Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE MANUAL 50-1115
OCTOBER 3, 2003

Safety and Environmental

OCCUPATIONAL SAFETY AND HEALTH

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/

OPR: W/OPS15 (E. Awni) **Certified by:** W/OPS1 (M. Paese)
Type of Issuance: Routine.

SUMMARY OF REVISIONS: This procedural directive supersedes NWSM 50-1115 dated September 4, 2002. The following revisions were made:

(1) Section 1, Fall Protection: Made editorial changes to the checklist. Requirement to train safety observer in First Aid/CPR was added to paragraph 1.3.2(c).

(2) Section 2, Working Alone: Corrected references in the checklist. Added a requirement for First Aid/CPR training of safety observer to paragraphs 2.3.2 and 2.3.5.

(3) Section 3, Safe Electrical Work Practices: Made an editorial change and corrected reference in the checklist. Added a requirement for First Aid/CPR training of safety observer to paragraphs 3.2 and 3.3.21(b)(3). Expanded paragraph 3.3.11 to address safety requirements related to use of portable electric equipment. Added a note to 3.3.11a describing restrictions for use of extension cords and multiple outlet assemblies. Removed requirement to measure a ground current in paragraph 3.3.11(o). Clarified requirements on self-testing of GFCI devices in paragraph 3.3.19(d).

(4) Section 15, Battery Charging and Storage Operations: Added clarification on inspection of UPS batteries in paragraph 15.3.5.

(5) Section 16, Flammable and Combustible Liquid Storage: Clarified flammable and combustible liquids storage requirements in paragraph 16.3.1(d).

(6) Section 18, Accident/Illness Reporting and Recording: Made editorial changes to the checklist. Clarified safety hazard reporting requirements in paragraphs 18.3.3(c) and 18.5.5(f). Updated information on recording, reporting and investigation of injuries/illnesses in paragraphs 18.3.4 and 18.3.5. Updated Regional Environmental/Safety Coordinator, station manager, safety focal point, supervisor and employee responsibilities in paragraphs 18.5.2, 18.5.3, 18.5.4, and 18.5.5. Revised information about OSHA log requirements and included a new address for submitting DOC forms in Attachment H.

(7) Section19, Hand and Power Tool Safety: Added paragraph 19.3.8 describing lawn mower safety requirements.

(8) Section 23, Emergency Response Agreements: Revised paragraph 23.1 to state that ERAs are highly recommended.

(9) Section 30, Office Safety: Clarified safety requirements for electrical heaters in 30.3.16. Updated the responsibilities section with NOAA-mandated monthly safety inspection requirement.

(10) Section 32, Motor Vehicle Safety: Updated general rules paragraph 32.3.1(f) by adding a list of emergency equipment in case of vehicle break down. Made editorial changes to Attachment A, Vehicle Inspection Checklist.

(11) Sections 1-32: In each responsibilities section, updated the reference to and added a web link for NWS policy directive PD 50-11, Occupational Safety and Health.

Pen & Ink Changes are published on OPS1 web site:
http://www.ops1.nws.noaa.gov/SAFETY/Safety_manual.htm.

Signed by September 12, 2003

John McNulty, Jr. Date
Director, Office of
Operational Systems

TABLE OF CONTENTS

OCCUPATIONAL SAFETY AND HEALTH MANUAL
TABLE OF CONTENTS

INTRODUCTION

1 FALL PROTECTION 1-1

2 WORKING ALONE 2-1

3 SAFE ELECTRICAL WORK PRACTICES 3-1

4 CONTROL OF HAZARDOUS ENERGY SOURCES 4-1

5 EMERGENCY ACTION PLAN 5-1

6 FIRE PROTECTION 6-1

7 HAZARD COMMUNICATION 7-1

8 PERSONAL PROTECTIVE EQUIPMENT 8-1

9 COMPRESSED GAS SAFETY 9-1

10 RESPIRATORY PROTECTION 10-1

11 HEARING CONSERVATION 11-1

12 CONFINED SPACE ENTRY 12-1

13 INDOOR AIR QUALITY 13-1

14 WALKING - WORKING SURFACES 14-1

15 BATTERY CHARGING AND STORAGE OPERATIONS 15-1

16 FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE 16-1

17 IONIZING AND NON-IONIZING RADIATION 17-1

18 ACCIDENT/ILLNESS REPORTING AND RECORDING 18-1

ATTACHMENT A 18-A-1
Form CD-137 "Report of Accident/Illness" 18-A-1
ATTACHMENT B 18-B-1
Form CD-351 "Report of Possible Safety/Health Hazard" 18-B-1
ATTACHMENT C 18-C-1
Form CA-1 "Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation" 18-C-1
ATTACHMENT D 18-D-1
Form CA-2 "Notice of Occupational Disease and Claim for Compensation" 18-D-1
ATTACHMENT E 18-E-1
Form SF-91 "Operator's Report of Motor Vehicle Accident" 18-E-1
ATTACHMENT F 18-F-1
Form SF-94 "Statement of Witness" 18-F-1
ATTACHMENT G 18-G-1
Form CA-16 "Authorization for Examination And/Or Treatment". 18-G-1

19 HAND AND POWER TOOL SAFETY 19-1

20 MACHINE GUARDING 20-1

21 LASER OPERATIONS 21-1

22 CRANES, HOISTS AND SLINGS 22-1

23 EMERGENCY RESPONSE AGREEMENTS 23-1

24 SAFETY TRAINING PROGRAM 24-3

25 ERGONOMICS 25-1

26 TRENCHING AND EXCAVATION OPERATIONS 26-1

27 FORKLIFT 27-1

28 WELDING/HOT WORK 28-1

29 SMALL BOAT SAFETY 29-1

30 OFFICE SAFETY 30-1

31 ASBESTOS SAFETY 31-1

32 MOTOR VEHICLE SAFETY 32-1

INTRODUCTION

1. General. This Occupational Safety and Health Manual implements one of the elements of the National Weather Service (NWS) Occupational Safety and Health Program defined in NWS Policy Directive NWSPD-50-11, Occupational Safety and Health. The manual includes 32 safety procedures developed in accordance with Occupational Safety and Health Administration (OSHA) standards, Department of Commerce Safety Manual and other Federal agencies safety and health standards (e.g., Department of Transportation, Nuclear Regulatory Commission, Federal Aviation Administration (FAA)). When no published OSHA standards existed, a guidance was derived from nationally recognized organizations (e.g., the National Fire Protection Association, American Conference of Industrial Hygienists, American National Standards Institute, National Institute for Occupational Safety and Health). In the absence of any published standards, guidance was developed to govern unique NWS activities.

2. Applicability. These procedures are applicable to NWS facilities, operations, and personnel (e.g., employees, contractors, visitors) and shall be implemented as directed by NWSPD-50-11. When NWS operations are conducted at another organization's site (e.g., Government agency, university), NWS safety requirements and procedures shall be followed unless the hosting organization's requirements and procedures pre-empt as determined in the lease agreement, Memorandum of Understanding, etc.

3. Manual Matrix. Each section of the manual consists of a table of contents, one-page summary (synopsis), checklist, and full text of the procedure. The summary highlights the most important aspects of the procedure and may be used by Station Managers as an overview for procedure implementation. The checklist should be used at least annually or, as needed, to review for compliance. In addition, examples, where available, of site-specific (WFO Springfield, MO) applications of the procedures are included as attachments to those procedures.

4. References. A list of specific references to regulations, standards, and guidelines is included in each procedure.

PROCEDURE 1 - Fall Protection

Table of Contents Page

Synopsis 1-ii
Fall Protection Checklist 1-v

1 FALL PROTECTION 1-1
1.1 Purpose and Scope 1-1
1.2 Definitions 1-1
1.3 Procedure 1-3
1.4 Quality Control 1-8
1.5 Responsibilities 1-8
1.6 References 1-9
1.7 Attachments 1-9
Pre-Use Inspection Guide 1-A-1

ATTACHMENT B 1-B-1
Annual Inspection Log 1-B-1

ATTACHMENT C 1-C-1
Structure Climbing/Descending Emergencies 1-C-1

Synopsis

This procedure is promulgated to reduce the potential of fall hazards associated with work on unguarded horizontal and vertical work surfaces (e.g., towers, river gauges, roofs). This procedure applies to all NWS facilities and work locations where fall protection is required and to all NWS employees who use fall protection in the performance of their jobs. This procedure excludes portable ladders (See procedure #14, Walking-Working Surfaces).

Initial Implementation Requirements:.

- **Analyze Site Operations versus Requirements of the Procedure**
  - Identify personnel impacted by this procedure *(1.3.9)*
  - Conduct Inspection of Fall Arrest System components. *(1.3.7a,b)*
- **Develop/Obtain Documentation/Information required for Site**
  - Document information relevant to Structure Climbing/Descending Emergencies *(Attachment C)*
  - Develop Emergency Response Agreements (ERA) with Local Emergency Response Organizations *(1.3.2a)*, if required
- **Designate Person to Administer the Fall Protection Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Fall Protection and Rescue Training/Certification of Climbers. *(1.3.9)*
  - Safety Observer Training. *(1.3.2b)*
- **Inventory Material/Equipment (Procure as required)**
  - Fall Protection Systems. *(1.5.2b, 1.3.1)*
  - Communication Devices. *(1.5.2b, 1.3.2b)*
  - Hard Hats. *(1.5.2b, 1.3.2i)*
  - Postings/Signs. *(1.5.2b, 1.3.4c)*
  - Fall Object Protection. *(1.5.2b, 1.3.4)*
  - Barricades. *(1.5.2b, 1.3.4b)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Perform Inspection of Fall Arrest System components prior to each use. *(1.3.7a)*
  - Review Climbing Incidents that caused Equipment Stress Loading *(1.3.7c)*
  - Conduct Annual Equipment Inspections. *(1.3.7b, Attachment B)*
- **Review/Update Documentation/Information required for Site**
  - Update information relevant to Structure Climbing/Descending Emergencies *(Attachment C)*
  - Update Emergency Response Agreements (ERA) with Local Emergency Response Organizations. *(1.3.2a)*
  - Maintain Personnel Training Records. *(1.3.9e)*
- **Provide Recertification of Site Personnel**
  - Recertification of Climbers. *(1.3.9b)*
- **Provide Re-training of Site Personnel (as required)**

- Re-training of Climbers. *(1.3.9e)*

- **Replace/Recalibrate/Maintain Material/Equipment (as required)**
  - Fall Protection Systems. *(1.5.2b, 1.3.1)*
  - Communication Devices. *(1.5.2b, 1.3.2b)*
  - Hard Hats. *(1.5.2b, 1.3.2i)*
  - Postings/Signs. *(1.5.2b, 1.3.4c)*
  - Fall Object Protection. *(1.5.2b, 1.3.4)*

This Page is Left Intentionally Blank

Fall Protection Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	1.4.2				
Are Fall Protection Systems used when work is being performed on towers, river gauges and other elevated structures where potential fall distance is 6 feet or more?	1.3.1a				
Has recommended coordination with the local emergency response organization(s) been conducted prior to the commencement of work to determine rescue ability within 30 minutes?	1.3.2a				
Have Emergency Response Agreements (ERA) been prepared and updated, as recommended in paragraph 1.3.2a?	1.3.2a				
Does a Safety Observer accompany the person performing the work requiring personal fall arrest and restraint systems?	1.3.2b				
Does the Safety Observer have immediate access to a reliable communication device for contacting the local emergency response organization should an accident occur?	1.3.2b				
Are only full body harnesses, with compatible components, being utilized for personal fall arrest systems?	1.3.2d				
Are vertical lifelines being used by NWS personnel for fall arrest purposes, when available?	1.3.2g				
Are ladder safety systems being used if installed?	1.3.2f				
Do employees use hard hats when climbing?	1.3.2i				

Requirements	Reference	YES	NO	N/A	Comments
Are all employees who perform work on roofs, etc., protected from falling or tripping by using appropriate fall protection systems?	1.3.~~4~~3				
Is falling object protection being used when work is being performed at an elevated work 6 feet or more above a lower level?	1.3.4				
When work is performed at elevated work-sites, is the area enclosed with barricades, if required, to protect station personnel and other workers?	1.3.4b				
Are signs warning of the hazards of falling materials, posted where applicable according to this procedure?	1.3.4c				
Are fall protection systems used when work is performed on roofs which do not have guardrails or parapets?	1.3.3				
Do contractors at this facility who use scaffolds and similar platforms, comply with this procedure?	1.3.6				
Are fall arrest systems inspected by the user prior to each use and also annually?	1.3.7a,b				
Are fall arrest system components removed from service and destroyed after being subjected to loading from a fall?	1.3.7a,c				
Are harnesses and lanyards maintained and stored according to this procedure?	1.3.8				
Have all employees required to climb, work on or descend structures been trained in fall protection and rescue?	1.3.9				

Requirements	Reference	YES	NO	N/A	Comments
Have all trained climbers been recertified every two years (nominal)?	1.3.9b				
Has a Safety Observer been trained in emergency notification, CPR/First Aid, and in use of rescue equipment/operations if local emergency organization is not available within 30 minutes?	1.3.2b,c				
Has re-training been provided to all affected employees, as required?	1.3.9e				

This Page is Left Intentionally Blank

1 FALL PROTECTION

1.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (MWS) is promulgating this procedure to reduce the potential of fall hazards associated with work on unguarded horizontal and vertical work surfaces (e.g., towers, river gauges, roofs). This procedure applies to all NWS facilities and work locations where fall protection is required and to all NWS employees who use fall protection in the performance of their jobs. This procedure excludes portable ladders (See Procedure #14, Walking-Working Surfaces).

1.2 Definitions

Anchorage. A secure point of attachment for personal fall arrest equipment (e.g., lifelines, lanyards or deceleration devices), capable of supporting impact loading of 5,000 pounds per attached employee or shall be designed and installed under the supervision of the Professional Engineer. If designed, it must be part of a complete personal fall arrest system which maintains a safety factor of at least 2 while limiting maximum arresting force on an employee to 1800 pounds.

Body Belt. A strap that a worker can secure around his/her waist and to which a lanyard or device for positioning can be attached. **The use of body belts as part of a personal fall arrest system is prohibited**. Body belts can be used only as part of positioning systems.

Carabiner. A trapezoid or oval shaped connector with a normally closed gate which may be opened by turning of the closing/locking mechanism and applying pressure on the gate that automatically closes when pressure is released. NWS employees should use only steel auto-locking carabiners.

Connector. A device which is used to connect part of the personal arrest system, positioning or restraint systems together. It may be an independent component such as carabiner or it may be integral component of body harness (D-rings) or lanyard (snap-hooks).

Construction Work. Construction, installation, alteration, and/or repair of facilities and/or ancillary equipment.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Full Body Harness. A design of multiple adjustable straps that can be secured around the body, having multiple D-rings as means for attaching carabiners, lanyards or other devices suitable for fall arrest, work positioning or restraint. The back (dorsal) D-ring is used for fall arrest or restraint, the front D-ring is used for work positioning or ladder climbing, and side D-rings are used for restraint and for work positioning.

Guardrail system. A vertical barrier erected along exposed edges of walking/working surfaces to prevent falls of persons to lower levels or the ground. A standard guardrail consists of top rail, mid rail, and posts, and shall have a vertical height of 42 inches plus or minus three (3) inches from the upper surface of top rail to floor, platform, runway, or ramp level. Nominal height of mid rail shall be at least 21 inches.

Guarded Roof Edge. A roof edge which is guarded by a parapet or similar structure with a minimum height of 39 inches.

Horizontal Lifeline. A component consisting of a flexible line for connection to anchorages at both ends to stretch horizontally and which serves as a means for connecting other components of a personal fall arrest system to the anchorage. Horizontal lifelines and their anchorage strength must be designed only by a qualified Professional Engineer.

Ladder Safety (Climbing) Systems. A fall arrest system that safeguards a worker while climbing or descending structures such as fixed ladders, small towers, poles. It consists of either a flexible steel cable or a rigid rail, mounting brackets, and a safety sleeve. The safety sleeve attached to the vertical cable/rail and worker's harness automatically follows the worker's movement and locks onto the cable/rail when a fall occurs.

Low-Sloped Roof. A roof having a slope less than four vertical inches in twelve horizontal inches.

Maintenance. Making or keeping a structure, equipment, fixture or foundation (substrates) in proper condition in a routine, scheduled or anticipated fashion.

Opening. A gap or void 30 inches (76 cm) or more high and 18 inches (48cm) or more wide, in a wall or partition, through which employees can fall to a lower level.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Personal Fall Arrest System. A system used to arrest a worker in a fall from a working level. It consists of an anchorage, connectors, a full body harness, shock absorbing lanyard and may include deceleration device, lifeline, or suitable combinations of these. **As of January 1, 1998, the use of a body belt for fall arrest is prohibited.**

Positioning Device System. A system that holds and sustains the worker on an elevated vertical surface and allows him/her to work with both hands free and limits the free fall to 2 feet. It consists of a full body harness, connecting assembly (e.g., positioning lanyard), connectors, and anchorage.

Positioning Lanyard. A flexible line of webbing with connectors (snap-hooks)on both ends that connect to a worker harness's side D-rings. It must be rigged such that a worker cannot free fall more than two feet.

Rope Grab. A mobile or static deceleration device attached to a vertical rope lifeline that automatically by friction locks onto the rope so as to arrest the fall of an employee.

Restraint System. A system designed to prevent the worker from reaching an area in which a free fall could occur. Thus, no free fall is possible (e.g., roof work).

Snap-hook. A connector having a hook-shaped body with a normally closed gate which opens by depressing an opening/locking mechanism and automatically closes when pressure is released. NWS employees shall use only self-closing and self-locking snap-hooks when used for fall protection.

Shock (Energy) Absorber. A component that is designed to dissipate kinetic energy and limits forces imposed on a worker during fall arrest to 900 pounds.

Shock Absorbing Lanyard. A flexible line of webbing, cable, or rope that has an integral shock absorber and connectors at each end for connecting a worker's harness to a lifeline or anchorage.

Steep Roof. A roof having a slope greater than four vertical inches to twelve horizontal inches.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC.), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Unguarded Roof Edge. Any side or edge roof where there is no wall or guardrail system at least 39 inches high.

Vertical Lifeline. A component consisting of a flexible line for connection to an anchorage at one end to hang vertically and which serves as a means for connecting other components of a personal fall arrest system to the anchorage. The lifeline shall have a nominal breaking strength of 5,000 pounds.

Y Lanyard. (100% Tie-Off). Two-legged lanyard with an integral shock absorber, which allows worker to be tied off to one anchorage point all the time even when moving from one location to another. Each leg is terminated by a connector (snap-hook or carabiner) and a center connector (usually snap-hook) attaches to a back (dorsal) D-ring of a worker's harness.

1.3 Procedure

1.3.1 General. Fall protection systems (e.g., guardrails, railings, safety nets, personal restraint and fall arrest systems, positioning systems, temporary scaffolding) are required under the following conditions:

a. When potential fall distance is 6 feet or more (e.g., towers, river gauges, unguarded roofs on Upper Air Buildings).

b. When potential fall distance is 6 feet or less under particularly hazardous circumstances (e.g., working over objects or equipment imposing an impalement hazard).

NOTE: Fall protection equipment is not required for the HVAC fixed ladder inside WFO buildings. Personnel climbing the HVAC fixed ladder should still exercise caution and abide by the rules in section 14.3.6, paragraphs l and m.

1.3.2 Fall Protection Safe Work Practices.

a. Prior to conducting work on towers, river gauges or similar structures, coordination with the local emergency response organization(s) should be conducted to determine the ability of the organization(s) to respond to the emergency and provide a rescue within 30 minutes.

NOTE: The coordination is intended to familiarize emergency response personnel with the fall protection equipment used by the NWS personnel, the structures the NWS personnel climb/descend, and the types of operations conducted. Familiarity with NWS operations and equipment will allow emergency response personnel to conduct the safest rescue operations possible. Emergency Response Agreement(s) are recommended to be prepared and updated in accordance with NWS Procedure #23. Information relevant to structure climbing/descending emergencies should be documented as a part of this procedure (see attachment C) and the site Emergency Action Plan, NWS Procedure #5, Attachment A.

b. A safety observer must accompany the person involved in any work that requires the use of personal fall arrest or restraint system (e.g., climbing towers, descending river gauges). The safety observer must be trained in summoning the assistance of a local emergency response organization in case an accident occurs and must have immediate access to a reliable communication device (telephone, cellular phone, two-way radio, etc.).

c. When a local emergency response organization is not available within the 30 minute response time, a safety observer trained in use of rescue equipment and rescue operations must be present. Appropriate rescue equipment shall be readily available in case an emergency rescue is required. In addition, safety observer must be trained in CPR/First Aid.

NOTE: A minimum number of rescue equipment kits for towers under and over 100 feet in elevation have been provided to the NWS regions. Additional rescue equipment kits will be stocked at the National Logistics Supply Center (NLSC) and available for ordering. Rescue equipment shall be replaced/refurbished after every five years.

d. The use of body belts for personal fall arrest systems is prohibited**.** Only full body harnesses and compatible components, including all connectors, shall be utilized for personal fall arrest system. Personal fall protection equipment shall be replaced after every five years.

e. Lanyards used as part of a personal fall arrest system shall have a maximum length of six feet and shall be equipped with integral shock absorbers. These lanyards shall be attached to the rear (dorsal) D-ring of a full body harness and shall be free of knots.

f. Ladder safety systems (when available) shall be used for climbing and descending if installed on towers, ladders or similar structures, river gauges, etc.

g. Vertical lifelines should be used by NWS personnel for fall arrest purposes, when available. Each employee shall be attached to a separate lifeline. **Horizontal lifelines, when used, must be designed by a Professional Engineer, qualified in fall protection**.

h. In the absence of vertical lifelines or ladder safety systems, NWS employees shall use Y lanyards with integral shock absorbers connected to a back (dorsal) D-ring of a full body harnesses when climbing towers and similar structures.

i. While climbing, NWS employees shall wear hard hats that provide top and side impact protection and have three-point chin straps.

j. Employees working on floors, roofs, or other walking/working surfaces shall be protected from falling or tripping through holes (including skylights), openings, hoist areas, and excavations more than six feet (1.8 m) above lower levels, by personal fall arrest systems, restraint systems, covers, or guardrails erected around such holes.

1.3.3 <u>Roof Access</u>

a. A fall protection system is required for work performed on low-sloped roofs with a ground-to-eave height greater than six feet. This does not apply at points of access such as stairways, ladders and ramps or when persons are on the roof only to inspect, investigate or estimate roof level conditions. A fall protection system shall consist of one or more of the following:

(1) Guardrails.

(2) Safety nets.

(3) Personal fall arrest system.

(4) Warning lines.

(5) Work-positioning or work-restraint devices such as locking rope grabs and static lanyards that are designed to restrict motion within or at the work area.

b. For work performed on a roof with a ground-to-eave height less than 6 feet, and a width less than 50 feet, guardrails, warning lines or personal fall arrest system may be used.

c. For all work on steep roofs, a fall protection system shall be used as defined in paragraph 1.3.3a.

1.3.4 Falling Object Protection

a. Falling object protection such as toeboards, paneling, screening and guardrails shall be utilized when work is performed at an elevated work area six feet or more above a lower level. No material or equipment shall be stored within four feet of the working edge.

b. To protect other employees and workers on the site, the area below the elevated work site shall be completely enclosed with barricades not less than 6 feet back from the projected edge of the work above.

c. Signs warning of the hazard of falling materials shall be posted, when necessary. For NEXRAD towers, these signs shall carry warnings about falling ice and shall be posted outside of ice falling area, where appropriate.

1.3.5 Aerial Lifts. Employees being lifted in aerial buckets shall wear a full body harness and be anchored to certified anchor points inside the bucket, connected by a lanyard adjusted as short as possible.

1.3.6 Scaffolds. Suspended scaffolds or similar platforms used by NWS employees or contractors shall comply with the pertinent requirements of 29 CFR 1926, Subpart L, “Scaffolds”.

1.3.7 Inspection and Testing of Fall Protection System

a. Fall arrest system components shall be inspected by the user before each use (see attachment A: Pre-use Inspection Guide). Each rivet shall be examined to be certain that it is secure. All fall protection hardware including buckles, D-rings, snap-hooks, and webbing shall be examined. Defective equipment shall be removed from service and returned to the Safety or Environmental/Safety Focal Point for disposal. The following components are available for replacement at NLSC:

(1) Harnesses (ASN 060-P-4, 060-P-5, 060-P-6, 060-P-7, 060-P-8)

(2) Y Lanyard (ASN 060-P-9)

(3) Positioning Lanyard (ASN 060-P-10)

(4) Carabiners (ASN 060-P-11, 060-P-12)

(5) Rescue Equipment Kits

(i) Towers below 100 feet (ASN 060-K-3)

(ii) Towers above 100 feet (ASN 060-K-4)

b. The Safety or Environmental/Safety Focal Point shall ensure that annual inspection of fall protection system components is conducted and an inspection log is kept (see attachments A and B).

c. Equipment subjected to stress loading in a fall shall be destroyed after a review of the fall has been completed.

1.3.8 Maintenance and Storage

a. Washing harnesses and lanyards in soapy water is the best way to remove loose debris, followed by rinsing with fresh water. Drying in a cool area away from ultra-violet (UV) light is recommended. Always make sure labels are legible. Do not use industrial solvents on synthetic materials. Do not oil moving parts unless instructed by manufacturer.

b. Synthetic material should be kept away from bright sunlight and UV light during storage and maintained in a cool dry place. Fading of dyed synthetic color is an indicator to signify UV exposure which may be damaging.

1.3.9 Training

a. Fall protection/rescue training shall be provided for all NWS employees required to climb, work on and descend structures in performance of their job duties. Training shall be provided by a competent person as defined in 29 CFR 1926.503 (a)(2).

b. Fall Protection/rescue recertification shall be required every two years (nominal) for personnel who attend initial fall protection/rescue training after September 4, 2002, the effective date of this requirement. Climbers trained in fall protection and rescue before September 4, 2002 will be recertified before the end of fiscal year 2004 and will thereafter observe the two-year (nominal) recertification cycle based on their recertification date. The two-year recertification period is nominal to account for changes in course schedule and personnel availability from year to year. For example, a climber certified in March 2003 would require recertification before the end of FY05, not necessarily in March 2005.

c. A written certification shall be generated by the training/recertification organization that contains the name of the employee trained, the date of the training and the subject of the certification for each individual successfully

completing the training. Training records shall be maintained by the site safety or environmental/safety focal point or his/her designee.

d. Training shall consist of, but not be limited to, the following:

(1) Recognition of the hazards related to falls.

(2) Procedures to be followed to minimize hazards related to falls.

(3) Successful demonstration of the ability to use fall protection equipment by trainees.

(4) Procedures for inspection of equipment such as harnesses and lanyards.

(5) Rescue techniques.

e. Re-training shall be required when:

(1) Changes in the workplace render previous training obsolete.

(2) Changes in the types of fall protection systems or equipment to be used render previous training obsolete.

(3) Affected employees fail to retain the requisite knowledge of skill provided by the training.

f. Recertification shall include, but not be limited to, the following:

(1) Classroom review of fall protection/rescue techniques taught during initial training.

(2) Successful demonstration of proficiency in application of rescue techniques by each participant.

1.4 Quality Control

1.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarter facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

1.4.2 Station Manager

Shall review or delegate review of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

1.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

1.5 Responsibilities

1.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

1.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and periodic inventory of fall protection systems, communication devices, postings/signs, hard hats, barricades and other safety equipment is accomplished and adequate stock is maintained.

1.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

1.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety or environmental/safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

1.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

1.6.1 American National Standards Institute, ANSI Z359.1-1992, "Safety Requirements for Personal Fall Arrest Systems".

1.6.2 National Weather Service, NWS Occupational Safety and Health Procedure 5, "Emergency Action Plan"

1.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.28, "Scaffolds".

1.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.66, Appendix C, "Fall Arrest Systems".

1.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.145, "Signs and Tags".

1.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.104, "Safety Belts, Lifelines, and Lanyards".

1.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.500, Subpart M - "Fall Protection".

1.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926 Subpart L, "Scaffolding."

1.7 Attachments

Attachment A. Pre-Use Inspection Guide, Fall Protection Equipment.

Attachment B. Annual Inspection Log, Fall Protection Equipment.

Attachment C. Structure Climbing/Descending Emergencies.

ATTACHMENT A

Pre-Use Inspection Guide

Fall Protection Equipment

WEBBINGS - Harnesses/Lanyards

Expected Service Lifetime: Per manufacturer's instructions or 5 years in use.

Recommended Check: Look for cuts (**c** -inch width in webs) wear burns, stitching problems, UV damage, chemical attack and/or ingrained dirt or oil.

ROPES - Lifelines/Lanyards

Expected Service Lifetime: Per manufacturer's instructions or 5 years maximum regardless of use and only when stored in a clean, dark and dry area.

Recommended Check: Check termination splices, wear points, ingrained dirt, kinks and broken wires in cables and thimbles, cuts to ¼-strand, wear in ropes, UV damage and/or chemical attack.

HARDWARE - Snap Hooks/D-Rings and Ladder Climbing Devices

Expected Service Lifetime: Approximately 5 years.

Recommended Check: Cracks, distortions, wear points, sticking of gate, functioning of gate and keeper latch.

NOTE: If fall occurs, remove all equipment involved from service.

This Page is Left Intentionally Blank

ATTACHMENT B

Annual Inspection Log

Fall Protection Equipment

(To be used with attachment A)

Component	Date	Pass/Fail	Comments

_____

Inspector

This Page is Left Intentionally Blank

ATTACHMENT C

Structure Climbing/Descending Emergencies

List structures maintained by site personnel (tower, river gauge, etc.):

No.	Structure Type	Location (address, if applicable)	Emergency Response Organization* (if available within 30-minute response time)

Emergency Response Organization(s):

Name _____ Phone Number_____

Name _____ Phone Number_____

(Attach Emergency Response Agreement, if available)

* - N/A. If no Emergency Response Organization available within 30-minute response time additional personnel trained in rescue operations and equipped with rescue kit must accompany the climber(s)

This Page is Left Intentionally Blank

PROCEDURE 2 - Working Alone

Table of Contents: Page

Synopsis 2-ii
Working Alone Checklist 2-iii

2 WORKING ALONE 2-1
2.1 Purpose and Scope 2-1
2.2 Definitions 2-1
2.3 Procedure 2-2
2.4 Quality Control 2-7
2.5 Responsibilities 2-7
2.6 References 2-8
2.7 Attachments 2-8

ATTACHMENT A 2-A-1
Equipment Maintenance Procedures That Require More Than One (1) Person 2-A-1

ATTACHMENT B 2-B-1
Screening Criteria for Heat Stress Exposure (WBGT values) 2-B-1

ATTACHMENT C 2-C-1
TLVs* Work/Warm Up Schedule for Four-Hour Shift 2-C-1

Synopsis

The purpose of this procedure is to provide guidelines to employees and supervisors when additional personnel assignment may be needed. This procedure applies to all NWS facilities, work locations, and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Assessment of site-specific situations/operations requiring additional personnel. *(2.3.3)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop General Rules to gauge the risks associated with each task. *(2.3.3)*
- **Designate Person to Administer Working Alone Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Safety Observer Training. *(2.3.5a,b)*
  - CPR Certification. *(2.3.2a)*
  - First Aid Training. *(2.3.2a)*
- **Inventory Material/Equipment (Procure as required)**
  - Communication Devices. *(2.3.4b)*

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Update General Rules to gauge the potential risk associated with each task. *(2.3.3)*
- **Provide Refresher Training of Site Personnel (when required)**
  - Safety Observer Training. *(2.3.5a,b)*
  - CPR Certification. *(2.3.2a)*
  - First Aid Training. *(2.3.2a)*
- **Replace/Re-calibrate/Maintain Material/Equipment as required**
  - Communication Devices. *(2.3.4b)*

Working Alone Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	2.4.2				
Are Engineering Handbooks (EHBs) and system/equipment manuals reviewed by affected personnel for the additional personnel requirement?	2.7				
Are personnel trained in First Aid available when work is being performed in areas where there is a risk of serious injuries and medical services are not readily available (more than 8 minutes away)?	2.3.2a				
Is a Safety Observer present during all permit-required confined space entry activities?	2.3.2b				
Have all potentially hazardous conditions been evaluated by the Station Manager and/or the Environmental/Safety Focal Point and/or Program Supervisors to determine when additional personnel are necessary?	2.3.3				
Have the Station Manager and/or Environmental/Safety Focal Point established the rules for assignment of additional personnel?	2.3.3				
Have these rules been coordinated and documented?	2.3.3				
Are potentially hazardous environments routinely evaluated by the Environmental/Safety Focal point or another qualified individual prior to the commencement of operations?	2.3.3				
Are adequate communication measures in place for operations which must be performed alone?	2.3.4b				
Are Safety Observers selected and properly trained to perform their duties in accordance with this procedure?	2.3.5b				
Are Safety Observers working with electrical operations trained in First Aid if medical services are not readily available?	2.3.5b				

This Page is Left Intentionally Blank

2 WORKING ALONE

2.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, National Weather Service (NWS) Headquarters (WSH) is promulgating this procedure to provide guidelines to employees and supervisors when additional personnel assignment may be needed. This procedure applies to all NWS facilities, work locations, and employees.

2.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hazardous Work. Any work that, if not properly performed, poses potential risk to the safety and health of the worker or damage to property, equipment, or the environment.

Operating Unit. For the purpose of this procedure, operating unit includes National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), and Sterling Research & Development Center (SR&DC).

Qualified Person - A person qualified by education, training, and experience to estimate employee exposures to hazardous materials and work conditions.

Station Manager. For the purpose of this procedure, the station manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Working Alone. Performance of any work by an individual who is out of voice or visual contact with all other individuals. In addition to the obvious cases, employees perform work locally but still may be remote from the immediate inhabited areas of the WFO or WFO/RFC or other normally inhabited structure(s). For example, field personnel may work alone:

a. When working on the automatic radiotheodolite (ART) system in the Upper Air shelter (radome), even though it is within the WFO general area - the pedestal has voltages of 120 volts present in the slip ring assembly.

b. When working in the equipment rooms at the WFO or WFO/RFC, employees may be out of sight or hearing of workers in the operations portion of the WFO or WFO/RFC.

c. Some NRC employees may work alone in the screen room when performing certain work on the WSR-88D, working on the pedestal in the “warehouse” area, or at certain times in one or more of the laboratory areas.

d. Students at, or employees of the NWSTC may work in laboratory or classroom areas out of sight or remote from other personnel. Similar examples may also apply to national centers, regional and national headquarters.

2.3 Procedure

2.3.1 Maintenance Procedures Requiring Two or More Persons.. Material contained in the NWS maintenance manuals and Engineering Handbooks (EHB) specify when two or more maintenance personnel are required to safely perform maintenance procedures. Examples where guidance may be found include: the Doppler surveillance radar (WSR-88D), the Radar Data Acquisition (RDA) unit, antenna pedestal system, Radar Products Generator (RPG) unit, Principal User Processor (PUP) maintenance manual set, a part of EHB-6; the ART maintenance manual set, a part of EHB-9; and Real Property Installed Equipment (RPIE) maintenance manuals.

A detailed example, a summary of WSR-88D maintenance and repair operations requiring two or more maintenance persons, is presented in attachment A. It is NOT a complete listing of operations, as the list is continuously being modified and updated. It is to be used as an example only. For a complete and up-to-date listing, consult the WSR-88D maintenance manual. Some procedures mandate the presence of additional personnel to assist employees performing heavy duty work (e.g., lifting heavy equipment). Other procedures require the presence of a second employee solely as a safety observer to minimize the risk of injury to employees, as described in section 2.3.5, while still others require additional personnel simply due to the nature of the work involved.

2.3.2 Specific Conditions Requiring Additional Personnel. The following additional personnel requirements are derived from OSHA regulations and interpretations.

a. In accordance with OSHA standard 1910.151, in the absence of an infirmary, clinic or hospital in near proximity to workplace, a person trained in First Aid shall be readily available.

NOTE: OSHA provides a 8 minute response time as a guidance for determining if medical services are readily available. Nature and extent of the hazards must be evaluated for each site. In general, if there is a risk of injury and medical services are more than 8 minutes away, a first aid trained employee shall be present on site. CPR certification and annual re-certification are recommended. However, if there is a risk of serious injury that may adversely affect employee's respiration, cause severe bleeding or other life threatening condition, 8-minute response time may be too long (e.g., irreversible brain damage may occur within 4 minutes due to lack of oxygen or death can occur due to arterial bleeding). In this case, a First Aid/CPR trained safety observer shall be available.

b. A safety observer must be present during all permit-required, confined-space entry activities.

2.3.3 Other Conditions that Require More than One Person. The station manager and the Safety or Environmental/Safety Focal Point, shall coordinate with site personnel to determine and document the general rules they will use to gage the risks under which personnel will be performing their assigned tasks. Conditions such as severe weather, dangerous terrain (including areas where management determines potential risk to the employee to be unacceptably high), exposure to wild animals, exposure to hazardous chemicals, work in the open trenches, sea buoy operations, and others may dictate a need for additional personnel assignment, even if it is not required by the maintenance procedures. Potentially unsafe conditions shall be identified prior to execution of any project and brought to the attention of appropriate management personnel.

NOTE: Working on any structure that involves climbing or descending shall require a safety observer to be present unless the structure has permanent stairways and platforms with guardrails or scaffolding guards in compliance with OSHA requirements. When the structure does not have permanent stairways and platforms with guardrails or scaffolding guards and when local emergency rescue organization is not available, second person trained in rescue operations must be present.

The following paragraphs include, but are not limited to, examples of work conditions under which it is recommended that two or more people be assigned. The final decision about personnel assignment rests with the station manager, who will consider input from the Safety or Environmental/Safety Focal Point, NWS Employee Organization Representative (time permitting) and the personnel performing the work.

a. Dangerous Weather or Terrain.

(1) When working on a cliff, narrow ledges, or near vertical mountainous slopes where a loss of footing would result in serious injury or death, or when working in areas where there is danger of rock falls or avalanches.

(2) When traveling to remote sites in winter, either on foot or by means of an off-road type vehicle, over secondary or unimproved roads or snow trails, in sparsely settled or isolated areas.

(3) When working or traveling in sparsely settled or isolated areas results in exposure to dangerous temperatures and/or high winds, and when shelter, other than a temporary shelter, and assistance are not readily available.

(4) When participating in snow plowing or snow or ice removal operations, regardless of whether on primary, secondary, or other classes of roads,

when there is danger of avalanche; or there is the danger of missing the road and falling down steep mountainous slopes because of lack of snow stakes, "white out" conditions, or sloping ice-pack covering the snow.

(5) When working outdoors in hot or cold weather conditions, use the guidance issued by the American Conference of Governmental Industrial Hygienists (ACGIH) for work-rest regimen in hot environment (Attachment B) and work-warming regimen in cold environment (Attachment C). Attachment B should be used for screening purposes only. It is possible that a condition may be above the criteria described in Attachment B and still not represent an unacceptable exposure.

(6) When working on river gauges that are located on the side of a bridge which is narrow and has high traffic flow or near rivers at or above flood levels.

b. Exposure to Hazardous Chemicals. Exposure to hazardous chemicals in certain amounts and concentrations can present a danger to a person's life or health, especially when an accidental spill occurs. Two or more people shall be assigned when chemical concentrations could potentially exceed OSHA Permissible Exposure Limits, ACGIH Threshold Limit Values (TLVs), or 20% of a Lower Explosive Limit. The estimate of potential exposures shall be made by the Safety or Environmental/Safety Focal Point or other qualified personnel (such as an Industrial Hygienist, Safety Engineer, etc.). The National Oceanographic and Atmospheric Administration (NOAA) Regional Safety Manager (RSM) or NWS Regional/National Headquarters should be consulted, if necessary.

c. Work in Open Trenches. Working in an open trench that is 4 feet or more deep, until proper shoring, sloping, or another approved method of cave-in prevention has been installed.

d. Work Beneath Hovering Helicopter. Participating in ground operations to attach an external load to helicopters hovering overhead. The second person in the operation shall observe and remain in the view of the person attaching the load in order to signal an emergency since oral communication may not be possible due to helicopter engine or rotor noise.

e. Work in Unsafe Structures. Working within or immediately adjacent to a building or structure which has been severely damaged by earthquake, fire, tornado, flood, or similar cause. Such work may be performed if considered necessary for the safety of personnel or recovery of valuable materials or equipment, but only when the work is authorized by Regional Headquarters, and, if necessary, in conjunction with National Headquarters.

f. Exposure to Wild Animals and Poisonous Insects and Snakes. Performing maintenance in undeveloped areas if danger of encountering wild animals exists (e.g., moose, polar/brown/grizzly bears in Alaska, black bears in continental United States, large birds of prey), poisonous plants, insects or snakes.

g. Tropical Jungle Duty. Work that occurs outdoors in undeveloped jungle regions outside the continental United States can be unsafe. Work may involve the following:

(1) An unusual degree of physical hardship caused by high heat, humidity, or other inclement conditions.

(2) An unusual danger or serious injury due to:

i Travel on unimproved roads or rudimentary trails in rugged terrain (e.g., walking on narrow trails in steep mountainous areas, fording deep, fast-moving rivers, and crossing deep crevices via log or other unsafe means).

ii Immediate presence of dangerous wildlife (e.g., venomous snakes, poisonous insects, and large carnivores).

h. High Crime Areas - Work in potentially high crime areas.

i. Hoisting and Rigging Operations - Additional personnel may be required to assist as spotter(s) during some hoisting and rigging activities when visibility of the load by the operator may be compromised due to the nature of the lift.

2.3.4 Considerations Concerning Assignment of Additional Personnel.

a. When evaluating the particular situation, all factors contributing to the risk involved shall be considered. In instances when additional personnel are not readily available to support the assigned task, especially when work must be performed at remote sites or on a high structure, postponing routine maintenance task until other personnel become available and/or severe weather conditions improve should be considered.

NOTE:	In case of severe weather, travel to the work site may not be safe, even if two people are present.

b. For situations when the two-person rule is not mandatory, emergency communications (e.g., telephone, cell phone, two-way radio) for personnel who must perform emergency equipment repair alone at remote locations shall be established.

c. When means of communication are not readily available, emergency rescue measures may need to be arranged in advance.

2.3.5 Safety Observers ("Buddies"). Under special conditions, described in Section 2.3.2 and 2.3.3, when the risk of serious injury to maintenance personnel is judged to be greater than normal, the presence of a safety observer is essential. The safety observer should be able to obtain medical assistance or be trained to render first aid. If there is a risk of serious injury that may adversely affect employee's respiration or cause severe bleeding or other life threatening condition, the safety observer must be trained in CPR/First Aid (see 2.3.2). The safety observer must have immediate means of communication (e.g., phone, cellular phone, two-way radio, etc.). The following paragraphs provide the requirements applicable to safety observers. The following paragraphs provide the requirements applicable to safety observers.

a. Work Conditions. When work is to be performed under high risk conditions, work shall not begin until a safety observer is present. A safety observer may be other maintenance personnel or trained staff members (e.g., operations staff, meteorology/hydrology staff).

b. Knowledge and Training. Safety observers shall receive initial and refresher training (as appropriate). Safety observers do not have to be proficient in the task being observed, but as a minimum, should:

(1) Be briefed and/or familiar with the potential hazards of the task and be able to detect an unsafe act or condition during the work.

(2) Know how to use electrical safety equipment and be familiar with procedures to remove personnel from electrical hazards and when **not** to touch an affected person.

(3) Be trained in First Aid or First Aid/CPR based on conditions described in paragraph 2.3.2 (NOTE).

(4) Be familiar with local procedures for obtaining medical assistance;

(5) Know where disconnect switches are located and know how to de-energize equipment.

(6) Be familiar with and be able to recognize the appropriate safety controls (engineering and administrative) and to select personal protective equipment.

(7) When acting as a fire watch for welding and other hot work activities, the observer must be trained in the use of a fire extinguisher and know how to turn off bottled welding gas supplies, and secure and safely move bottled gas cylinders.

(8) The safety observer should have no responsibilities or duties other than being the safety watch.

c. Duties/Responsibilities. The safety observer should:

(1) Give positive warning of potential danger to anyone approaching the equipment.

(2) Be at a safe distance from which he/she can observe all personnel who are working on the equipment and have access to the main power switch.

(3) Have easy access to safety and rescue equipment.

(4) Provide near constant surveillance (e.g., two-way radio) or other alternative means of communication.

d. Assignment of Safety Observers. The Station Manager shall ensure that the safety observers are assigned before starting the tasks. Individuals making safety observer personnel assignments should consider splitting assignments among station staff to the extent possible.

2.4 Quality Control

2.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

2.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

2.4.3 NWS Headquarters (WSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

2.5 Responsibilities

2.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

2.5.2 Station Manager*

Shall have oversight over the implementation of this procedure and shall ensure that the requirements of this procedure are followed by individuals at the NWS facility.

2.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

2.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

2.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

2.6.1 American Conference of Governmental Industrial Hygienists, "Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)."

2.6.2 National Weather Service, NWS Occupational Safety and Health Procedure 1, "Fall Protection."

2.6.3 National Weather Service, NWS Occupational Safety and Health Procedure 12, "Confined Space Entry."

2.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart Z, "Toxic Substances."

2.7 Attachments

Attachment A. Table 2-1: Equipment Maintenance Procedures That Require More Than One (1) Person.

NOTE:	Attachment A contains **examples** from NEXRAD manuals (EHB-6). It is provided as a guide only. The latest approved EHBs and system/equipment manuals must be used for equipment-specific guidance. It is appropriate to caution that there is no ultimate guarantee that errors and omission in documentation have been completely eradicated. Common sense and sound judgement should be applied in each and every decision process.

Attachment B. Screening Criteria for Heat Stress Exposure (WBGT Values)

Attachment C. TLVs Work/Warm Up Schedule for Four-Hour Shift

ATTACHMENT A

Equipment Maintenance Procedures That Require More Than One (1) Person

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-510 RDA Maintenance Group	Chapter 6 Maintenance	Safety Summary	2	Do not Service or Adjust Alone. Under no circumstances should any person reach into or enter an enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.
			2	UD5A7 is heavy. Two technicians are required to support the unit during removal and installation.
			2	Two people are required to safely perform step 8 (page 6 4120).
			2	Power supplies are heavy. Two technicians are required to support the power supplies during both removal and installation procedures.
			2	Unit 5A12 is heavy. Two technicians are required to support the unit during removal and installation.
	6.5 Replacement and Setup Procedures	Para.6.5 Replacement and Setup Procedures	2	After 6.5.3, Table 6-5.3 RDA Group Turn-On Procedure Two people are required to safely perform the stow pin procedure.
		6-5.45 Pedestal/Power Amplifier Unit UD5A7 Replacement Procedure	2	Two technicians are required for this procedure. UD5A7 is heavy. Two technicians are required to support the unit during removal and installation.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-510 RDA Maintenance Group	6.5 Replacement and Setup Procedures	6-5.46 - Elevation/ Azimuth Power Amp UD5A7A1 and UD5A7A2 Replacement	2	UD5A7 is heavy. Two technicians are required to support the unit during removal and installation.
		6-5.53.1. Elevation Manual Drive Assembly UD2A1A1A1 Replacement Procedure	2	6.-5.53 - Antenna Pedestal UD2 LRU Replacement Information Two technicians are required for this procedure.
			Implied	Under Warning in sub-para. 6-5.53.1.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
		6-5.53.2 - Elevation Manual Drive Stow Pin Switch UD2A1A1A1S1 Replacement	2	Two technicians are required for this procedure.
			Implied	Under Warning in sub-para. 6-5.53.2.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
		6-5.53.3 - Elevation Data Package UD2A1A1A2 Replacement	2	Two technicians are required for this procedure.
			Implied	Under Warning in sub-para. 6-5.53.3.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
		6-5.53.4 - Elevation Gearbox UD2A1A1A3 Replacement	3	Three technicians are required for this procedure.
EHB 6-510 RDA Maintenance Group	6.5 Replacement and Setup Procedures	6-5.53.4 - Elevation Gearbox UD2A1A1A3 Replacement	Implied	Under Warning in sub-para. 6-5.53.4.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
			3	Under 6-5.53.4.3.24, Notes: Three people are required to safely remove and replace the gearbox/drive motor.
		6-5.53.5 - Elevation Gearbox Drive Motor UD2A1A1B1 Replacement	2	Two technicians are required for this procedure.
			Implied	Under Warning in sub-para. 6-5.53.5.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
			2	Under 6-5.53.5.38, Notes: Two people are required to safely remove and replace the drive motor.
		6-5.53.6 - Elevation Stowe Pin Switch UD2A1A1S1/S2 Replacement	2	Two technicians are required for this procedure.
			Implied	Under Warning in sub-para.. 6-5.53.6.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
		6-5.53.7 - Azimuth Manual Drive Assembly UD2A1A3A1 Replacement Procedure	2	Two technicians are required for this procedure.
EHB 6-510 RDA Maintenance Group	6.5 Replacement and Setup Procedures	6-5.53.8 - Azimuth Manual Drive Interlock Switch UD2A1A3A1S1 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.53.9 - Azimuth Data Package UD2A1A3A2 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.53.10 - Azimuth Gearbox UD2A1A3A3 Replacement Procedure	4	Four technicians are required for this procedure.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-510 RDA Maintenance Group			Implied	Under Warning in sub-para. 6-5.53.10.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
			3	Under Warning in subpara. 6-5.53.10.3.35, three people are required to safely guide the gearbox/drive motor through the azimuth access door and to the floor.
		6-5.53.11 - Azimuth Gearbox Drive UD2A1A3B1 Replacement Procedure	2	Two technicians are required for this procedure.
			2	Under Note in subpara. 6.5-53.11.3.6, two people are required to safely remove and replace the drive motor.
	6.5 Replacement and Setup Procedures	6-5.53.12 - Azimuth Stow Pin Switch UD2A1A3S2 Replacement Procedure	2	Two technicians are required for this procedure.
			Implied	Under Note in subpara. 6.5-53.12.3, Another technician must climb into the azimuth housing and assist in removing and replacing the stow pin switch.
		6-5.53.13- Receiver Protector UD2A3 and UD2A7 Replacement Procedure	3	Three technicians are required for this procedure.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-510 RDA Maintenance Group	6.5 Replacement and Setup Procedures	6-5.53.14 - Low Noise Amplifier (LNA) UD2A4 and UD2A8 Replacement Procedure	2	Two technicians are required for this procedure.
			Implied	Under Warning in subpara. 6-5.53.14.2.3, "The technician who climbs the ladder is responsible for putting on the safety harness and hooking it to a safe secure position prior to ascending the 20-foot ladder."
		6-5.53.15 - Main Bearing Oil Sensor UD2A1A3RT2 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.53.16 - Rotary Joint Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.53.17 - Slip Ring Replacement Procedure	3	Three technicians are required for this procedure.
		6-5.53.17 - Slip Ring Replacement Procedure	3	Under Note in subpara. 6.5-53.17.3.2, Three technicians are required for the next step, two technicians inside the lower pedestal housing and one outside the pedestal housing.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
		6-5.55 Waveguide Pressurization Unit UD6 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.60 Power Supplies UD5PS5/PS6 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.64 CPU Chassis Fan Assembly UD5A15B1-B4 Replacement Procedure	2	Two technicians are required for this procedure.
		6-5.72 Spectrum Filter Replacement Procedure	2	Two technicians are required for this procedure.
		6-6.15 RDA Maintenance Procedures Initial Setup	2	Under Note in subpara. 6-6.15.3.5, two people are required to perform steps c and d.
	6.6 Alignment and Adjustment Procedures	6-6.17 Azimuth/ Elevation Encoder Alignment	2	Subpara 6-6.17.2.2 Initial/Preliminary Setup. Radome technicians (2) remain in radome.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-510 RDA Maintenance Group	6.6 Alignment and Adjustment Procedures	6-6.18 Elevation Pre-limit and Final Limit Switch Adjustment (Alignment) Procedures	2	Under Note in subpara. 6-6.18.3 , two technicians should remain in the radome area using this procedure.
		6-6.12. Clogged Filter Indicator Alignment	2	Two radar technicians are required in the RDA Equipment Shelter UD1.
		6-6.28 Receiver/Signal Processor Calibration	3	Three technicians are required to perform Part I; two in the radome, and one in the RDA equipment shelter.
EHB-6-511	Operations and Maintenance Instructions Transmitter System	preamble	Other	Do Not Service or Adjust Alone Under no circumstances should any person reach into or enter any high power transmitter enclosure for the purpose of servicing or adjusting the equipment, except in the presence of someone who is capable of rendering aid.
		Subpara. 7.6.2.1 Isolation Transformer To	2	Requires 2 people to handle an 80 lb. transformer.
EHB 6-514	WSR-88D Pedestal System	Overall Safety Summary	Other	Advises technicians not to reach into an enclosure in order to service or adjust equipment except in the presence of someone capable of rendering aid.
		Warnings	Other	When performing maintenance requiring equipment to be energized, use extreme caution. Observe safety precautions and always have a second person present.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
		Warnings	2	Two persons are required to raise the gearbox properly into the mating pilot.
			2	Two persons are required to install waveguide components, associated bracketry, and attaching hardware.
EHB 6-514	WSR-88D Pedestal System	2-4.4.1.3.5 Procedure (Redundant Linear Polarization Installation)	2	Subpara 3.a under CAUTION Two persons are required to perform the pre-installation procedure due to various component weights.
			3	Subpara 6.a, Under WARNING, a third person is required to assemble heavy and pre-assembled units
		3.6 Digital Control Unit Maintenance	2	Under WARNING, When performing maintenance requiring equipment to be energized, use extreme caution. Voltages are present that can cause severe injury or death. Observe safety precautions and always have a second person present.
EHB 6-550	Real Property Installed Equipment (RPIE) WSR-88D	Safety Summary	Other	Under Do Not Service or Adjust Alone, Under no circumstances should any person reach into or enter an enclosure for the purpose of servicing or adjusting the equipment except in the presence of some one who is capable of rendering aid.
			2	Under Antenna Pedestal, Warnings, (page xvii), two technicians are required to remove the exhaust fan cover. Failure to use two technicians to remove the cover could result in serious injury. Also failure to perform power-down procedures for the damper assembly could cause serious injury or death (3-47).

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	Under Antenna Pedestal, Warnings, (page xvii), two technicians are required to safely perform steps 3 through 21. Failure to comply with this caution can cause serious injury. (Page 3-127)
		3-3.2 RPIE Maintenance Procedures	2	3-3.2. Air Conditioner Control Circuitry Troubleshooting. This procedure requires two technicians.
			2	3-3.2.2 Radome Venting Circuitry Troubleshooting. This procedure requires two technicians.
EHB 6-550	RPIE WSR-88D	3-3.2 RPIE Maintenance Procedures	2	3-3.2.6 Security Panel Alarm Circuitry (UD7A12) Troubleshooting. This procedure requires two technicians.
		3-4 Servicing (Preventive Maintenance)	2	3-4.1 Air Conditioner Drain Hoses, Coil, and Filter Inspect and Clean (UD7AC1 and UD7AC2). The purpose of this procedure is to inspect and clean the air conditioner drain hoses, coil, and filter. This procedure requires two technicians.
			2	3-4.2 Micro 1 EV or Junior Fire Control System Inspection and Cleaning (UD7A5). The purpose of this procedure is to inspect and clean the Micro 1 EV or Junior Fire Control System. This procedure requires two technicians.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	3-4.4 Generator Assembly Inspection, Cleaning, and Servicing (UD10MG1). The purpose of this procedure is to provide for the inspection, cleaning, and service routines for the generator assembly. This procedure requires two technicians. Refer to NWS EHB 6-551-5 and 6-551-9 for additional information.
			2	3-4.5 Check Battery Charging System (UD10A1A6). The purpose of this procedure is to ensure that the battery charging module UD10A1A6 is operating correctly. This procedure requires two technicians.
			2	3-4.6 Inspect and Clean Motorized Damper Assembly. The purpose of this procedure is to ensure that the damper assemblies and associated equipment are clean and maintained in an operational condition. This procedure requires two technicians.
			2	3-4.7 Clean and Inspect Generator Assembly (UD10), This procedure requires two technicians.
EHB 6-550	RPIE WSR-88D	3-4 Servicing (Preventive Maintenance)	2	3-4.8 Generator Assembly (UD10) - Change Crankcase Oil. This procedure requires two technicians. Refer to NWS EHB 6-551, page 17 for additional information.
			2	3-4.9 Check Equipment Shelter and Generator Shelter Grounding. This procedure requires two technicians.
			2	3-4.10 Air Conditioner - Freon Leak Test. This procedure requires two technicians.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	3-4.12 Dayton Wall Heater (ADHERE) - Clean Perforated Grill. This procedure requires two technicians.
			2	3-4.14 Fire Suppression System - Performance Check. This procedure requires two technicians.
			2	3-4.16 Dayton Wall Heater (ADHERE) - Lubrication of Generator Shelter Heater Fan Motor Bearings. This procedure requires two technicians.
		3-5 Removal and Replacement Procedure	2	3-5.3.1 Circuit Breaker, Power Distribution Panel (UD7A2) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.2 Circuit Breaker, Power Distribution Panel (UD7A3) Removal/Replacement. This procedure requires two technicians.
EHB 6-550	RPIE WSR-88D	3-5 Removal and Replacement Procedure	2	3-5.3.3 Printed Circuit Board, Micro 1 EV (UD7A5A1) Removal/Replacement). This procedure requires two technicians.
			2	3-5.3.4 Transformer, Micro 1 EV or Junior (UD7A5T1) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.5 Solenoid Pilot Valve Assembly UD7A8A1 Removal/Replacement. This procedure requires two technicians. Refer to NWS EHB 6-551-3 for parts location.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	3-5.3.7 Trip Switch, Contractor Coil (UD7S2) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.8 Evaporator Fan Motor (UD7AC1B1) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.9 Condenser Fan Motor UD7AC1B2 Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.10 Evaporator Fan Motor (UD7AC2B1) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.11 Evaporator Fan Motor (UD7AC2B2) Removal/Replacement. This procedure requires two technicians.
EHB 6-550	RPIE WSR-88D	3-5 Removal and Replacement Procedure	2	3-5.3.12 Accessory Control Panel (UD10A1A1) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.13 Signal Module (UD10A1A2) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.14 Exerciser Clock (UD10A1A3) Removal/Replacement. This procedure requires two technicians.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
EHB 6-550	Real Property Installed Equipment (RPIE) WSR-88D	3-5 Removal and Replacement Procedure	2	3-5.3.15 Power Sentry Module (UD10A1A4) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.16 Voltage Sensing Module (UD10A1A5) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.17 Battery Charger (UD10A1A6) Removal/Replacement. This procedure requires two technicians.
			2	3-5.3.18 Program Transition Module (UD10A1A8) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.19 Relay (UD10A2K1) Removal/Replacement). This procedure requires two technicians.
			2	3-5.3.20 Relay (UD10A1K2) Removal/Replacement). This procedure requires two technicians.
			2	3-5.3.21 Relay (UD10A1K3) Removal/Replacement). This procedure requires two technicians.
			2	3-5.3.22 Circuit Breaker, Power Distribution Panel (UD10A2) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.23 Generator Fuel Level Assembly (UD10A6MT1) Removal/ Replacement. This procedure requires two technicians.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	3-5.3.24 Damper Motor Actuator (UD11A1B1)) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.25 Motor, Radome Fan (UD11A2B1) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.26 Vent Fan Assembly (UD11A2) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.27 Circuit Breaker, Microwave Line of Sight (MLOS) Power Distribution Panel (UD13A1) Removal/ Replacement. This procedure requires two technicians.
			2	3-5.3.28 Air Conditioners Discharge Air Temperature Sensors (UD7A18, UD7A19) and Transmitter Exhaust Air Temperature Sensor (UD7A21) Removal/ Replacement. This procedure requires two technicians. This procedures is in two parts. Part 1 is for UD7A18 and UD7A9. Part 2 is for UD7A21.
			2	3-5.3.29 Interior (Room) Air Temperature Sensor (UD7A20 and UD10A7) Removal/ Replacement. This procedure requires two technicians. For component location refer to NWS EHB 6-501, IPB Manual.
EHB 6-550	RPIE WSR-88D	3-5 Removal and Replacement Procedure	2	3-5.3.30 Exterior Air Temperature Sensor (UD7A22) Removal/ Replacement. This procedure requires two technicians. For component location refer to NWS EHB 6-501, IPB Manual.

Table 2-1: Equipment Maintenance Procedures That Require More than One (1) Person

Tech Manual (TM)	TM Chapter #	Reference	Number of Technicians Required	Statements from Procedure
			2	3-5.3.31 Aircraft Warning Light (UD12A1) Removal/ Replacement. This procedure requires two technicians. For component location refer to NWS EHB 6-501, IPB Manual.
		3.6 Alignment and Adjustment Procedures	2	3-6.4 Clogged Filter Indicator Adjustment. This procedure provides instructions to clean or replace the air intake filters and adjust the Clogged Filter Indicators, UD7A14, A15, and A16 for the Equipment Shelter Air Conditioners, UD7AC1 and UD1AC2, and the Transmitter UD3. This procedure requires two technicians.
		Appendix A Micro Junior Control Panel Fire Suppression Data	2	A-1.1 Fire Suppression System - Performance Check. This procedure requires two technicians.
			2	A-1.2 Battery (UD7A5BT1, BT2) - Perform Battery Load Test. This procedure requires two technicians.
			2	A-1.3 Printed Circuit Board, Micro Junior (UD7A5A1) Removal/ Replacement. This procedure requires two technicians.

ATTACHMENT B

Screening Criteria for Heat Stress Exposure (WBGT values)

(ACGIH, 2001 TLVs and BEIs)

	LIght		**Moderate**		**Heavy**		**Very Heavy**	
Hourly Activity	Unacclimatized	Acclimatized	Unacclimatized	Acclimatized	Unacclimatized	Acclimatized	Unacclimatized	Acclimatized
100% Work	27.5	29.5	25	27.5	22.5	26.0	21.0	25.0
75% Work 25% Rest	29.0	30.5	26.5	28.5	24.5	27.5	22.5	26.5
50% Work 25% Rest	30.0	31.5	28.0	29.5	26.5	28.5	25.0	27.5
25% Work 75%Rest	31.0	32.5	29.0	31.0	28.0	30.0	26.5	29.5

Notes:

- WBGT values are expressed in ^{0}C and are rounded to the nearest half degree.
- Work and rest environments are assumed to be the same. When they are different, hourly time-weighted averages (TWA) should be calculated and used. TWAs for work rates should also be used when they vary within the hour.
- Values in the table are applied by reference to the "Work-Rest Regimen" section of the *Documentation* and assume 8-hour work days in a 5-day work week with conventional breaks as discussed in the *Documentation*. When work days are extended, consult the "Application of the TLV" section of the Documentation.

* - TLVs - Threshold Limit Values

This Page is Left Intentionally Blank

ATTACHMENT C

TLVs* Work/Warm Up Schedule for Four-Hour Shift

(ACGIH, 2001 TLVs and BEIs)

Air Temperature - Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph wind		15 mph wind		20 mph wind	
^{0}C (approx.)	^{0}F (approx.)	Max Work Period	No. of Breaks	Max Work Period	No. of Breaks	Max Work Period	No. of Breaks	Max Work Period	No. of Breaks	Max Work Period	No. of Breaks
-26^0 to -28^0	-15^0 to -19^0	(Norm. Breaks) 1		(Norm. Breaks) 1		75 min	2	55 min	3	40 min	4
-29^0 to -31^0	-20^0 to -24^0	(Norm. Breaks) 1		75 min	2	55 min	3	40 min	4	30 min	5
-32^0 to -34^0	-25^0 to -29^0	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency work should cease	
-35^0 to -37^0	-30^0 to -34^0	55 min	3	40 min	4	30 min	5	Non-emergency work should cease			
-38^0 to -39^0	-35^0 to -39^0	40 min	4	30 min	5	Non-emergency work should cease					
-40^0 to -42^0	-40^0 to -44^0	30 min	5	Non-emergency work should cease							
-43^0 & below	-45^0 & below	Non-emergency work should cease									

Notes:

1. Schedule applies to any 4-hour work period with moderate to heavy work activity, with worm-up periods of ten (10) minutes in a warm location and with an extended break (e.g., lunch) at the end of the 4-hour period in a warm location. For light-to-moderate work (limited physical movement): apply schedule one step lower. For example, at -35° C (-30° F) with no noticeable wind (step 4),

a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period (step 5).

2. The following is suggested as a guide for estimating wind velocity if accurate information is not available:
   5 mph: light flag moves; 10 mph: light flag fully extended; 15 mph: raises newspaper sheet; 20 mph: blowing and drifting snow.

3. TLVs apply only for workers in dry clothing.

* - TLVs - Threshold Limit Values

PROCEDURE 3 - Safe Electrical Work Practices

Table of Contents Page

Synopsis 3-ii
Safe Electrical Work Practices Checklist 3-iii

3 SAFE ELECTRICAL WORK PRACTICES 3-1
3.1 Purpose and Scope 3-1
3.2 Definitions 3-1
3.3 Procedure 3-2
3.4 Quality Control 3-12
3.5 Responsibilities 3-13
3.6 References 3-14
3.7 Attachments 3-14

Synopsis

This procedure provides guidelines related to electrical hazards in the workplace. The procedure applies to all NWS equipment, facilities, work locations, and employees.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operations versus Requirements of the Procedure**
  - Inspect/Test Electrical Equipment.*(3.3.11o)*
  - Perform Initial Ground-Fault Circuit Interrupters (GFCI) amperage testing. *(3.3.19d)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop Lockout/Tagout procedures utilizing the template in NWS Occupational Safety and Health Procedure # 4, "Control of Hazardous Energy Sources"*(3.3.2e)*
  - Ensure availability of Instrument Operator's Manuals. *(3.3.3)*
- **Designate Person to Administer "Safe Electrical Work Practices" Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - "Qualified" Personnel Training. *(3.3.21a)*
  - Safety Observers *(3.3.21b)*
  - Other Personnel *(3.3.21c)*
- **Inventory Material/Equipment (Procure as required)**
  - Insulating & Shielding Materials. *(3.5.2e, 3.3.5a)*
  - Barricades. *(3.5.2e, 3.3.16b)*
  - Safety Postings/Signs. *(3.5.2e, 3.3.16a)*
  - Personal Protective Equipment. *(3.5.2e, 3.3.5a)*
  - Insulated Tools. *(3.5.2e, 3.3.5a)*

<u>Recurring and Annual Task Requirements:</u>

- **Perform Inspection/Assessment/Testing**
  - Annual Inspections/Testing of Electrical Equipment. *(3.3.11o)*
  - Annual Ground-Fault Circuit Interrupters (GFCI) amperage testing. *(3.3.19d)*
- **Review/Update Documentation/Information required for Site**
  - Maintain Lockout/Tagout procedures for all applicable equipment on site. *(3.3.2e)*
- **Provide Refresher Training of Site Personnel**
  - "Qualified" Personnel Training. *(3.3.21a)*
  - Safety Observers *(3.3.21b)*
  - Other Personnel *(3.3.21c)*

Inspect/Replace/Maintain Material/Equipment

- Insulating & Shielding Materials. *(3.5.2e, 3.3.5a)*
- Barricades. *(3.5.2e, 3.3.16b)*
- Personal Protective Equipment. *(3.5.2e, 3.3.5a)*
- Insulated Tools. *(3.5.2e, 3.3.5a)*

Safe Electrical Work Practices Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	3.4.2				
Is equipment de-energized prior to being serviced or maintained?	3.3.2				
Are live parts that operate at less than 50 volts-to-ground de-energized if there is a safety risk?	3.3.2b				
Are circuit energizing parts locked-out and tagged-out during the process of de-energizing fixed electric equipment or circuits in accordance with the National Weather Services (NWS) Occupational Safety and Health Procedure # 4, “Control of Hazardous Energy Sources”?	3.3.2c				
Have procedures for Locking and Tagging of specific equipment been written, followed and maintained on file?	3.3.2e				
Is training of qualified individuals in proper Lockout/Tagout procedures conducted?	3.3.21a.4				
Are equipment operation manuals being used by employees to ensure proper de-energizing procedures?	3.3.3				
Are equipment de-energizing methods being followed by employees at the facility as described in the procedure?	3.3.3 a-d				

Requirements	Reference	YES	NO	N/A	Comments
Are equipment re-energizing requirements being followed by employees at the facility as described in the procedure?	3.3.4a-e				
Has safety training been provided for employees who work on energized equipment/circuit parts?	3.3.5				
Is correct Personal Protective Equipment (PPE) being used when working on energized equipment/circuits parts?	3.3.5				
Are correct shielding and insulating materials and tools being used when working on equipment/circuit parts that have not been de-energized?	3.3.5				
Are procedures for “working near energized equipment” being followed/used when work is being performed near overhead lines?	3.3.6				
Is adequate lighting provided when working near energized equipment?	3.3.8				
Are correct PPE, barriers and insulating materials being used when working in confined spaces that contain exposed energized equipment?	3.3.9				
Are proper safety procedures being followed when working on conductive material and equipment?	3.3.10a-b				
Are safety guidelines followed for the use of portable electric equipment?	3.3.11a-o				

Requirements	Reference	YES	NO	N/A	Comments
Are correct disconnecting means being used for routine opening, reversing, or closing circuits under load conditions?	3.3.12a				
Are correct equipment being used to disconnect a circuit under load?	3.3.12b				
Are safety checks being performed prior to re-energizing equipment /circuit to determine what caused a device to trip?	3.3.12c				
Is instrument/equipment testing being performed by a qualified person using equipment rated for the voltage and for the correct environment?	3.3.13				
Are appropriate signs and warning devices used to protect employees from electrical hazards?	3.3.16				
Is a minimum of 3 feet maintained in front of all 0-150 volt panels?	3.3.17				
Is a minimum of 4 feet maintained in front of all 151-600 volt panels?	3.3.17				
Are all ground conductors color coded according to the National Electrical Code?	3.3.18b				
Have grounding conductors been installed on all electrical equipment in accordance with this procedure?	3.3.18c				
Are neutral-to-ground bonds kept separate at all sub-panel board and junction box?	3.3.18d				

Requirements	Reference	YES	NO	N/A	Comments
Are GFCI devices installed in areas where frequent electrical maintenance occurs, as recommended by paragraph 3.3.19b?	3.3.19b				
Are GFCI devices utilized in damp locations and for all outside maintenance activities?	3.3.19a,c				
Are GFCI devices tested on annual basis to ensure proper operation?	3.3.19d				
Are correct safety/utilization procedures being used for GFI devices in accordance with this procedure?	3.3.20				
Have qualified individuals been properly trained as required by the procedure?	3.3.21a				

3 SAFE ELECTRICAL WORK PRACTICES

3.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure related to electrical hazards in the workplace. This procedure applies to all NWS facilities, work locations and employees.

3.2 Definitions

Energized. Connected to an energy source or containing residual or stored energy.

Exposed. Energized part that is capable of being touched or approached nearer than a safe distance as specified in this procedure.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Ground-Fault Circuit-Interrupters (GFCI). Electrical receptacles designed to open the active (live) circuit when ground current exceeds a pre-established level, usually 5 milliamps. A current difference indicates that a path exists between the live circuit or an electrical component and ground. The current path could be an equipment short circuit or a human body making contact with an active circuit and ground.

Ground-Fault Interrupter (GFI). A GFI is an equipment protector, unlike the GFCI which is a personnel protector. It is intended to protect the equipment from damaging line-to-ground fault currents by opening all ungrounded conductors of the faulted circuit.

Ground. An electrically conducting connection between equipment or an electric circuit and the earth or to some other conducting body. A properly designed grounding system provides a reliable conducting path to earth or some other conducting body in place of the earth. This system provides a low impedance path for electric short circuits and faults enabling over-load protective devices to open the circuit. The grounding system maintains a common potential for grounded equipment at or near earth's potential level. It also provides a low impedance path for electrical short circuits, permitting large currents to pass through over-load protective devices permitting them to open.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Qualified Person. A person who has received proper training and is permitted to work on or near exposed energized parts.

NOTE: Whether an employee is considered to be a "qualified person" will depend upon various circumstances in the workplace. It is possible that an individual is considered "qualified" with regard to certain equipment but is not "qualified" with regard to other equipment.

NOTE: An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a "qualified" person is considered to be a "qualified" person for the performance of those duties.

Safety Observer. Under special conditions, when the risk of serious injury to maintenance personnel is judged to be greater than normal, the presence of a safety observer is essential. The safety observer should be able to obtain medical assistance or render emergency first aid. If there is a risk of serious injury that may adversely affect employee's respiration or cause severe bleeding or other life threatening condition, the safety observer must be trained in CPR/First Aid.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

3.3 Procedure

3.3.1 Electrical Work Practices. Safety-related work practices shall be used to minimize the risk of electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are, or may be, energized.

3.3.2 De-Energized Parts. Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them unless it can be shown that de-energizing introduces additional or increased hazards or is not feasible.

a. The NWS requires that systems be de-energized except in an emergency. The Station Manger or designee is responsible for making the decision about de-energizing the equipment unless there is a specific regional or national policy about a particular piece of equipment.

(1) Examples of *increased or additional hazards* include deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination from an area.

(2) Example of work that may be performed on or near energized circuit parts because of *infeasibility due to equipment design or operational limitations* include testing of electrical circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.

b. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns, explosions due to electric arcs, or risk of equipment damage. If any of these situations are possible, the equipment should be de-energized. A qualified person shall determine if de-energizing is necessary based on testing to show the number of amps and the amount of energy in the system and system configuration.

c. During the time an employee may be exposed to contact with parts of fixed electric equipment or circuits which have been de-energized, the circuits energizing the parts shall be locked out or tagged following NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources."

d. Conductors and parts of electric equipment that have been de-energized but have not been locked out or tagged following NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources" shall be treated as being energized.

e. Procedures for locking out or tagging the specific piece of equipment must be written, maintained and kept on file. A template for these procedures is included in NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources."

f. Interlocks for electric equipment shall not be used as a substitute for lockout and tagging procedures.

3.3.3 <u>De-Energizing Equipment</u>. Safe procedures for de-energizing circuits and equipment shall be determined before circuits or equipment are de-energized. The operating manual for the specific equipment shall be consulted for the proper method of de-energizing the equipment.

a. The circuits and equipment to be worked on shall be disconnected from all electric energy sources.

b. Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.

Example: B220 Transmitter upgrade. High voltage components in the power supply must be grounded to discharge filter capacitors to ensure power is not accidentally re-applied.

Example: ASOS Technical Information Package section 2.2, Voltage Precautions of the Automated Surface Observing System (ASOS) Technical Information Package, which instructs technicians to always ground circuits prior to handling because of the possibility of electrical charge after the power has been disconnected due to capacitors.

NOTE: Capacitors or associated equipment shall be treated as energized, until discharged as required in (b) above.

c. Stored non-electrical energy in devices that could re-energize electric circuit parts shall be blocked or relieved commensurate with the probability that the circuit parts could be accidentally energized by the device.

Example: A spring-loaded contactor found on switches in main power distribution areas such as transformers and on some motor controls. Another example: When working on or around high voltage power supplies or equipment including cathode ray tubes, the tube should be de-energized and grounded at the anode while working on other parts of the equipment in the vicinity of the high voltage areas to ensure against accidental shock.

d. All circuits and equipment must be tested to verify that they have been de-energized. All of the following steps shall be performed to ensure de-energizing is accomplished:

e. A qualified person shall operate the equipment operating controls to verify that the equipment cannot be restarted.

f. A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will, or may reasonably expect, to be exposed and shall verify that the circuit elements and equipment parts are de-energized.

NOTE: *If the circuit to be tested is over 600 volts nominal, the test equipment shall be checked for proper operation prior to and immediately after the test. An example of the test would be to check a circuit with a known voltage to ensure the instrument is reading properly. Always consult the instrument operator's manual for additional criteria to accomplish the test. Also see section 3.3.13. See 3.3.14 for personal protective equipment guidance.*

3.3.4 Re-Energizing Equipment. Prior to re-energizing circuits or equipment, even temporarily, the following requirements shall be met in the order listed:

a. A qualified person shall verify that all tools, electrical jumpers, shorts, grounds and other similar devices have been removed so that the circuits and equipment can be safely energized, including removal of equipment interlock-defeating devices.

b. Individuals exposed to the hazards associated with re-energizing the circuit or equipment shall be warned to stay clear of circuits and equipment.

c. All locks and tags shall be removed as specified in NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources."

d. A visual check shall be made to ensure that all individuals are clear of the circuits and equipment.

e. Where appropriate, protective covers, shields, and shrouds should be secured, unless specific maintenance guidance states otherwise.

3.3.5 Energized Equipment. If the exposed energized parts cannot de-energized, an equivalent level of safety shall be provided to protect employees who may be exposed to the electrical hazards involved.

Only qualified personnel may work on electric circuit parts or equipment that have not been de-energized. They shall be properly trained regarding working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials and insulated tools as stated in 29 CFR 1910.333(c)(2). A safety observer trained in First Aid must be present if medical services are not readily available as specified in NWS Occupational Safety and Health Procedure 2, "Working Alone, section 2.3.2."

3.3.6 Overhead Lines. Work near overhead lines shall be avoided whenever possible. If work near overhead lines must be performed, the lines shall be considered to be energized and the requirements for working near energized equipment shall be followed. Emergency switches must be located to shut down the grid to overhead lines that employees will be working on or near.

3.3.7 Vehicular and Mechanical Equipment. When working near an energized overhead line, no part of a vehicle and mechanical equipment shall come within 10 feet of the line. This distance shall be increased by 4 inches for every 10kV over 50kV.

3.3.8 Lighting. An individual may not perform work near energized equipment unless the level of lighting is sufficient (at least 100 foot-candles) to enable the individual to work safely.

a. A trouble light can be used to provide light and should be made of non-conducting material to avoid shorting conductors together. The flexible cord of

a portable lamp should never be pinched, kinked, cracked or cut, exposing live wires or parts.

b. An individual shall not reach blindly into areas that may contain energized equipment.

3.3.9 Confined or Enclosed Work Spaces. Individuals working in a confined or enclosed space (such as a manhole or vault) that contains exposed energized equipment shall use protective shields, barriers or insulating materials to avoid inadvertent contact with the energized equipment.

Example: Individuals working inside of the cabinet where the main power feeds enter into the Weather Forecast Office. The conductors feeding the cabinet must be covered to prevent accidental contact.

Doors, covers, access panels, etc., shall be secured to prevent them from swinging into an employee and causing the employee to contact exposed energized parts.

Example: The access cover that must be removed when performing maintenance on the NEXRAD pedestal.

3.3.10 Conductive Materials and Equipment. Conductive materials and equipment shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts.

a. If there are conductive objects in a work area where there are exposed live parts or circuits, the worker(s) shall use insulated blankets, insulated gloves and protective barriers to help minimize accidental contact with the exposed parts or circuits.

b. Conductive articles of jewelry and clothing (e.g., watch bands, bracelets, rings, key chains or metal headgear) shall not be worn when working near electrical equipment.

3.3.11 Use of Portable Electric Equipment. Portable electric equipment such as drills, saws, and trouble lights shall be used in a safe manner and be connected to a circuit protected by GFCI capability (i.e., circuit breaker or separately enclosed, portable GFCI) unless UL listed as double insulated. The following guidelines provide minimum requirements for the use of this type of equipment.

a. All cord and plug-connected electric equipment, flexible cord sets (extension cords), and portable electric equipment shall be handled in a manner that will not cause damage.

NOTE: Adding an extension cord to a multi outlet assembly (e.g., power strip) in order to obtain more outlets is not a violation of NEC. However, each multiple outlet assembly has been electrically load calculated and, therefore, the overcurrent protection for that multiple outlet

assembly must be upgraded. The same applies if one multiple outlet assembly is connected to another one. Multiple outlets shall not be"daisy-chained." Use of extension cord in combination with power strip shall not be permitted.

b. Flexible electric cords connected to equipment may not be used for raising or lowering the equipment.

c. Flexible cords may not be fastened with staples or otherwise hung in a fashion that could damage the outer jacket or insulation.

d. Portable cord- and plug-connected equipment and extension cords shall be visually inspected for external defects such as loose parts, deformed and missing pins, burns or scorch marks, or damage to outer jacket or insulation and for evidence of possible internal damage such as signs of pinching or crushing before use. However, cord- and plug-connected equipment and extension cords which remain connected once they are put in place and are not exposed to damage are not required to be visually inspected until they are relocated.

e. If there is evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service and not used until repaired and tested to ensure the equipment is safe.

f. Whenever an attachment plug is to be connected to a receptacle (including extension cords), the plug end and the receptacle shall be checked to ensure that they are of proper configurations and that the fit is snug.

g. An extension cord used with grounding-type equipment shall contain an equipment grounding conductor.

h. Plugs and receptacles may not be connected or altered in a manner that would prevent proper continuity of the equipment grounding conductor at the point where plugs are attached to receptacles. (Do not cut off the ground prong on a plug) Additionally, those devices may not be altered to allow the grounding pole of a plug to be inserted into slots intended for connection to the current-carrying conductors.

i. Adapters that do not allow continuity of the equipment grounding connection may not be used.

j. Portable electric equipment and extension cords used in highly conductive work locations (such as areas with standing water), or in job locations where employees are likely to contact water shall be approved for those locations.

k. Employees' hands may not be wet when plugging and unplugging flexible cords and cord- and plug-connected equipment if energized equipment is involved.

l. Energized plug and receptacle connections may be handled only with insulating gloves if the condition of the connection could provide a conducting path to the employee's hand. For example, a cord connector is wet from being immersed in water.

m. Locking-type connectors shall be properly secured after connection.

n. All equipment shall have U. L. approval.

o. At least once a year during a scheduled site visit, the qualified person shall test and inspect all electrical receptacles, cords and plugs to ensure that all ground circuits, pins, and sockets are properly wired and are in good repair and operating condition. Adapters that permit the ground pin of an electrical plug to be by-passed shall **not** be used. All electrical cords must not be frayed and must be in good repair.

NOTE: Ground currents usually exist because the grounding conductor is mis-wired as a neutral circuit or the grounding conductor is shorted to a neutral circuit permitting the current to return on the grounded conductor. These faults must be identified and corrected. Neutral currents should also be measured in 3-phase circuits to detect excessive phase imbalance and/or third harmonics. Use grounding cable on components that may retain a residual charge, making sure that the equipment is de-energized. In DC circuits, reverse polarity may cause damage to equipment or cause it to operate improperly. In AC reversing, the hot and neutral leads must be avoided on GFCI to ensure that they operate properly. More details on grounding protection can be found in EHB-3, Chapter 11, Grounding and Lightning Protection.

3.3.12 Electric Power and Lighting Circuits

a. Load-rated switches (light switch), electrical disconnects and circuit breakers specifically designed as a disconnecting means shall be used for the routine opening, reversing, or closing of circuits under load conditions.

b. Cable connectors not of the load-break type, fuses, terminal lugs, and cable splice connections may not be used to disconnect a circuit under load except in an emergency.

c. After a circuit is de-energized by a circuit protective device (fuse, circuit breaker, thermal cutouts, etc.) the circuit may not be manually re-energized until it has been determined what caused the device to trip and if the equipment and circuit can be safety energized.

d. Repetitive resetting of circuit breakers or re-energizing circuits through replaced fuses is prohibited.

e. Overcurrent protection of circuits and conductors may not be modified, not even on a temporary basis.

3.3.13 Test Instruments and Equipment. Testing work on electric circuits or equipment may only be performed by qualified persons using equipment rated for the voltage which they will be testing and designed for the environment in which they will be used. Test instruments, equipment, associated test leads, cables, power cords, probes, and connectors shall be visually inspected for external defects and damage before the equipment is used. If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service until it can be repaired and tested

3.3.14 Personal Protective Equipment. Individuals shall be provided and shall use electrical protective equipment that is appropriate for the type work to be performed. Personal protective equipment shall be used and maintained in accordance with NWS Occupational Safety and Health Procedure 8, "Personal Protective Equipment."

a. If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected, for example, an outer covering of leather when it is used for the protection of rubber insulating material.

b. Employees shall wear nonconductive head protection wherever there is a danger of head injury from electric shock or burns due to contact with exposed energized parts.

c. Employees shall wear protective equipment for the eyes or face wherever there is danger of injury to the eyes or face from electric arcs or flashes or from flying objects resulting from electrical explosion. Employees shall wear protective face and body equipment when working on equipment using chemicals such as battery acid or caustic fluids.

d. Employees shall wear approved protective equipment when working on equipment with live voltages over 50 volts (e.g., gloves approved for high voltage work, per 29 CFR 1910.335).

3.3.15 General Protective Equipment and Tools. When working near exposed energized conductors or circuit parts, each employee shall use insulated tools or equipment if they might make contact with conductors or parts.

a. If the insulating capability of insulated tools or handling equipment is subject to damage, the insulating material shall be protected.

b. Fuse handling equipment, insulated for the circuit voltage, shall be used to remove or install fuses when the fuse terminals are energized.

c. Ropes and "fish tapes" used near exposed energized parts shall be nonconductive.

d. Protective shields, protective barriers or insulating materials shall be used to protect individuals working near exposed energized parts which might be

accidentally contacted or where dangerous electric heating or arcing might occur.

e. When normally enclosed live parts are exposed for maintenance or repair, they shall be guarded to protect unqualified persons from coming in contact with the parts if they are still energized.

3.3.16 Alerting Techniques. The following techniques shall be used to warn and protect employees from hazards which could cause injury due to electric shock, burns or failure of electric equipment parts.

a. Safety signs, safety symbols or accident prevention tags shall be used, where necessary, to warn individuals about electrical hazards in their work area. Signs, symbols and tags shall conform to the requirements of 29 CFR 1910.145, "Specifications for Accident Prevention Signs and Tags."

NOTE: Typical signs warning of electrical hazards include red danger tape with the words: "Danger - Electrical Hazard" or "Danger - High Voltage" or "Danger- High Voltage - Authorized Personnel Only" or "Danger - Electrical Shock Hazard."

b. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing individuals to uninsulated energized equipment.

NOTE: Conductive barricades may not be used where they might cause an electrical contact hazard.

c. If signs and barricades do not provide sufficient warning and protection from electrical hazards, a safety observer or qualified person shall be stationed to warn and protect individuals from the potential hazard.

3.3.17 Clearances. A minimum of 3 feet shall be maintained in front of all 0-150 volt electrical panels that may be accessed periodically to perform maintenance on a circuit or to de-energize a circuit in an emergency. A minimum of 4 feet clear access to the front of all 151-600 volt panels shall be maintained.

3.3.18 Grounding. Grounding systems are intended to decrease the risk of electric shock to the human body from equipment and wiring.

a. An Equipment Grounding Conductor (EGC) originating at the service equipment entrance or at the location of a separately derived system shall connect all non-current carrying metal equipment, enclosures, conduits, fittings, and metal outlets. This will provide the necessary electrical continuity required for the over-current devices to trip.

b. The ground conductor shall be color coded green, green with a tracer color, or bare copper in accordance with the National Electric Code (NEC).

c. Grounding conductors must be installed on all electrical equipment, including metal outlets and junction boxes, to comply with NEC and 29 CFR 1910.304 requirements.

d. The only neutral-to-ground bond shall be at the service entrance and any separately derived source. The neutral and ground should be kept separate at all sub-panel boards and junction boxes. The only two locations where the neutral and ground are bonded together is at the main service entrance and at the secondary side of a separately derived system.

(1) Down line neutral-to-ground bonds result in parallel paths for the load return current where one of the paths becomes the ground circuit. This can cause a malfunction of protective devices and is a direct violation of the NEC.

(2) The Ground Electrode Conductor (GEC) will connect this neutral-to-ground bond to the facilities ground reference.

3.3.19 Ground-Fault Circuit-Interrupter (GFCI). GFCI receptacles are designed to open the active (live) circuit when ground current exceeds a pre-established level, usually 5 milliamps. Current on the ground wire indicates that a path exists between the live circuit or an electrical component and ground. The current path could be an equipment short circuit or a human body making contact with an active circuit and ground (e.g., touching a faulty double insulated power tool case).

a. GFCI devices shall be used in wet or damp environments, or any other similar conditions, where the human body could accidently come into contact with energized wiring or equipment and ground.

b. Installing GFCI devices in areas where electrical maintenance is frequently performed is a good safety practice and is highly recommended.

c. All outside maintenance work must be done with GFCI connections. As a minimum, NEC and local electric code requirements shall be followed.

d. It is recommended that GFCI devices be self-tested with the testing indicator on GFCI device before each use. to determine at what amperage the circuit trips. GFCIs that trip above 6 milliamps should be replaced.

3.3.20 Ground-Fault Interrupter (GFI). GFIs shall be used when there is a requirement to protect equipment from damaging line-to-ground fault currents by opening all ungrounded conductors of the faulted circuit.

GFI devices shall be used in wet or damp locations. GFIs are addressed in the 1996 NEC, Article 230-95, which requires the installation of all solid-grounded wye

electrical services of more than 150 volts to ground, but not exceeding 600 volts, phase to phase for each service disconnect rated 1000 amperes or more.

3.3.21 Training.

a. Initial training shall be given upon assignment to a position requiring an individual to work with or in close proximity to exposed electrical parts, equipment or conductors as a regular part of his/her job. Refresher training shall be given if there is a significant change in this procedure or work practices. Employees shall, at a minimum, be trained in, possess the knowledge of, and/or be familiar with the following to become "qualified" personnel:

(1) The skills, knowledge and techniques necessary to distinguish exposed live parts from other parts of electric equipment.

(2) The skills and techniques necessary to determine the nominal voltage of exposed live parts.

(3) The requirements specified in this procedure.

(4) Proper lockout/tagout procedures.

b. Safety observers do not have to be proficient in the task being observed, but as a minimum, shall:

(1) Be briefed on and/or familiar with the potential hazards of the task and be able to detect an unsafe act or condition during the work.

(2) Know how to use electrical safety equipment and be familiar with procedures to remove personnel from electrical hazards and when **not** to touch an affected person.

(3) Be trained in basic first aid or First Aid/CPR based on conditions described in paragraph 2.3.2 (NOTE).

(4) Be familiar with local procedures for obtaining medical assistance.

(5) Know where disconnect switches are located and know how to de-energize equipment.

(6) Be familiar with and be able to recognize the appropriate safety controls (engineered and administrative) and to select personal protective equipment.

(7) Receive initial and refresher training (as appropriate).

c. All other personnel shall be trained in the portions of this procedure that are necessary to ensure their safety. Refresher training shall be given if there is a significant change in work practices. This training should include but not be limited to:

(1) Warning signs indicating electrical hazards.

(2) The safe use of portable electrical equipment.

(3) Emergency notification procedures.

3.4 Quality Control

3.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

3.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

3.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of WSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

3.5 Responsibilities

3.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters and field offices or operating units.

3.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure and shall ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure appropriate clearances are maintained when working near overhead lines and energized circuits.

c. Shall ensure qualified personnel perform electrical work in accordance with the requirements of this procedure.

d. Shall ensure qualified personnel are trained to a level that, at a minimum, meet the requirements of this procedure.

e. Shall ensure that initial and periodic inventory of PPE, barricades, insulating and shielding materials, insulating tools is accomplished and adequate stock is maintained.

3.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

3.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

3.6 References

3.6.1 Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

a. National Fire Protection Association, NFPA 70, NEC.

b. National Fire Protection Association, NFPA 70E, "Standard for the Electrical Safety Requirements for Employee Workplaces."

c. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.145, "Specifications for Accident Prevention Signs and Tags."

d. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.301 "Introduction."

e. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.302 "Electrical Utilization Systems."

f. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.303 "General Requirements."

g. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.304 "Wiring Design and Protection."

h. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.305 "Wiring Methods, Components, and Equipment for General Use."

i. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.306 "Special Purpose Equipment and Installations."

j. U.S. Department of Labor, Occupational Safety and Health Administration, 9 CFR 1910.307 "Hazardous (classified) Locations."

k. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.308 "Special Systems."

l. U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.331-335 "Safety-Related Work Practices."

m. NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources."

n. NWS Occupational Safety and Health Procedure 2, "Working Alone."

o. NWS Occupational Safety and Health Procedure 8, "Personal Protective Equipment."

3.7 Attachments

None

PROCEDURE 4 - Control of Hazardous Energy Sources

Table of Contents Page

Synopsis 4-ii
Control of Hazardous Energy Sources Checklist 4-iii

4 CONTROL OF HAZARDOUS ENERGY SOURCES 4-1
4.1 Purpose and Scope 4-1
4.2 Definitions 4-1
4.3 Procedure 4-3
4.4 Quality Control 4-12
4.5 Responsibilities 4-13
4.6 References 4-13
4.7 Attachments 4-14

ATTACHMENT A 4-A-1
Equipment Lockout/Tagout Procedure Template 4-A-1

ATTACHMENT B 4-B-1
Sample List of NWS Equipment Requiring Lockout/Tagout Procedure 4-B-1

ATTACHMENT C 4-C-1
Sample Training Certificate 4-C-1

ATTACHMENT D 4-D-1
Lockout/Tagout Procedures 4-D-1
WFO Springfield, MO 4-D-1

Synopsis

The purpose of this procedure is to provide requirements related to hazards associated with the unexpected energizing or start up of machines or equipment or the release of stored energy (mechanical, electrical, gravitational). This procedure applies to all NWS equipment, facilities, work locations, and employees.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operations versus Requirements of the Procedure**
  - Identify Equipment/Systems requiring Lockout/Tagout Procedures. *(4.3.3, Attachment A)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop Lockout/Tagout procedure for applicable equipment/systems. *(4.3.3)*
- **Designate Person to Administer Control of Hazardous Energy Sources Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training/Certification of authorized personnel. *(4.3.4a)*
  - Safety Observer Training. *(4.3.4i)*
  - Awareness Training for all employees. *(3.3.4c,d)*
- **Inventory Material/Equipment (Procure as required)**
  - Lockout/Tagout Devices. *(4.4.2b, 4.3.2)*
  - Personal Protective Equipment (PPE). *(4.4.2b, 4.3.1a(2)(c))*

<u>Recurring and Annual Task Requirements:</u>

- **Review/Update Documentation/Information required for Site**
  - Update Lockout/Tagout Procedures. *(4.3.3)*
  - Maintain a log of all Lockout/Tagout procedures. *(4.3.1g(11))*
  - Maintain Training Records. *(4.3.4h)*
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Change in Equipment & Job Assignment Training. *(4.3.4e,f)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Lockout/Tagout Devices. *(4.4.2b, 4.3.2)*
  - Personal Protective Equipment (PPE). *(4.4.2b, 4.3.1a(2)(c))*

Control of Hazardous Energy Sources Checklist

REQUIREMENTS	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	5.4.2				
Have procedures been developed for properly locking out/ tagging out equipment/systems?	4.3.3 Attachment A				
Are Lockout/Tagout procedures reviewed at least annually?	4.4.2a				
Are all Lockout locks standardized and used only for Lockout purposes?	4.3.2a				
Are Lockout Devices used along with tags?	4.3.1c				
Has all equipment regularly maintained been modified to accommodate Lockout Device?	4.3.1d				
Do the tags have the name of person installing the lock and the date the lock was installed legibly printed on the lock?	4.3.2a, 4.3.1f				
Are tags affixed to Lockout or energy isolation devices by a means of a strong fastening device?	4.3.2b				
Are Lockout/Tagout devices removed by personnel who applied the device or their designated representative?	4.3.2c				

REQUIREMENTS	Reference	YES	NO	N/A	Comments
If more than one individual is required to work on piece of equipment, are multiple lockout devices used?	4.3.1g(8)				
Is NWS employee being designated to install additional lockout device when a contractor is performing work requiring use of such device?	4.3.1g(9)				
Have employees that perform Lockout/Tagout been properly trained?	4.3.4a				
Have affected employees been instructed on the purpose of Lockout/Tagout?	4.3.4b				
Are employees retrained when changes in equipment, job assignment or Lockout/Tagout procedures occur?	4.3.4e				
Is Safety Observer Training conducted?	4.3.4i				
Are Training Certificates kept on file?	4.3.4h, Attachment C				

4 CONTROL OF HAZARDOUS ENERGY SOURCES

4.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure relative to hazards associated with the unexpected energizing or start up of machines or equipment or the release of stored energy (mechanical, electrical, gravitational). This procedure applies to all NWS facilities, work locations, and employees.

4.2 Definitions

Affected Employee. An employee who, in the performance of their official duties, is required: to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or to work in an area in which such servicing or maintenance is being performed.

Authorized Employee. A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include servicing or performing maintenance as covered under this procedure.

Capable of Being Locked Out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which a lock can be affixed or if it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild or replace the energy isolating device or permanently alter its energy control capability.

Energized. Connected to an energy source or containing residual or stored energy.

Energy-Isolating Device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker, a disconnect switch, a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve; a block and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit-type devices of the momentary contact type are not energy-isolating devices.

Energy Source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hot Tap. A procedure used in the repair, maintenance, and service activities that involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or additions. A hot tap is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam and petrochemical distribution systems.

Hot-work. For the purpose of this procedure this term will refer to performing work on or in the direct vicinity of unprotected/un-insulated energized electrical conductors or components.

Jogging or Cycling. A procedure in which the energy-isolating device is temporarily removed to allow the equipment/component to be energized for testing and/or positioning purposes.

Lockout. The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Lockout devices include blank flanges and bolted slip blinds.

Normal Production Operations. The use of machinery or equipment to perform their intended work function(s).

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Servicing and/or Maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energizing or startup of the equipment or release of hazardous energy.

Setting Up. Any work performed to prepare machinery or equipment to perform its normal work operation.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Tagout. The placement of a tagout device on an energy isolating device following established procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the tagout device is removed by the individual who tagged the device or by his/her designated safety representative.

Tagout Device. A prominent warning device such as a tag and a means of attachment which can be securely fastened to an energy isolating device, following established procedure, to indicate that the energy isolating device and the equipment being controlled shall not be operated until the tagout device is removed by the individual (or his/her designated safety representative) who tagged the device.

4.3 Procedure

4.3.1 Control of Hazardous Energy. The following procedures shall be used whenever there is potential for personal harm due to the unexpected energizing or start-up of equipment or the release of stored energy:

a. This procedure does not cover the following:

(1) Work on equipment that can be completely de-energized by being unplugged, if the plug is always in the sight and control of the immediately responsible, physically endangered person(s) and if there are no other hazards associated with the operation. Even then, it is recommended that the user tagout the equipment or use a plug lockout device.

(2) Work on any electrical equipment that is to remain energized, if all of the following apply:

(a) The requirements and recommendations of the following publications are followed:

i National Electrical Code (NFPA 70)

ii National Electrical Safety Code (NESC) - ANSI/IEEEC2

iii OSHA 29 CFR Part 1910 Subpart S, Electrical

iv Standard for Electrical Safety Requirements for Employee Workplaces - NFPA 70E

NFPA 70E covers the following safety practices and procedures:

a. Clearances (working distances) while working on electrical equipment as shown in NEC Article 110-26 (based on operating voltages) shall be provided.

b. Clothing made from synthetic materials such as acetate, nylon, polyester or rayon shall not be worn.

c. Appropriate safety and personal protective equipment shall be worn while working on energized electrical equipment:

Protective eye goggles

Nonconductive hard hat

Insulated gloves

Protective shields

d. No tampering with any electrical overcurrent devices shall be allowed.

e. No conductive objects shall be taken closer to any live parts than the restricted approach boundary.

f. Conductive articles such as jewelry, clothing, watchbands, bracelets, key chains and necklaces shall not be worn while working on energized equipment.

g. Caution shall be used while handling metal ducts, pipes, conductive hoses, steel tapes, metal scaffold parts, etc.

h. Insulated tools that are voltage rated for the equipment worked on shall be used.

i. Portable ladders shall have nonconductive side rails.

j. Protective measures shall be taken while being exposed to hazardous materials and gases in work area.

k. Safety signs and accident prevention tags shall be used where necessary to warn personnel about the electrical hazards that might endanger them.

l. Barrier tapes shall be used as necessary.

(b) Continuity of service is essential.

NOTE:	The Station Manager shall determine when continuity of service is essential.

(c) Personal protective equipment is used such as high voltage gloves, bus blankets, insulated tools, etc.

NOTE:	Hot work on an Uninterruptible Power System (UPS) will be performed following the same precautions used for live electrical equipment supplied power from the local utility lines or the back-up generator. Hot work activities do not differ based on types of power sources, therefore, the same precautions shall be followed.

(3) Individuals performing minor tool changes and adjustments and/or other minor servicing activities that are routine, repetitive, and integral to the use of the equipment and that occur during normal work operations are not covered by this procedure, provided the work is performed using alternative measures that provide effective protection.

b. Lockout locks and devices are the preferred method to isolate a potential hazard. They shall be used whenever:

(1) There is a hazard present that may cause personal harm by an inadvertent start-up or unexpected release of energy or toxic material.

(2) The equipment is capable of being locked out.

c. Lockout locks shall always be accompanied by a tagout tag for identification purposes.

d. All equipment that is regularly maintained, or which contains a high degree of hazard, should be modified to accommodate a lockout lock. New equipment procured after January 2, 1990, shall be capable of accommodating a lockout lock and/or lock device to which a lock can be attached.

e. Tagout tags shall be used whenever:

(1) A lockout lock is used and/or.

(2) A hazard is present that may cause personal harm, and the equipment is not capable of being locked out. **If a tagout tag is used without a lockout lock, it is the responsibility of the user to provide an additional level of safety** to prevent release of the hazard(s). Examples of such actions include removal of an isolating circuit element, blocking of a controlling switch, installing of a blind flange, bracing or cribbing an opening, opening of an extra disconnecting device or the removal of a valve handle to reduce the likelihood of an inadvertent release or energizing.

f. Tagout devices shall be signed and dated (month and year) by the installer. The installer shall also write the expected tagout period, which includes date, time and location of the person(s) performing the tagout of the circuit(s) on the tag.

g. Installation and removal of lockout and/or tagout devices shall be performed in the following order:

(1) The installer shall ensure that all affected employees are notified that service or maintenance is to be performed on the equipment or system and that lockout and or tagout devices will be installed.

(2) The equipment shall be shut down following the manufacturer's guidelines or by means of approved protocols established for the specific piece of equipment.

(3) All forms of energy supplied to the equipment and the necessary means to isolate the energy source(s) (e.g., primary and backup) shall be identified and lockout and tagout devices shall be installed.

(4) A lockout device(s) and tag(s) shall be placed on all energy isolation equipment or electrical circuits. If the lockout device is not capable of being locked, then a tag shall be affixed on or near the lockout device in such a manner that it is obvious which equipment or circuit the tag pertains to.

(5) All stored energy in the equipment or system shall be released or constrained by means of venting, discharging, bleeding, blocking or repositioning.

(6) Once all sources of energy have been isolated and all stored energy is released or constrained, system controls will be tested to ensure that the system cannot activate or release stored energy. Once this test has been completed, controls shall be returned to the neutral or off position.

(7) Once the above items have been accomplished, the maintenance or servicing of equipment can be performed.

(a) If a function test or "jogging" that requires the removal of a lockout or tagout device must be performed during the servicing or maintenance of the equipment, all affected employees shall be notified.

(b) Once the action requiring the energizing of the equipment has been completed, items 2 through 6 shall be completed again prior to work continuing.

(8) If more than one individual is required to work on a piece of equipment, a multiple lockout device shall be used. Each individual working on the equipment shall install their own lock and tag.

(9) If a contractor is performing work that requires a lockout/tagout in the area where other NWS employees are present, an NWS employee shall be designated to lock and/or tag the equipment in addition to the lockout/tagout device installed by the contractor. The NWS employee shall not remove his/her lockout/tagout device until the contractor has completed the work and removed their devices. This requirement does not apply to situations when contractors are working at the remote site by themselves.

(10) Once work has been completed, all tools shall be removed from the area and all guards reinstalled, only then can the lockout/tagout devices be removed. All affected employees shall be notified that the equipment is safe for use.

(11) Each site shall maintain a log containing all Lockout/Tagout operations performed on the site.

4.3.2 Lockout/Tagout Device Requirements. Lockout locks and tagout tags shall be recommended by the NWSH Safety Office as to the manufacturer and model number of locks and the type of tag and the wording used for lockout/tagout purposes. This is to ensure standardization of locks and tags as required by code.

a. Lockout locks shall be individually identified by a number or similar marking to identify the individual that installed the lock. Lockout locks shall be used **only** for lockout purposes and shall be standardized at each facility.

b. Tags shall be affixed to the lockout or isolation device by a means of a fastening device (e.g., wire or nylon cable ties) that exhibits a minimum breaking strength of 50 pounds and shall include a legend such as the following: **DANGER: DO NOT OPERATE, DO NOT START, DO NOT OPEN, DO NOT CLOSE, DO NOT ENERGIZE**.

c. Lockout/Tagout devices shall only be removed by the individual who applied the device or his/her designated representative.

(1) When the authorized employee who applied the lockout lock and/or tagout tag is not available to remove it, other authorized employees may remove it provided that they:

(a) Understand the hazards created by removal of the lockout lock or tagout tag, and follow the requirements in this procedure for removal of lockout locks and/or tagout tags.

(b) Accept responsibility for and perform the following:

i Verify that the authorized employee who applied the lockout lock or tagout tag is not at the facility.

ii Make good faith effort to contact the authorized employee who applied the lockout lock or tagout tag to tell him that their lockout lock and/or tagout tag has been removed.

iii Ensure that the authorized employee who applied the lockout lock or tagout tag is told that their lockout lock

or tagout tag has been removed before that employee resumes work at the facility.

iv Return the lock and tag to the authorized employee.

v The appropriate supervisor is notified prior to or immediately after removal of the lock.

d. When jobs are worked by successive shifts, either:

(1) The succeeding shift shall apply their lockout/tagout devices prior to the removal of the lockout/tagout devices already in place.

(2) The on-coming shift is given the keys to locks and replaces the tags from the shift going off with their own.

4.3.3 Equipment Procedures. Equipment/systems that require lockout/tagout shall be identified and equipment-specific procedure shall be developed using the template in Attachment A. All lockout/tagout procedures shall be maintained and updated as necessary.

a. Equipment and systems may be exempted from this requirement provided all of the following elements exist and the exemption is approved by the Station Manger or his/her designee:

(1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down.

(2) The machine or equipment has a single energy source which can be readily identified and isolated.

(3) The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.

(4) The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.

(5) A single lockout device will achieve a locked-out condition.

(6) The lockout device is under the exclusive control of the authorized employee performing the work.

(7) The servicing or maintenance does not create hazards for other employees.

(8) There have been no accidents involving the unexpected activation or re-energizing of the machine or equipment during servicing or maintenance while using this exemption.

b. If the equipment does not meet the above guidelines, a procedure shall be developed that includes the following items:

(1) A detailed process to notify all affected employees.

(2) Specific steps for shutting down, isolating, blocking and securing equipment or systems to control hazardous energy.

(3) Specific steps for the placement, removal and transfer of lockout and or tagout devices and identification of the person who is responsible for them.

(4) Requirements for testing of equipment or systems to determine and verify the effectiveness of the lockout/tagout devices and any other energy control measures.

(5) Requirements for testing to ensure that there is no stored energy in the equipment that, if unexpectedly released (or released in an uncontrolled manner), poses risk of injury to the employee(s) working on or around the system/equipment. And, if there is stored energy, requirements for containing it or releasing it in a safe and controlled manner.

4.3.4 Training. Training shall be provided to ensure that the purpose of this procedure is understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy control devices are acquired by employees. The training shall include the following:

a. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

b. Each affected employee shall be instructed in the purpose and use of the Energy Control Procedure.

c. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about this procedure, and about the prohibition relating to attempts to restart or re-energize machines or equipment which are locked out or tagged out.

d. When tagout systems are used, employees shall also be trained in the following limitations of tags:

(1) Tags are essentially warning devices affixed to energy-isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.

(2) When a tag is attached to an energy-isolating means, it is not to be removed without the authorization of the person responsible for it, and it shall never be bypassed, ignored, or otherwise defeated.

(3) Tags shall be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area.

(4) Tags and their means of attachment shall be made of materials which will withstand the environmental conditions encountered in the workplace.

(5) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall Energy Control Procedure.

(6) Tags shall be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

e. Affected employees shall be trained/retrained when there is a change in equipment, job assignment, or change in energy control procedures.

f. Re-training shall also be performed when there are indications of inadequacies in the employee's knowledge or deviations from this procedure are observed or believed to be occurring.

g. All training shall establish employee proficiency with the material and processes presented during the training.

h. A certificate shall be issued containing the employee's name and date of training, indicating the employee has accomplished the required training. The

certification shall be kept up to date. A sample certificate has been included in Attachment C.

i. Safety observer training shall be to the level required to sensitize the observer to unsafe work practices and to have the observer notify, warn, or otherwise advise the primary worker of any situation posing risk to personnel.

4.4 Quality Control

4.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

4.4.2 Station Manager

a. Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

b. Shall ensure that initial and periodic inventory of lockout/tagout devices, PPE and other safety equipment is accomplished and adequate stock is maintained.

4.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

4.5 Responsibilities

4.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall ensure that procedures are developed at regional headquarters or operating unit facilities for equipment that require lockout/tagout.

4.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that procedures are developed at NWS field offices for equipment that require lockout/tagout.

c. Shall ensure NWS employees follow the requirements of this procedure when performing lockout/tagout procedures.

4.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

4.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

4.6 References

4.6.1 American National Standards Institute Z 244.1-1982, "Lockout/Tagout of Energy Sources - Minimum Safety Requirements."

4.6.2 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.147, "The Control Of Hazardous Energy (Lockout/Tagout)."

4.6.3 National Fire Protection Association, NFPA 70, NEC.

4.6.4 NWS Occupational Safety and Health Procedure 3, "Safe Electrical Work Practices."

4.7 Attachments

Attachment A. Equipment Lockout/Tagout Procedure Template

Attachment B. Sample List of NWS Equipment Requiring Lockout/Tagout Procedure

Attachment C. Sample Training Certificate

Attachment D. Lockout/Tagout Procedures (WFO Springfield, MO)

ATTACHMENT A

Equipment Lockout/Tagout Procedure Template

Lockout/Tagout Procedure

Equipment_____Location_____

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT B

Sample List of NWS Equipment Requiring Lockout/Tagout Procedure

NOTE: *This list is representative, not all inclusive*

1. Radar WSR-88D including all of the major groups of equipment:

   a. Radar Data Acquisition (RDA) Group

   b. Wide-Band Communication (WBC) Group,

   c. Radar Product Generator (RPG) Group,

   d. Principal User Processor (PUP) Group, and

   e. Real Property Installed Equipment (RPIE) Group.

   f. Rotary UPS. (RUPS)

   g. Diesel Driven Generator (DDG).

   Consult operations and maintenance instructions for the WSR-88D system found in Radar Systems EHB-6-510, and EHB-6-511 for the location of the power feeds and safety precautions for this system.

2. NOAA Weather Radio and the following components:

   a. Exciters

   b. Power Amplifiers

   c. Power Supply Units

   d. Cabinet Components

   Consult the Operator Maintenance Instruction Manuals for SR-416D Dual VHF FM and WRT-1000 Dual 1 KW Transmitter Systems for the location of the power feeds and safety precautions for these units.

3. Upper Air Systems and the following components:

   a. Antenna and Pedestal assembly (Unit 1)

   b. Signal/Power Distribution (Unit 2)

   c. Data Control Assembly (Unit 3)

d. ART Printer (Unit 4)

e. Remote Control Unit (Unit 5)

f. Range Antenna Assembly (ART-1R)

g. Phase Comparator Assembly (ART-1R)

h. 403 MHz Transmitter (ART-1R)

Consult the Operator Maintenance Instruction Manuals for the location of the power feeds and safety precautions for these components.

4. Any portion of the electrical wiring system of the forecasting offices and surrounding structures to include but not limited to:

a. Electrical outlets

b. Lighting systems

c. Main distribution unit for the facility

d. Auxiliary circuit panels

e. Emergency Generator (*This unit shall be isolated to ensure this unit does not accidentally start-up while being serviced*)

f. Security and Fire Alarm Systems

NOTE:	The low voltage side of these systems (<50 volts) are exempted from the requirements of this procedure)

g. Uninterruptable Power System (P). *Note: See Attachment 4L for UPS energy isolation and Attachments 4M and 5 for UPS battery replacement.*

h. House Air Handling Units and Air Condensing Units.

i. Future TMPS Systems.

j. ASOS Systems.

5. Cranes used at the NDBC shall be locked and tagged out when servicing activities could expose an individual to injury by an inadvertent start-up of the unit. Examples of service to the cranes that would require lockout/tagout include but are not limited to;

6. Maintenance of the hoisting unit of the bridge crane in the high-bay.

7. Maintenance of the hydraulic system on the portable crane used to move the buoys.

NOTE:	It was indicated that these cranes are not serviced by NWS personnel or their contractors. However, NWS personnel shall ensure that the servicing personnel lock or tagout this equipment to prevent an accidental start-up of these units by NWS personnel.

ATTACHMENT C

Sample Training Certificate

CERTIFICATE OF COMPLETION

Let it be known that

_____

has satisfactorily completed the requirements for employee training in

Lockout/Tagout Procedures

_____ _____

Instructor **Date**

ATTACHMENT D

Lockout/Tagout Procedures

WFO Springfield, MO

ATTACHMENT D-1

Lockout/Tagout Procedure

NEXRAD Overview

Equipment: NEXRAD RDA*, RPG, PUP and AWIPS

Location: RDA Shelter WFO Springfield, MO

The electrical service is delivered to these systems components through power cords that can been unplugged. The components are then removed from their cabinets and taken to a centralized service area for repair. The procedures provided in the respective maintenance manuals satisfy the exception for Lockout/Tagout Standard.

Examples of these components include:

1. SOPS/Micro5

2. VME

3. SCSI

4. Modem Rack

5.RAMTEK

6. PUP/RPG Workstations

For the RPG, PUP, and AWIPS: this procedure is all in encompassing since all AC sources are unpluggable AC.

* RDA components transmitter, receiver, signal processor, pedestal electronics, waveguide pressurization unit, and main PDP circuits have Lockout/Tagout Procedures because they do not have unpluggable AC sources.

ATTACHMENT D-2

Lockout/Tagout Procedure

Equipment: NEXRAD Pedestal Electronics

Location: RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Secondary Power Distribution Panel, CB2, CB4, and CB6 (ganged)
2. UD5A2S3 Pedestal Electronics Power Switch

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-510 Table 6-5.2, steps 1 through 5g and 13 through 15, provides sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Secondary Power Distribution Panel, CB2, CB4, and CB6 (ganged)

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-3

Lockout/Tagout Procedure

Equipment: NEXRAD Receiver

Location: RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

Secondary Power Distribution Panel, CB22

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-510 Table 6-5.2, steps 1 through 6, provides sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Secondary Power Distribution Panel, CB22

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-4

Lockout/Tagout Procedure

Equipment: RDA Generator

Location: RDA Generator Shed WFO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Control Switch on the RDA Generator in the RDA Generator Building.

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Turn the Control Switch on the RDA Generator in the RDA Generator Building to the OFF position.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Turn the Control Switch on the RDA Generator in the RDA Generator Building to the OFF position and lockout/tagout.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the

lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-5

Lockout/Tagout Procedure

Equipment: NEXRAD Signal Processor

Location: RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Secondary Power Distribution Panel, CB16 and CB18 (ganged)
2. UD5A2S4 DAU Power Switch

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-510 Table 6-5.2, steps 1 through 5g, 21, and 22, provides sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Secondary Power Distribution Panel, CB16 and CB18 (ganged)

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the

lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-6

Lockout/Tagout Procedure

Equipment: NEXRAD Waveguide Pressurization Unit

Location: RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Secondary Power Distribution Panel, CB8
2. UD6CB1Power On/Off switch

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-510 Table 6-5.2, steps 1 through 5g, 11 and 12, provides sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Secondary Power Distribution Panel, CB8

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-7

Lockout/Tagout Procedure

Equipment NEXRAD RDASC

Location RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

Secondary Power Distribution Panel, CB15.CB17, and CB19 (ganged)

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-510 Table 6-5.2, steps 1 through 5g and 17 through 20, provides sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device..

1. Secondary Power Distribution Panel, CB16 and CB18 (ganged)

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-8

Lockout/Tagout Procedure

Equipment: NEXRAD Transmitter

Location: RDA Shelter WSO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

See EHB 6-511 para. 3.4.1.2 step5a thru step 5c

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

Under ordinary corrective and preventive maintenance, existing procedures in the EHB 6-511 para. 3.4.1.2 step 1 thru 3.4.1.2 step 5c provide sufficient energy isolation that additional lockout/tagout are not required. However, if the circuit is left unattended for any reason, provide full Lockout/Tagout Device Application .

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. UD3 CB1 High voltage circuit breaker interlock key

2. Secondary Power Distribution Panel, CB1,3,5 (ganged) and CB7

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

1. Filter Capacitor Bank 3A9: Opening the right bay inner door releases the discharge plunger.

2. Modulator Pulse Assembly UD3A12: Use the grounding stick per EHB 6-511 Repair Procedures.

3. Oil Tank Assembly UD3A7: Use the grounding stick per EHB 6-511 Repair Procedures.

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-9

Lockout/Tagout Procedure

Equipment: RDA Generator and Transfer Switch

Location: RDA Generator Shelter WFO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Master generator switch on the Generator Control Panel in the RDA Generator Shelter.
2. Utility Main Power Disconnect Switch in the RDA Generator Shelter or Main Site Disconnect Switch located outside the RDA Generator Shelter.

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Turn the Transfer switch Control Key on the Transfer Switch Cabinet in the RDA Generator Shelter to the OFF position and remove the key.

2. Turn the Control Switch on the Generator in the RDA Generator Shelter to the OFF position.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Disable the engine generator (Onan or Kohler) in the RDA Generator Shelter as follows:

   a. On the Onan Generator Control Panel, push the EMERGENCY STOP button in and set the RUN-STOP(RESET)-REMOTE switch to STOP(RESET), or

   b. On the Kohler Generator Control Panel, push the EMERGENCY STOP button in and set the RUN-OFF/RESET-AUTO switch to OFF/RESET.

2. Sites with a Transition Power Source (TPS), perform TPS shutdown procedure.

3. In the RDA Generator Shelter, set the Utility Main Power Disconnect Switch to OFF.

   Sites without a disconnect switch in the generator shelter, set the Main Site Disconnect Switch to OFF.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.

- Verify that all controls are in their neutral or off position.

- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.

- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-10

Lockout/Tagout Procedure

Equipment: Upper Air Tracking Radar

Location: Upper Air Building Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. The WBRT On/Off main power toggle switch, which is located on the control panel inside the Dome of the Upper Air Building:

2. The WBRT Drive Motors are supplied by Circuit 7, which is located in the Electrical Branch Circuit Panel on the exterior of the Upper Air Building.

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Flip the WBRT On/Off main power toggle switch at the control panel inside the Dome of the Upper Air Building to the OFF position.

2. Open Circuit 7 on the Branch Circuit panel located on the outside of the Upper Air Building

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Lockout/tagout Circuit 7, which is located in the Electrical Branch Circuit Panel on the exterior of the Upper Air Building.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-11

Lockout/Tagout Procedure

Equipment: Generator and Transfer Switch

Location: Generator Building WFO Springfield, MO

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. Master generator switch on the Generator Control Panel in the WFO Generator Shelter or Electrical Room.
2. Utility Main Power Disconnect Switch in the WFO Generator Shelter or Main Site Disconnect Switch located outside the WFO Generator Shelter.

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Turn the Transfer switch Control Key on the Transfer Switch Cabinet in the WFO Electrical Room to the OFF position and remove the key.

2. Turn the Control Switch on the Generator in the Generator Building to the OFF position.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Disable the engine generator in the WFO Generator Shelter by pushing the EMERGENCY STOP button in and setting the master generator switch to the STOP of OFF position.

2. Sites with an Uninterruptible Power Source (UPS), perform UPS shutdown procedure.

3. In the RDA Generator Shelter, set the Utility Main Power Disconnect Switch to OFF.

   Sites without a disconnect switch in the generator shelter, set the Main Site Disconnect Switch to OFF.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

N/A

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

ATTACHMENT D-12

Lockout/Tagout Procedure

Equipment: UPS and Battery Backup

Location: WFO Springfield, MO

NOTE: Special precautions outlined in paragraph 9 of this Attachment should be followed.

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. AC Power: Panel MDPP Circuit 3 (AKA UPS Input Breaker (Q10)).

Note: For continued power supply to the site, while the UPS is off line switch UPS to MDPP.

2. Static Discharge: SBS Input Breaker

3. DC Power: Battery Breaker (Q1).

4. Primary Capacitors on Main Line

5. Secondary Capacitors near

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Turn SBS Mode Selector to MAINS operation. LED 5 illuminate and LED 11 goes out.

2. Place Mechanical Bypass Switch in bypass position (1) LED 1 illuminates and LED 5 goes out.

3. Press Inverter On/Off (17) key on the Display Panel followed within 2 seconds, by the Enter Key (18).

4. Turn Rectifier Mode and SBS Mode Selectors to OFF.

5. Open UPS Input Breaker (Q51) and Battery Breaker (Q1). UPS is now shut down. Place external maintenance bypass in bypass position.

6. Manually discharge the Primary Capacitors.

7. Manually discharge the Secondary Capacitors.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Open Panel MDPP Circuit 3 (AKA UPS Input Breaker (Q10)) and lockout/tagout.

Note: For continued power supply to PPC, while the UPS is off line switch UPS to MDPP.

2. Open SBS Input Breaker and lockout/tagout

3. Open Battery Breaker (Q1) and lockout/tagout.

4. Manually discharge the Primary Capacitors, Ground and Tagout.

5. Manually discharge the Secondary Capacitors, Ground and Tagout.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

1. DC battery power supply needs to be isolated by lockout/tagout of Battery Breaker (Q1)

2. Batteries should be removed rather than discharged. This involves Live Electrical Work. Caution: Batteries carry 375 volts. To remove batteries, isolate racks then each shelf and then each pair until finally the individual batteries remain.

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the

lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

9. Special Precaution for UPS Battery Replacement

The following special precautions should be followed:

5. Two person crew should do the work.
6. Rubber electrical safety gloves and chemical resistant safety goggles or safety glasses with chemical resistant face shields shall be worn.
7. Follow all lockout/tagout procedures prior to battery removal.

8. There are multiple rows of UPS model specific batteries that cannot be turned off. Voltage across the +/- terminals is 375 volts D.C. The order of isolation for these batteries are as follows:
   (1) Racks
   (2) Shelves
   (3) Pairs
9. Damaged batteries should be placed in special container and disposed of properly.
10. Reverse these directions to install new batteries.

ATTACHMENT D-13

Lockout/Tagout Procedure

Equipment: Changing Batteries in the UPS Battery Backup

Location: WFO Springfield, MO

NOTE:	Special precautions outlined in paragraph 9 of this Attachment should be followed.

1. Make Notifications

Notify affected employees that a lockout is required, the reason for the lockout, and the expected duration. List the Name(s) of affected employees and how to notify them.

1. Electronics Systems Analysts
2. Meteorologist in Charge
3. Lead Forecaster

2. Machine or Equipment Isolation

Determine all sources of energy feeding into the machine or equipment and the location of the isolation device needed to isolate the machine or equipment from the energy source. List the location of all energy sources and the sequence in which they need to be isolated. **Note:** The Equipment Manuals and Operations and Maintenance Manuals for the specific piece of equipment should provide the location and type of energy sources feeding into the equipment.

1. AC Power: Panel MDPP Circuit 3 (AKA UPS Input Breaker (Q10)).

Note: For continued power supply to the site, while the UPS is off line switch UPS to MDPP.

2. Static Discharge: SBS Input Breaker

3. DC Power: Battery Breaker (Q1).

4. Primary Capacitors on Main Line

5. Secondary Capacitors near.

6. Battery Rack

3. Shutdown Equipment

Provide the appropriate procedure to shut down the equipment.

1. Turn SBS Mode Selector to MAINS operation. LED 5 illuminate and LED 11 goes out.

2. Place Mechanical Bypass Switch in bypass position (1) LED 1 illuminates and LED 5 goes out.

3. Press Inverter On/Off (17) key on the Display Panel followed within 2 seconds, by the Enter Key (18).

4. Turn Rectifier Mode and SBS Mode Selectors to OFF.

5. Open UPS Input Breaker (Q51) and Battery Breaker (Q1). UPS is now shut down. Place external maintenance bypass in bypass position.

6. Manually discharge the Primary Capacitors.

7. Manually discharge the Secondary Capacitors.

8. Batteries removal is Hot-Work. Follow precautions for Live Electrical Work. Caution: Batteries carry 375 volts. To remove batteries, isolate racks then each shelf and then each pair until finally the individual batteries remain.

4. Lockout or Tagout Device Application

List the location of all lockout devices. If a lockout device cannot be applied list the location of the tagout device and any additional precautions taken to ensure the level of safety is equal to that of a lockout device.

1. Open Panel MDPP Circuit 3 (AKA UPS Input Breaker (Q10)) and lockout/tagout.

Note: For continued power supply to PPC, while the UPS is off line switch UPS to MDPP.

2. Open SBS Input Breaker and lockout/tagout

3. Open Battery Breaker (Q1) and lockout/tagout.

4. Manually discharge the Primary Capacitors, Ground and Tagout.

5. Manually discharge the Secondary Capacitors, Ground and Tagout.

5. Release Stored Energy

List any devices that may contain stored energy and the process to safely release or contain this energy. Examples include, but are not limited to, capacitors, springs, hydraulic cylinders, and pressurized piping.

1. DC battery power supply needs to be isolated by lockout/tagout of Battery Breaker (Q1)

2. Batteries should be removed rather than discharged. This involves Live Electrical Work. Caution: Batteries carry 375 volts. To remove batteries, isolate racks then each shelf and then each pair until finally the individual batteries remain.

6. Verification of Isolation

To ensure that all energy sources have been isolated, ensure that no personnel can be exposed to operating machinery or equipment, operate all controls to ensure that the equipment will not operate. List all controls that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources. "**CAUTION**" ensure all controls have been returned to the off or neutral position upon completion of the test.

Use Multi-meter to verify that no voltage is present.

7. Jogging or Cycling

If, during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of lockout/tagout device(s) is removed to accomplish this. Only the lockout/tagout devices absolutely necessary to allow the equipment or machine to be jogged or cycled should be removed. After the equipment or machine has been cycled or jogged the lockout/tagout devices shall be reapplied and steps two through six shall be repeated prior to commencing work.

N/A

8. Release from Lockout/Tagout and Restoring to Service

Before lockout/tagout devices are removed and energy is restored to the machine or equipment, inspect the area to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

- Check the work area to ensure that all employees are clear of the equipment or machine.
- Verify that all controls are in their neutral or off position.
- Each lockout/tagout device shall be removed from each energy isolation device by the employee who applied the device.
- Notify all affected employees that the lockout/tagout devices have been removed and the machine or equipment is safe for use.

9. Special Precaution for UPS Battery Replacement

The following special precautions should be followed:

- Two person crew should do the work.

- Rubber electrical safety gloves and chemical resistant safety goggles or safety glasses with chemical resistant face shields shall be worn.
- Follow all lockout/tagout procedures prior to battery removal.
- There are multiple rows of UPS model specific batteries that cannot be turned off. Voltage across the +/- terminals is 375 volts D.C. The order of isolation for these batteries are as follows:
    (1) Racks
    (2) Shelves
    (3) Pairs
- Damaged batteries should be placed in special container and disposed of properly.
- Reverse these directions to install new batteries.

PROCEDURE 5 - Emergency Action Plan

Table of Contents Page

Synopsis 5-ii
Emergency Action Plan Checklist 5-iv

5 EMERGENCY ACTION PLAN 5-1
5.1 Purpose and Scope 5-1
5.2 Definitions 5-1
5.3 Procedure 5-2
5.4 Quality Control 5-5
5.5 Responsibilities 5-6
5.6 References 5-7
5.7 Attachments 5-7

ATTACHMENT A 5-A-1
Emergency Action Plan (*Template*) 5-A-1

ATTACHMENT B 5-B-1
Emergency Action Plan for 5-B-1
Weather Forecast Office, Springfield, MO 5-B-1

Synopsis

The National Weather Service (NWS) is promulgating Emergency Action Plan procedure to provide requirements related to responding and mitigating the potential consequences of an emergency at NWS sites. This procedure applies to all NWS facilities, work locations and employees with the following exception: NWS operations that are located on another agency's facility that has a standing emergency response program will follow the requirements of that agency.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
- **Develop/Obtain Documentation/Information required for Site**
  - Prepare site-specific Emergency Action Plan (EAP) *(5.3.1)*
    - < Prepare Site-Specific Emergency Route Maps *(5.3.1a.(1))*
    - < Develop/Review/Negotiate/Coordinate Emergency Response Agreements (ERA) *(5.3.1b.5)*
    - < Designate assembly points and postings. *(5.3.1a.1)*
    - < Prepare emergency procedures for potential emergency situations. *(5.3.1a.2)*
    - < Prepare procedures for notification of backup stations for weather forecast.*(5.3.1a.4)*
    - < Develop procedures for key employees required to remain to operate critical equipment.*(5.3.1c)*
    - < Provide details of rescue task and medical first aid duties of any volunteer employee. *(5.3.1b.5)*
    - < Describe types of evacuations needed for the different types of emergencies. *(5.3.3)*
- **Designate Person to Administer EAP Procedure Requirements**
- **Provide Local Training for Site Personnel**
  - Training of site personnel on EAP *(5.3.4a)*
  - Training for site personnel to assist the Emergency Coordinator in safe and orderly emergency evacuation of employees. *(5.3.4b)*
  - Training for Emergency Systems Shutdown *(5.3.4c)*
- **Inventory Material/Equipment (Procure as required)**
  - Emergency Notification/Alarm Systems. *(5.3.2)*

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required**
  - Update site-specific Emergency Action Plan (EAP) *(5.3.1)*
- **Provide Refresher Training for Site Personnel (If Applicable)**
- **Conduct Safety Exercises/Drills**
  - Plan/Conduct annual Fire Drill. *(5.3.1a.3)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Emergency Notification/Alarm Systems. *(5.3.2)*

Emergency Action Plan Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	5.4.2				
Has an Emergency Coordinator been designated?	5.5.2b				
Has an EAP been developed and implemented to comply with this procedure?	5.3.1 Attachment A				
Does the EAP require the site to post and designate routes and assembly points for emergencies?	5.3.1a(1)				
Are there postings of emergency numbers and points of contact throughout the facility in the event of an emergency?	5.3.1a.4				
Are facility emergency drills conducted at least annually?	5.3.4				
Are procedures developed for notification of backup stations and coordinated with emergency escape procedures?	5.3.1a(4)				
Are emergency evacuation procedures in place for key employees who are required to remain to operate critical equipment?	5.3.1c				
Does the EAP contain a site personnel accountability method?	5.3.1d				

Requirements	Reference	YES	NO	N/A	Comments
Does the EAP designate floor/area monitors to account for personnel during an emergency?	5.3.1d(1)				
Does the EAP address adequately trained employees to perform rescue and medical duties, if required?	5.3.1b.5				
Does the EAP include Emergency Response Agreements (ERA) with all outside agencies who would be relied upon to provide services during an emergency, if applicable?	5.3.1b.5				
Are detailed explanations of rescue tasks and medical first aid duties included in the EAP or referenced by the plan and placed in a separate document?	5.3.1b.5				
Are there reporting procedures described in the EAP to address fires and other emergencies?	5.3.1a.2				
Does the EAP address alarm systems to notify employees of various types of emergencies in the work area?	5.3.2				
Does the EAP contain different types of evacuation methods that will be used for various types of emergencies?	5.3.3				
Are sufficient number of personnel trained to assist in the safe and orderly emergency evacuation of employees and to assist the Emergency Coordinator?	5.3.4b				

Requirements	Reference	YES	NO	N/A	Comments
Are adequate number of qualified personnel trained to assist in equipment and facility protection in the event of emergencies?	5.3.4c				
Is the site-specific EAP reviewed with all employees annually?	5.3.4a				

5 EMERGENCY ACTION PLAN

5.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this Emergency Action Plan to respond to an emergency (e.g., fire, chemical spill, medical emergency, earthquake or other natural disaster, extended power loss, bomb threat, etc.) at NWS sites. This procedure applies to all NWS facilities, work locations and employees with the following exception: NWS operations that are located on another agency's facility that has a standing emergency response program will follow the requirements of that agency.

5.2 Definitions

Designated Responsible Official (DRO). The highest ranking manager at an NWS site, such as the MIC, OIC, or HIC.

Emergency Action Plan (EAP). A written plan for each facility that covers the designated actions NWS personnel must take to ensure employee safety from fire and other emergencies.

Emergency Coordinator. The person in charge of the NWS site during an emergency. This may be the Designated Official or someone appointed by the Designated Official to fulfill the functions of this position.

Evacuation. Evacuation is a protective action taken which removes NWS site employees or the public from harm.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Floor/Area Monitor. A person designated to assist the Emergency Coordinator during an emergency. These activities include ensuring evacuation of their floor or area, assisting with accountability, etc.

ERA (Emergency Response Agreement). A formal or informal agreement between the NWS and a response organization which outlines the basic agreement for cooperation during an emergency situation. This agreement should be in writing if possible.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Shelter-in-Place. Shelter-in-Place is a protective action in which NWS site employees and the public are to stay inside their buildings, close windows and turn off ventilation systems.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC,

NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

5.3 Procedure

5.3.1 A written comprehensive Emergency Action Plan as required by 29 CFR 1910.38, shall be developed and implemented at each NWS site. The plan shall be integrated into the Station Manual or an existing emergency plan. Attachment A is a template for development of an Emergency Action Plan. Elements of the plan must include:

a. Emergency escape procedures, routes and assembly points.

(1) Emergency escape route maps should be conspicuously posted in the work area showing employees the nearest emergency exit and included into the plan. Assembly points should also be designated on this posting. These assembly points can include a parking lot, neighboring building, a nearby field, street, or in the case of shelter-in-place, inside the building.

(2) Emergency procedures for potential emergency situation must be developed. Examples of such situations would be fire, floods, earthquakes, bomb threats, etc. These procedures shall specify what actions are to be taken in each type of emergency and by whom.

NOTE:	If the site fire alarm is not connected to the local fire department, the method of contacting the department shall be specified in the plan.

(3) Procedures for facility fire drills shall be developed (fire drills shall be conducted at least annually at all NWS staffed locations).

(4) Procedures for emergency notification of backup weather forecast stations and associated actions should be developed and coordinated with emergency escape procedures.

b. List of site emergency response personnel. The emergency phone numbers shall be posted throughout the facility for the following personnel:

(1) Emergency Coordinators (for all shifts)

(2) Designated Responsible Official (DRO)

NOTE:	DRO may act as an Emergency Coordinator unless the function is delegated to another person at the facility.

(3) Floor/Area Monitors

(4) Assistants to physically challenged.

(5) Volunteers to perform medical and rescue duties, if applicable.

NOTE: If volunteer employees are to perform rescue and medical duties, they must be identified and provided adequate training. A detailed explanation of what rescue and medical first aid duties these individuals will perform shall be included in the plan or referenced by the plan if placed in a separate document. If outside agencies are relied upon to provide these services, Emergency Response Agreements are recommended to be developed with these agencies as described in NWS Occupational Safety and Health Procedure 23, "Emergency Response Agreements." Emergency Response Agreements related to the Emergency Action Plan (e.g., Fire Department) should be included as attachments to the plan and updated as necessary.

c. Procedures for employees who are required to remain to operate critical equipment, if applicable. These procedures shall include items such as:

(1) What equipment to shut down and in what sequence.

(2) Utilities that need to be shut off, such as closing the gas valve or the main power to the building during an emergency.

d. A method of accountability to ensure that all individuals have evacuated the area or have been accounted for in an emergency.

(1) During an evacuation, Floor/Area monitors shall take an accounting of personnel in their area to ensure that all personnel have evacuated or have been accounted for. This information, along with any problems encountered, is reported to the Emergency Coordinator.

(2) There shall be an adequate number of monitors appointed to ensure that at least one monitor is on duty during hours of operations, including the night shift. If assistance is required for physically challenged personnel, it is recommended to designate two assistants per each physically challenged person.

5.3.2 Alarm Systems. An employee alarm system must be established in accordance with section 6.3.4 of the NWS Occupational Safety and Health Procedure 6, "Fire Protection." This alarm system shall be used to notify employees of various types of emergencies in the work area.

5.3.3 Evacuations. The Emergency Action Plan shall include the type of evacuation that will be used for various emergencies. The following types of evacuation shall be considered during each type of emergency.

a. Total evacuation shall be considered during grave emergencies, such as explosion, gas leak or large fire.

b. Partial evacuation may be considered when a small emergency is contained to a certain section of the facility and it will not place the safety of others located in a different part of the facility in jeopardy. An example of this would be a water leak in the ceiling of a conference room or a fire in another section of the building separated by a fire-wall.

c. Shelter-in-Place may be chosen when the hazard is external to the building and personnel are safer staying in the facility than evacuating. Examples of this would include tornados, chemical leak from a nearby facility, or a terrorist threat.

5.3.4 Training. Before implementing the Emergency Action Plan, a sufficient number of personnel shall be trained to assist in the safe and orderly emergency evacuation of employees and to assist the Emergency Coordinator during an emergency. Emergency drills shall be conducted at least annually.

a. The Emergency Action Plan shall be reviewed with all NWS personnel at each facility annually and at the following times:

(1) When the plan is initially developed.

(2) When a new employee begins duty at a site or facility.

(3) When an employee's responsibilities or duties under the plan change, the plan will be reviewed with that employee again.

(4) When the plan is changed such that personnel will be affected, a review of the plan and its changes will be reviewed with those personnel.

b. The Emergency Action Plan shall include training for an adequate number of qualified volunteers to assist in the evacuation and accountability of all personnel at the site. Training shall include:

(1) Identification of hazards associated with site and facility.

(2) The designation and location of primary and alternate assembly areas as well as safe areas within the building for Shelter-in-Place evacuations.

(3) Primary and alternate evacuation routes of egress and use of floor plans to assembly areas.

(4) Methods of evacuation sweeps for the entire assigned building area.

(5) Procedures to account for all employees in the Assembly Areas.

(6) Techniques of notification to assigned employees and accountability tasks.

(7) Procedures to assist physically challenged personnel.

(8) Rescue and medical duty (CPR/First Aid), if required.

c. The Emergency Action Plan shall include training for adequate qualified personnel to assist in equipment and facility protection in the event of emergencies. Training shall address the following:

(1) Personnel notification of backup stations and associated equipment shutdown.

(2) Protection of equipment and facilities to prevent freezing of pipes and equipment that contain freezable liquids in the event of an extended power loss.

(3) Proper sequential equipment shut down procedures to prevent electrical strain on backup and battery sources and to prevent damage to sensitive equipment from electrical surges during restoration of power to the facility.

(4) Proper shut down of specific utilities during severe weather episodes.

5.4 Quality Control

5.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarter facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

5.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

5.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

5.5 Responsibilities

5.5.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall ensure that the regional headquarters or operating unit facilities have developed and implemented an Emergency Action Plan.

c. Shall ensure all Regional personnel have reviewed the plan and are aware of their responsibilities as related to the plan.

5.5.2 Station Manager

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall act as the Designated Official and the Emergency Coordinator unless that function is delegated to another person at the facility.

c. Shall ensure all affected personnel have reviewed this procedure and are aware of their responsibilities as related to the plan.

5.5.3 Safety or Environmental/Safety Focal Point

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

5.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor, safety or environmental/safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

5.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

5.6.1 National Fire Protection Association; 101 Operating Features; Fire Exit Drills 101

5.6.2 U.S. Department of Commerce Occupational Safety and Health Manual.

5.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.38, Employee Emergency Plans and Fire Prevention Plans.

5.6.4 NWS Occupational Safety and Health Procedure #6, "Fire Protection."

5.6.5 NWS Occupational Safety and Health Procedure #23, "Emergency Response Agreements."

5.7 Attachments

Attachment A. Emergency Action Plan (template)

Attachment B. Emergency Action Plan (WFO Springfield, MO)

This Page is Left Intentionally Blank

ATTACHMENT A

Emergency Action Plan (*Template*)

EMERGENCY ACTION PLAN

for

Facility Name: _____

Facility Address: _____

_____

DATE PREPARED: _____

EMERGENCY PERSONNEL NAMES AND PHONE NUMBERS

DESIGNATED RESPONSIBLE OFFICIAL (Highest Ranking Manager at NWS site, such as MIC, OIC, or HIC)**:**

Name:_____ **Phone:** (___)_____

EMERGENCY COORDINATOR:

Name:_____**Phone:** (___)_____

AREA/FLOOR MONITORS (If applicable)**:**

Area/Floor:_____ **Name:**_____**Phone:** (___)_____

Area/Floor:_____ **Name:**_____**Phone:** (___)_____

ASSISTANTS TO PHYSICALLY CHALLENGED (If applicable)**:**

Name:_____**Phone:** (___)_____

Name:_____**Phone:** (___)_____

Date ____/____/____

EVACUATION ROUTES

! Evacuation route maps have been posted in each work area. The following information is marked on evacuation maps:

a. Emergency exits

b. Primary and secondary evacuation routes

c. Locations of fire extinguishers

d. Fire alarm pull stations' location

e. Assembly points

! Site personnel should know at least two evacuation routes.

EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT: _____

PARAMEDICS: _____

AMBULANCE: _____

POLICE: _____

FEDERAL PROTECTIVE SERVICE: _____

SECURITY (If applicable): _____

BUILDING MANAGER (If applicable): _____

UTILITY COMPANY EMERGENCY CONTACTS

(Specify name of the company, phone number and point of contact)

ELECTRIC: _____

_____

_____

WATER: _____

_____

_____

GAS (if applicable): _____

_____

_____

TELEPHONE COMPANY: _____

_____

_____

Date:_____/____/____

EMERGENCY REPORTING AND EVACUATION PROCEDURES

Types of emergencies to be reported by site personnel are:

- **!** MEDICAL
- **!** FIRE
- **!** SEVERE WEATHER
- **!** BOMB THREAT
- **!** CHEMICAL SPILL
- **!** STRUCTURE CLIMBING/DESCENDING
- **!** EXTENDED POWER LOSS
- **!** OTHER (specify)_____
  (e.g., terrorist attack/hostage taking)

MEDICAL EMERGENCY

! Call medical emergency phone number (check applicable):

- 9 Paramedics _____
- 9 Ambulance _____
- 9 Fire Department _____
- 9 Other _____

Provide the following information:

a. Nature of medical emergency,

b. Location of the emergency (address, building, room number), and

c. Your name and phone number from which you are calling.

! Do not move victim unless absolutely necessary.

! The following personnel trained in CPR and First Aid, if immediately available, should provide the required assistance prior to the arrival of the professional medical help:

Name: _____ **Phone:**_____

Name: _____ **Phone:**_____

! If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:

a. Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).

b. Clear the air passages using the Heimlich Maneuver in case of choking.

! In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if trained and qualified.

Date___/___/___

FIRE EMERGENCY

***When fire is discovered*:**

! Activate the nearest fire alarm (if installed)

! Notify the local Fire Department by calling _____.

! If the fire alarm is not available, notify the site personnel about the fire emergency by the following means (check applicable):

9	Voice Communication	9	Radio
9	Phone Paging	9	Other (specify) _____

Fight the fire ONLY if:

! The Fire Department has been notified.

! The fire is small and is not spreading to other areas.

! Escaping the area is possible by backing up to the nearest exit.

! The fire extinguisher is in working condition and personnel are **trained** to use it.

Upon being notified about the fire emergency, occupants must:

! Leave the building using the designated escape routes.

! Assemble in the designated area (specify location): _____

! Remain outside until the competent authority (Designated Official or designee) announces that it is safe to reenter.

Designated Official, Emergency Coordinator or supervisors must (underline one):

! Disconnect utilities and equipment unless doing so jeopardizes his/her safety.

! Coordinate an orderly evacuation of personnel.

! Perform an accurate head count of personnel reported to the designated area.

! Determine a rescue method to locate missing personnel.

! Provide the Fire Department personnel with the necessary information about the facility.

- Perform assessment and coordinate weather forecast office emergency closing procedures

Area/Floor Monitors must:

- Ensure that all employees have evacuated the area/floor.
- Report any problems to the Emergency Coordinator at the assembly area.

Assistants to Physically Challenged should:

- Assist all physically challenged employees in emergency evacuation.

Date___/___/___

EXTENDED POWER LOSS

In the event of extended power loss to a facility certain precautionary measures should be taken depending on the geographical location and environment of the facility:

- Unnecessary electrical equipment and appliances should be turned off in the event that power restoration would surge causing damage to electronics and effecting sensitive equipment.
- Facilities with **freezing temperatures** should turn off and drain the following lines in the event of a long term power loss.
    - Fire sprinkler system
    - Standpipes
    - Potable water lines
    - Toilets
- Add propylene-glycol to drains to prevent traps from freezing
- Equipment that contain fluids that may freeze due to long term exposure to freezing temperatures should be moved to heated areas, drained of liquids, or provided with auxiliary heat sources.

Upon Restoration of heat and power:

- Electronic equipment should be brought up to ambient temperatures before energizing to prevent condensate from forming on circuitry.
- Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

CHEMICAL SPILL

The following are the locations of:

Spill Containment and Security Equipment: _____

Personal Protective Equipment (PPE): _____

MSDS:_____

When a Large Chemical Spill has occurred:

- **!** Immediately notify the designated official and Emergency Coordinator.
- **!** Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.).
- **!** Secure the area and alert other site personnel.
- **!** Do not attempt to clean the spill unless trained to do so.
- **!** Attend to injured personnel and call the medical emergency number, if required.
- **!** Call a local spill cleanup company or the Fire Department (if arrangement has been made) to perform a large chemical (e.g., mercury) spill cleanup.

Name of Spill Cleanup Company:_____

Phone Number:_____

- **!** Evacuate building as necessary

When a Small Chemical Spill has occurred:

- **!** Notify the Emergency Coordinator and/or supervisor (select one).
- **!** If toxic fumes are present, secure the area (with caution tapes or cones) to prevent other personnel from entering.
- **!** Deal with the spill in accordance with the instructions described in the MSDS.
- **!** Small spills must be handled in a safe manner, while wearing the proper PPE.
- **!** Review the general spill cleanup procedures.

Date___/___/___

STRUCTURE CLIMBING/DESCENDING EMERGENCIES

List structures maintained by site personnel (tower, river gauge, etc.):

No.	Structure Type	Location (address, if applicable)	Emergency Response Organization* (if available within 30-minute response time)

Emergency Response Organization(s):

Name _____ Phone Number_____

Name _____ Phone Number_____

(Attach Emergency Response Agreement if available)

* - N/A. If no Emergency Response Organization available within 30-minute response time additional personnel trained in rescue operations and equipped with rescue kit must accompany the climber(s).

TELEPHONE BOMB THREAT CHECKLIST

INSTRUCTIONS: BE CALM, BE COURTEOUS. LISTEN. DO NOT INTERRUPT THE CALLER.

YOUR NAME: _____ TIME: _____ DATE: _____

CALLER'S IDENTITY SEX: Male _____ Female ____ Adult ____ Juvenile ____
APPROXIMATE AGE: _____

ORIGIN OF CALL: Local _____ Long Distance _____ Telephone Booth _____

VOICE CHARACTERISTICS

___ Loud ___ Soft
___ High Pitch ___ Deep
___ Raspy ___ Pleasant
___ Intoxicated _____ Other

ACCENT

___ Local ___ Not Local
___ Foreign ___ Region
___ Race

SPEECH

___ Fast ___ Slow
___ Distinct ___ Distorted
___ Stutter ___ Nasal
___ Slurred _____ Other

MANNER

___ Calm ___ Angry
___ Rational ___ Irrational
___ Coherent ___ Incoherent
___ Deliberate ___ Emotional
___ Righteous ___ Laughing

LANGUAGE

___ Excellent ___ Good
___ Fair ___ Poor
___ Foul _____ Other

BACKGROUND NOISES

___ Factory ___ Trains
___ Machines ___ Animals
___ Music ___ Quiet
___ Office ___ Voices
___ Machines ___ Airplanes
___ Street ___ Party
___ Traffic ___ Atmosphere

BOMB FACTS

PRETEND DIFFICULTY HEARING - KEEP CALLER TALKING - IF CALLER SEEMS AGREEABLE TO FURTHER CONVERSATION, ASK QUESTIONS LIKE:

When will it go off? Certain Hour ____ Time Remaining _____ _____

Where is it located? Building _____ Area _____
_____

What kind of bomb? _____ What kind of package? _____
_____ How do you know so much about the bomb? _____
_____

What is your name and address? _____
_____

If building is occupied, inform caller that detonation could cause injury or death.

Activate malicious call trace: Hang up phone and do not answer another line. Choose same line and dial *57. Listen for the confirmation announcement and hang up.

Call Security at _____ and relay information about call.

Did the caller appear familiar with plant or building (by his/her description of the bomb location)? Write out the message in its entirety and any other comments on a separate sheet of paper and attach to this checklist. Notify your supervisor immediately.

SEVERE WEATHER AND NATURAL DISASTERS

Tornado:

! When a warning is issued by sirens or other means, seek inside shelter. Consider the following:

- Small interior rooms on the lowest floor and without windows,
- Hallways on the lowest floor away from doors and windows, and
- Rooms constructed with reinforced concrete, brick, or block with no windows.

! Stay away from outside walls and windows.

! Use arms to protect head and neck.

! Remain sheltered until the tornado threat is announced to be over.

Earthquake:

! Stay calm and await instructions from the Emergency Coordinator or the designated official.

! Keep away from overhead fixtures, windows, filing cabinets, and electrical power.

! Assist people with disabilities in finding a safe place.

! Evacuate as instructed by the Emergency Coordinator and/or the designated official.

Flood:

If indoors:

! Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.

! Follow the recommended primary or secondary evacuation routes.

If outdoors:

! Climb to high ground and stay there.

! Avoid walking or driving through flood water.

! If car stalls, abandon it immediately and climb to a higher ground.

Hurricane:

! The nature of a hurricane provides for more warning than other natural and weather disasters. A hurricane watch issued when a hurricane becomes a threat to a coastal area. A hurricane warning is issued when hurricane winds of 74 mph or higher, or a combination of dangerously high water and rough seas, are expected in the area within 24 hours.

Once a hurricane watch has been issued:

- **!** Stay calm and await instructions from the Emergency Coordinator or the designated official.
- **!** Moor any boats securely, or move to a safe place if time allows.
- **!** Continue to monitor local TV and radio stations for instructions.
- **!** Move early out of low-lying areas or from the coast, at the request of officials.
- **!** If you are on high ground, away from the coast and plan to stay, secure the building, moving all loose items indoors and boarding up windows and openings**.**
- **!** Collect drinking water in appropriate containers.

Once a hurricane warning has been issued:

- **!** Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- **!** Leave areas that might be affected by storm tide or stream flooding.

During a hurricane:

- **!** Remain indoors and consider the following:
  - Small interior rooms on the lowest floor and without windows,
  - Hallways on the lowest floor away from doors and windows, and
  - Rooms constructed with reinforced concrete, brick, or block with no windows.

Blizzard:

If indoors:

- **!** Stay calm and await instructions from the Emergency Coordinator or the designated official.
- **!** Stay indoors!
- **!** If there is no heat:
  - Close off unneeded rooms or areas.
  - Stuff towels or rags in cracks under doors.

  c. Cover windows at night.
- **!** Eat and drink. Food provides the body with energy and heat. Fluids prevent dehydration.
- **!** Wear layers of loose-fitting, light-weight, warm clothing, if available.

If outdoors:

- **!** Find a dry shelter. Cover all exposed parts of the body.
- **!** If shelter is not available:
  - Prepare a lean-to, wind break, or snow cave for protection from the wind.
  - Build a fire for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.
  - Do not eat snow. It will lower your body temperature. Melt it first.

If stranded in a car or truck:

- **!** Stay in the vehicle!
- **!** Run the motor about ten minutes each hour. Open the windows a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked.
- **!** Make yourself visible to rescuers.
  - Turn on the dome light at night when running the engine.
  - Tie a colored cloth to your antenna or door.
  - Raise the hood after the snow stops falling.
- **!** Exercise to keep blood circulating and to keep warm.

CRITICAL OPERATIONS

During some emergency situations, it will be necessary for some specially assigned personnel to remain at the work areas to perform critical operations.

Assignments:

Work Area	Name	Job Title	Description of Assignment

- Personnel involved in critical operations may remain on the site upon the permission of the site designated official or Emergency Coordinator.
- In case emergency situation will not permit any of the personnel to remain at the facility, the designated official or other assigned personnel shall notify the appropriate NWS offices to initiate backups. This information can be obtained from the Emergency Evacuation Procedures included in the Office Station Duty Manual.

  The following offices should be contacted:

  Name/Location:_____

  Telephone Number:_____

  Name/Location:_____

  Telephone Number:_____

  Name/Location:_____

  Telephone Number:_____

TRAINING

The following personnel have been trained to ensure a safe and orderly emergency evacuation of other employees:

Facility: _____

Name	Title	Responsibility	Date

ATTACHMENT B

Emergency Action Plan for

Weather Forecast Office, Springfield, MO

January 20, 2000

All components of the Emergency Action Plan have been integrated into Volume I of the Station Duty Manual at the WFO in Springfield, MO. Volume I, also known as the Emergency Station Duty Manual (ESDM) provides guidance for all types of emergencies anticipated at the facility.

REFERENCES

Plan Component	**ESDM Section**
Training	1.01
Annual Plan Review	1.01 & 1.04
Hazardous Material Spills	2.02
Forecast backup Notification	3.03
Fire	4.01
Natural Disaster	4.01
Evacuation	4.01
Personnel Safety/Security	4.02

PROCEDURE 6 - Fire Protection

Table of Contents Page

Synopsis 6-ii
Fire Protection Checklist 6-iii

6 FIRE PROTECTION 6-1
6.1 Purpose and Scope 6-1
6.2 Definitions 6-1
6.3 Procedure 6-3
6.4 Quality Control 6-10
6.5 Responsibilities 6-11
6.6 References 6-12
6.7 Attachments 6-12

ATTACHMENT A 6-A-1
Fire Extinguisher Hydrostatic Test Frequency 6-A-1

ATTACHMENT B 6-B-1
Exit Marking and Placement Criteria 6-B-1

ATTACHMENT C 6-C-1
Fire Prevention Plan *(template)* 6-C-1

ATTACHMENT D 6-D-1
Fire Prevention Plan for 6-D-1
WFO Springfield, MO 6-D-1

Synopsis

The purpose of this procedure is to provide guidelines related to potential fire hazards in the workplace. This procedure applies to all NWS facilities, work locations, and employees.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operations versus Requirements of the Procedure**
  - Conduct Inspection of Fire Extinguishers and other Systems*(6.3.1j, Attachment C)*
  - Evaluate major Fire Hazards *(6.3.2a.1, Attachment C)*
  - Inventory Flammable/Combustible Materials *(6.3.2a, Attachment C)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop Fire Prevention Plan *(6.3.2a, Attachment C)*
  - Develop written Maintenance Schedule for thermostats and thermal overload devices*(6.3.2d)*
- **Designate Person to Administer Fire Protection Program Requirements**
  - List personnel responsible for maintenance of equipment and systems used to control fires. *(Attachment C)*
- **Provide Local Training of Site Personnel**
  - Fire Extinguisher Training (if applicable). *(6.3.1o)*
  - Fire Hazard Awareness Training. *(6.3.2b)*
  - Reporting Emergencies Training. *(6.3.4d)*
- **Inventory Material/Equipment (Procure as required)**
  - Alarm Systems for WFOs (where installed). *(6.5.2e, 6.3.4)*
  - Fire Extinguishers (as required).*(6.5.2e, 6.3.2)*
  - Emergency Lights for egress (as required). *(6.5.2e, 6.3.5)*

<u>Recurring and Annual Task Requirements:</u>

- **Perform Inspection/Assessment/Testing**
  - Perform Monthly Visual and Annual Fire Extinguisher Maintenance Check. *(6.3.1l, 6.3.1k)*
  - Conduct periodic Hydrostatic Testing of fire Extinguishers. *(6.3.1n)*
  - Conduct routine Inspections of Thermostats and Thermal Overload Devices. *(6.3.2d)*
  - Provide testing of Fire Alarm Systems. (where installed) *(6.3.4h, k)*
  - Conduct periodic Inspection of Electrical Equipment. *(Attachment C)*
- **Review/Update Documentation/Information required for Site**
  - Maintain Annual Maintenance Inspections Records. *(6.3.1m)*
  - Update Fire Prevention Plan. *(6.3.2)*
  - Maintain Training Records. *(6.3.2c)*
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Annual Refresher Training for Fire Extinguisher use. *(6.3.1o)*
- **Conduct Annual Fire Drills**
- **Inspect/Replace/Maintain Material/Equipment**
  - Alarm systems for WFOs (where installed). *(6.5.2e, 6.3.4)*

- Fire Extinguishers (as required).*(6.5.2e, 6.3.2)*
- Emergency Lights for egress (as required). *(6.5.2e, 6.3.5)*

Fire Protection Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	6.4.2				
Have personnel been designated to oversee inspections, maintenance and testing of fire extinguishers?	6.3.1j				
Are fire extinguishers properly selected according to the potential fire hazard and the construction and occupancy of the building?	6.3.1b				
Are fire extinguishers readily available for immediate use in case of fire?	6.3.1c				
Are monthly visual inspections of portable fire extinguishers performed and documented using a tag?	6.3.1k				
Is annual maintenance check of fire extinguishers performed?	6.3.1l				
Are written records of maintenance checks kept for one year?	6.3.1m				
Are fire extinguishers hydrostatically tested at periodic intervals based upon the type of extinguisher?	6.3.1n Attachment A				
Are employees trained in fire extinguisher use upon initial employment and annually (if site-specific Emergency Action Plan calls for employees to fight the fire)?	6.3.1o				
Is a Fire Prevention Plan developed and available for employees review?	6.3.2a, Attachment C				

Requirements	Reference	YES	NO	N/A	Comments
Are facility's major fire hazards inventoried and documented as part of Fire Prevention Plan?	Attachment C				
Has personnel been designated to perform maintenance and inspection of equipment and systems used to control the fire?	6.3.1j, Attachment C				
Is a written schedule for maintenance of thermostats and other thermal overload devices developed?	6.3.2d				
Has the awareness training on potential fire hazards associated with materials and processes been provided?	6.3.2b				
Are written records of personnel training kept on file?	6.3.2c				
Is periodic inspection of electrical equipment performed?	Attachment C				
Are routine inspections of thermostats and thermal overload devices performed?	6.3.2d				
Are general fire prevention guidelines outlined in the procedure followed?	6.3.3				
Are monthly inspections of egress paths, combustible/flammable storage areas and general facility housekeeping performed?	6.3.3j				
Are means for reporting the fire established and communicated to the site personnel?	6.3.4b-e				
Are supervised alarm systems tested annually for reliability and adequacy (if applicable)?	6.3.4k				

Requirements	Reference	YES	NO	N/A	Comments
Are non-supervised alarm systems tested every two months (if applicable)?	6.3.4h				
Are fire drills conducted at least annually?	6.3.4m, 5.3.1a(3)				
Are requirements for the building egress met?	6.3.5				

This Page is Left Intentionally Blank

6 FIRE PROTECTION

6.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to fire hazards in the workplace. This procedure applies to all NWS facilities, work locations, and employees.

6.2 Definitions

ADA. Americans with Disabilities Act.

Approved. For the purposes of this procedure "approved" shall mean equipment listed or approved by a nationally recognized testing laboratory.

Class A Fire. Fire involving materials such as wood, paper and cloth which produce glowing embers or char.

Class B Fire. Fire involving flammable gases, liquids and greases including gasoline and most hydrocarbon liquids which must be vaporized for combustion to occur.

Class C Fire. Fire in live electrical equipment or in materials near electrically powered equipment.

Class D Fire. Fire involving combustible metals such as magnesium, zirconium, potassium and sodium.

Emergency Action Plan. A plan for a workplace, or parts thereof, describing what procedures the employer and employees must take to ensure employee safety from fire or other emergencies.

Emergency Escape Route. The route that employees are directed to follow in the event they are required to evacuate the workplace or seek a designated refuge area. (See also means of egress, exit, exit access and exit discharge.)

Exit. Exit is that portion of a means of egress which is separated from all other spaces of the building or structure by construction or equipment as required in this subpart to provide a protected way of travel to the exit discharge.

Exit Access. A continuous and unobstructed way of exit from any point in a building or structure to an exit.

Exit Discharge. That portion of a means of egress between the termination of an exit and a public way.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Fire. Fire is a rapid oxidation process accompanied by the evolution of heat and light by various degrees.

High-Hazard Contents. Contents which are likely to burn with extreme rapidity, emanate poisonous fumes/vapors or explode in the event of fire.

Loaded Stream. A water-based extinguishing medium that uses an alkali metal salt as a freezing point depressant.

Low Hazard Contents. Contents with such low combustibility that no self-propagating fire can occur and the only probable danger requiring the use of emergency exits will be from panic, non-toxic fumes, or smoke or fire from some external source.

Means of Egress. A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: the way of exit access, the exit and the way of exit discharge.

NFPA. National Fire Protection Association.

Ordinary Hazard Contents. Contents which are likely to burn with moderate rapidity and to give off a considerable volume of smoke, but from which neither poisonous fumes nor explosions are to be feared in case of fire.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Supervised Alarm System. An employee alarm system that has a monitoring signal carried by the wiring from the alarm panel to all detection devices and appliances that will detect a malfunction such as a short or break in the wiring and activate a supervisory alarm or trouble code at the alarm panel.

Tactile Device. A device or piece of equipment that can be perceptible to the touch.

UL. Underwriter's Laboratories.

Unsupervised Alarm System. An alarm system that does not monitor the alarm circuitry.

NOTE: *All employee alarm systems installed after January 1, 1981 that are capable of being supervised shall be supervised.*

6.3 Procedure

6.3.1 Fire Extinguishers. A portable fire extinguisher can be very effective when used for fighting incipient stage fires. Fire extinguishers are provided at all NWS offices and the associated sites. Primarily, these fire extinguishers are classified as ABC-type fire extinguishers, but some may only be classified for BC-type usage. The proper fire extinguisher should be selected, appropriate for the type of fire it is used to extinguish.

a. Fires are classified into four general categories depending on the type of material or fuel involved. The type of fire determines the type of extinguisher that should be used to extinguish it.

(1) Class A fires involve materials such as wood, paper and cloth which produce glowing embers or char.

(2) Class B fires involve flammable gases, liquids and greases including gasoline and most hydrocarbon liquids which must be vaporized for combustion to occur.

(3) Class C fires involve fires in live electrical equipment or in materials near electrically powered equipment.

(4) Class D fires involve combustible metals such as magnesium, zirconium, potassium and sodium.

b. Extinguishers shall be selected according to the potential fire hazard, the construction and occupancy of facilities, hazard to be dealt with and other factors pertinent to the situation.

c. Extinguishers shall be conspicuously located and readily accessible for immediate use in the event of fire. They shall be located along normal paths of travel and egress. Wall recesses and/or flush-mounted cabinets shall be used as extinguisher locations whenever possible.

d. Extinguishers shall be clearly visible. In locations where visual obstruction cannot be completely avoided, directional arrows shall be provided to indicate the location of extinguishers, and the arrows shall be marked with the extinguisher classification.

e. If extinguishers intended for different classes of fire are located together, they shall be conspicuously marked to ensure that the proper class extinguisher selection is made at the time of a fire. Extinguisher classification markings shall be located on the front of the shell above or below the extinguisher nameplate. Markings shall be of a size and form to be legible from a distance of three (3) feet.

f. Portable extinguishers shall be maintained in a fully charged and operable condition. They shall be kept in their designated locations at all times when not being used. When extinguishers are removed for maintenance or testing, a comparable fully charged and operable replacement unit shall be provided.

g. Extinguishers shall be installed on hangers, brackets, or in cabinets. Extinguishers having a gross weight exceeding 40 pounds shall be installed so that the top of the extinguisher is not more than 3½ feet above the floor. Extinguishers less than 40 pounds shall be installed so that the top of the extinguisher is not more than 5 feet above the floor.

h. Extinguishers mounted in cabinets or wall recesses or set on shelves shall be placed so that the extinguisher operating instructions face outward. The location of such extinguishers shall be made conspicuous by marking the cabinet or wall recess in a contrasting color which shall distinguish it from the normal decor.

i. Extinguishers shall be distributed in such a way that the amount of time needed to travel to their location and back to the fire does not allow the fire to get out of control. OSHA requires that the travel distance for Class A and Class D extinguishers not exceed 75 feet. The maximum travel distance for Class B extinguishers is 50 feet because flammable liquid fires can get out of control faster than Class A fires. There is no maximum travel distance specified for Class C extinguishers, but they shall be distributed on the basis of appropriate patterns for Class A and B hazards.

NOTE: *It is recommended that the maximum travel distance to any extinguisher not be more than 50 feet*.

j. Once an extinguisher is selected, purchased and installed, it is the responsibility of the Station Manager or his/her designee to oversee the inspection, maintenance and testing of fire extinguishers to ensure that they are in proper working condition and have not been tampered with or physically damaged.

k. Portable fire extinguishers shall be visually inspected monthly and be documented using a tag. The monthly inspection shall include such items as:

(1) Ensuring the pressure has not leaked from the extinguisher if a pressure gauge is present.

(2) Inspecting the hose of the extinguisher to ensure it is not cracked, torn or dry rotted.

(3) Ensuring the outlet nozzle is not blocked by a foreign object.

(4) Ensuring that the extinguisher is not blocked.

(5) Ensuring that the extinguisher is properly mounted.

(6) Vehicle-mounted extinguishers shall be turned upside down and shaken vigorously to help prevent the powder in the extinguisher from compacting and caking due to vibration from the vehicle.

(7) Ensuring that the shell of the extinguisher is not corroded or physically damaged.

(8) If applicable, ensuring that safety pull pins are in place.

l. An annual maintenance check of fire extinguishers shall be performed. This check shall include the following:

(1) The mechanical parts of the extinguisher.

(2) The extinguishing agent used.

(3) The means by which the agent is expelled.

NOTE: *An internal examination of non-rechargeable, carbon dioxide or stored pressure fire extinguishers is not required during the annual maintenance check. However, stored pressure extinguishers with a loaded stream shall be disassembled on an annual basis.*

m. A written record of the annual maintenance check shall be maintained for one year. This is best accomplished with a tag placed upon the extinguisher by the service contractor performing the check.

n. Fire extinguishers shall be hydrostatically tested at periodic intervals based upon the type of extinguisher. Attachment A provides the hydro-static test intervals for the various type of fire extinguishers.

o. Where portable fire extinguishers are provided for employee use, an educational program shall be provided to familiarize all employees with the general principles of fire extinguisher use and the hazards involved with incipient-stage fire fighting. The education program (e.g., videotapes, Fire Department training, etc.) shall be provided upon initial employment and at least annually thereafter.

6.3.2 <u>Fire Prevention Plan</u>.

a. Each facility shall develop and maintain a written Fire Prevention Plan (See Attachment C: Fire Prevention Plan Template) which, at a minimum, contains the following elements:

(1) A list of the major workplace fire hazards and their proper handling and storage procedures.

(2) Potential ignition sources (such as smoking, hot surfaces, welding and others) and their control procedures.

(3) A list of the types of fire protection equipment or systems which can control fires involving the major workplace fire hazards.

(4) Names or job titles of the individual(s) responsible for maintenance and inspection of fire protection/detection equipment or systems.

(5) Names or job titles of the individual(s) responsible for controlling potential fuel sources that may create a fire hazard.

(6) A list of flammable/combustible materials.

(7) Procedures for handling, storage and disposal of flammable and combustible waste materials.

b. Employees shall be given awareness training to apprize them of the potential fire hazards associated with materials and processes which they are exposed to in their work area. This training shall be given upon initial assignment.

c. A written record of the training and attendance shall be maintained.

d. A written maintenance schedule shall be established to ensure thermostats and thermal overload devices on heat producing equipment are regularly inspected and maintained to prevent accidental ignition of combustible materials and included as part of the Fire Prevention Plan.

e. The written Fire Prevention Plan shall be kept in the workplace and made available for employee review.

f. Upper Air issues related to hydrogen fire prevention shall be addressed in accordance with WSOM draft, Chapter B-45. Employees involved in maintenance of Upper Air Sites shall receive training in accordance with WSOM draft, Chapter B-45.

6.3.3 General Fire Prevention Guidelines. The following guidelines shall be followed at all NWS facilities and associated sites to help reduce the potential for fire at these locations:

a. Flammable material shall be stored and used in accordance with NWS Occupational Safety and Health Procedure 16, “Flammable and Combustible Liquid Storage.”

b. Materials such as oily rags shall be collected in fire-safe container and disposed of properly by a licensed contractor.

c. Electrical circuits shall not be loaded beyond their rated capacity.

d. Equipment with frayed or damaged electrical cords or plugs shall be removed from service.

e. Portable electric heating devices shall be in good physical condition and be UL listed. The manufacturer's recommendations for clearances shall be followed when these devices are in use.

f. Combustible materials shall not be stored under stairways or in exit ways.

g. Spills of combustible or flammable materials shall be cleaned up immediately. Contaminated materials shall be disposed of properly in accordance with Procedure #7, "Hazard Communication."

h. Smoking is not permitted within 50 feet of flammable material storage areas.

i. Fire hydrants, building fire department connections and other fire suppression related fixtures shall be kept clear of plants, materials and other items that may block their access.

j. Monthly inspections shall be conducted for egress paths, combustible loadings, chemical storage and general facility conditions.

6.3.4 Emergency Alarm/Notification Systems. NWS facilities with more than ten employees shall have an alarm system to warn employees of workplace emergencies. The following criteria not only apply to fire alarms but also to alarms used to notify employees of other workplace emergencies.

a. The alarm shall be capable of being seen and/or heard above ambient light and noise levels in the work area. Sight- or hearing-impaired individuals may be notified by flashing lights, vibrating devices, air fans or other tactile devices.

NOTE:	Individual smoke detectors that do not report to a central alarm panel or are not interconnected in such a way that when one detector activates all detectors alarm, shall be able to be heard in rooms or hallways adjacent to the location in which the detector is installed.

b. Communication systems such as intercoms and telephones may serve as an employee alarm system provided that all emergency messages have priority over all non-emergency messages.

c. If the ringer on a telephone system is used as an employee alarm, the ring shall be distinctive and recognizable as a signal to evacuate the work area.

d. Employees shall be made aware of, and instructed in the proper use of, the preferred means of reporting emergencies such as pull-boxes, telephones, public address systems, etc.

e. When the telephone system is used as the preferred method of reporting emergencies, emergency numbers shall be posted near telephones, employee notice boards and other conspicuous locations.

f. All devices, components, combination of devices or systems constructed and installed to act as an employee alarm system shall be approved by their appropriate agency or organization.

g. All alarm systems shall be maintained in operating condition except when undergoing repairs or maintenance.

h. A test of the reliability and adequacy of non-supervised employee alarm systems shall be made every two months.

i. Power supplies shall be maintained as often as necessary to assure the alarm system is fully operational. A back-up means of alarm such as employee runners shall be provided when systems are out of service.

j. Alarm circuitry that is capable of being supervised and installed after January 1, 1981, shall be supervised and shall provide positive notification whenever a deficiency exists in the system.

k. All supervised alarm systems shall be tested at least annually for reliability and adequacy.

l. Manually operated alarm devices such as pull-boxes shall be unobstructed, conspicuous and readily accessible.

m. Fire drills shall be conducted at least annually and can be done when the alarm systems are being tested.

6.3.5 Egress. Every building or structure, new or old, designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency. The design of exits and other safeguards shall be such that reliance for safety to life in case of fire or other emergency shall not depend solely on any single safeguard; additional safeguards shall be provided for life safety in case any single safeguard is ineffective due to some human or mechanical failure.

a. Every building or structure shall be provided with an adequate number of exits to ensure all individuals have a quick direct route of escape in an emergency and to avoid undue danger to the lives and safety of the individuals from fire, smoke, fumes or resulting panic during the period of time reasonably necessary to escape the building.

b. Emergency lighting shall be provided in the event power and/or illumination is lost during an emergency situation to allow for a safe means of egress.

c. Exits shall be arranged and maintained to provide free and unobstructed egress from all parts of the building at all times when it is occupied.

d. Doors shall be designed to allow free escape from the inside of the building during an emergency.

e. Exits shall be clearly visible and marked along their entirety in such a manner that the direction for escape from any point in the building is unmistakable to all occupants. Attachment B provides criteria for the placement of exit signs.

f. All normally occupied work areas shall have a minimum of two exits from the area, and the exits shall be arranged in such a manner to minimize the threat of both exits being blocked by one fire or other emergency condition. An exit is defined as a means of egress which is separated from all other spaces of the building or structure by construction or equipment placement. For example, an office building with a central hallway with offices on each side would use the hallway as the start of the exit. The office is not considered part of the exit.

NOTE: *WSR-88D Radar sites, Wind-profiler sites and Upper Air Inflation buildings are not considered normally occupied work areas.*

g. Exit doors serving more than fifty people shall swing out with exit travel and not open in against the flow of people.

h. Exits shall not require individuals to travel from a low hazard content area through a ordinary hazard content area or from a low hazard content area through a high hazard content area to the exit discharge. For example, travel from an office area through an electrical room to the outside as part of the exit way is not permitted.

i. The means of egress, exit, exit way and exit discharge shall all be constructed to meet the requirements of the applicable local building codes or NFPA 101 "Life Safety Code."

j. Corridors in Office Occupancies shall feed into an exit, or another corridor, and be at least 44 inches wide. All aisles between modular office partitions that serve more than 12 people shall be considered corridors and shall meet this requirement. All aisles between modular office partitions that serve 12 or fewer people shall be called aisles (see "k" below).

k. All aisles in Industrial Occupancies and between modular office partitions that serve 12 or fewer people shall be at least 36 inches wide except:

(1) For projections, not to exceed 3.5 inches, and less than 42 inches in height.

(2) Facilities built prior to 1988 may have aisles 28 inches wide.

l. All aisles between movable furniture or modular office partitions that typically serve 6 or fewer people shall be at least 28 inches wide.

m. Doorways and cubicle entryways shall be at least 28 inches wide.

n. All exits shall discharge directly to the street, or to a yard, court or other open space that gives safe access to a public way. The area to which the exit discharges shall be of adequate width and size to provide all persons leaving the building with ready and safe access to the street.

o. The exit discharge and exterior way of exit shall be kept clear of accumulations of snow and ice or other materials that impede its usage.

p. ADA Accessibility Guidelines for Buildings and Facilities shall follow Section 4, "Accessible Elements and Spaces: Scope and Technical Requirements."

6.4 Quality Control

6.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarter facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

6.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

6.4.3 NWS Headquarters (NSWH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

6.5 Responsibilities

6.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall ensure that fire extinguishers are properly located, tested, and maintained at the regional headquarters facilities and operating unit facilities.

c. Shall ensure that a written fire protection plan is developed and maintained at the regional headquarters facilities and operating unit facilities.

d. Shall ensure employee alarm systems are installed, tested, and maintained at the regional headquarters facilities and operating unit facilities.

6.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that fire extinguishers are properly located, tested, and maintained.

c. Shall ensure that a written fire protection plan is developed and maintained.

d. Shall ensure employee alarm systems are installed, tested, and maintained.

e. Shall ensure that initial and periodic inventory of fire extinguishers, emergency lights and other safety equipment is accomplished and adequate stock is maintained.

6.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

6.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

6.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

6.6.1 American National Standards Institute, as applicable.

6.6.2 National Fire Protection Association, NFPA 10, "Fire Extinguishers."

6.6.3 National Fire Protection Association, NFPA 70, "National Electrical Code."

6.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.38, "Employee Emergency Plans and Fire Prevention Plans."

6.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.157, "Portable Fire Extinguishers."

6.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.164, "Fire Detection Systems."

6.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.165, "Employee Alarm Systems."

6.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart L, Appendix A, "Fire Protection."

6.6.9 NWS Occupational Safety and Health Procedure 5, "Emergency Action Plan."

6.6.10 Americans with Disabilities Act (ADA) Section 4, "Accessible Elements and Spaces: Scope and Technical Requirements."

6.7 Attachments

Attachment A. Fire Extinguisher Hydrostatic Test Frequency

Attachment B. Exit Marking and Placement Criteria

Attachment C. Fire Prevention Plan Template

Attachment D: Fire Prevention Plan (WFO Springfield, MO)

ATTACHMENT A

Fire Extinguisher Hydrostatic Test Frequency

Type of Extinguisher	Hydro-static Test Interval (years)
Soda acid (soldered brass shells)	(1)
Soda acid (stainless steel shell)	5
Cartridge operated water and/or antifreeze	5
Stored pressure water and/or antifreeze	5
Wetting agent	5
Foam (soldered brass shells)	(1)
Foam (stainless steel shell)	5
Aqueous Film Forming foam (AFFF)	5
Loaded stream	5
Dry chemical with stainless steel	5
Carbon Dioxide	5
Dry chemical, stored pressure, with mild steel, brazed brass or aluminum shells	12
Dry chemical, cartridge or cylinder operated, with mild steel shells	12
Halon 1211	12
Halon 1301	12
Dry powder, cartridge or cylinder operated with mild steel shells	12
(1) Extinguishers having shells constructed of copper or brass joined by soft solder or rivets shall be removed from service.	

ATTACHMENT B

Exit Marking and Placement Criteria

B.1 Exit Marking. Exits shall be marked by a readily visible sign. Access to exits shall be marked by readily visible signs in all cases where the exit or way to reach it is not immediately visible to the occupants.

a. Any door, passage or stairway which is neither an exit nor a way of exit access and which is so located or arranged as to be likely to be mistaken for an exit, shall be identified by a sign reading "No Exit" or shall be identified by a sign indicating its actual character such as "To Basement," "Storeroom," "Linen Closet." "No Exit" signs shall not be illuminated.

b. Every sign designating an exit or way of exit access shall be readily visible and distinguishable from its background.

c. A sign reading "Exit" with an arrow indicating the directions shall be placed in every location where the direction of travel to reach the nearest exit is not immediately apparent.

d. Every exit sign shall be suitably illuminated by a reliable light source giving a value of not less than 5-foot candles on the illuminated surface. The light source shall continue to illuminate the sign for a minimum of 90 minutes in the event of a power outage.

e. Exits signs shall remain illuminated when normal illumination in the area is reduced.

f. Every exit sign shall have the word "Exit" in plainly legible letters not less than 6 inches high, with the principal strokes of letters not less than ¾-inch wide.

g. If the direct means to an exit is readily apparent, an exit sign is not required. For example, a room with one door leading directly to the outside would not require an exit sign.

ATTACHMENT C

Fire Prevention Plan *(template)*

FIRE PREVENTION PLAN

for

Facility Name _____

Facility Address _____

DATE PREPARED: _____

LIST OF MAJOR FIRE HAZARDS

The following materials and equipment (check applicable) are present on site and can become the potential fire hazards when handled improperly or if in poor working condition:

- 9 Electrical circuits, wiring and extension cords
- 9 Electrical Equipment
- 9 Coffee and tea pots
- 9 Toasters
- 9 Portable Heaters
- 9 Flammable/combustible materials
- 9 Welding equipment
- 9 Oil-soaked rags
- 9 Other_____

_____

_____

_____

FLAMMABLE/COMBUSTIBLE MATERIALS

STORAGE AND HANDLING

The following flammable/combustible materials are stored or/and used on site (List diesel fuel tanks, heating oils, gasoline, hydrogen, solvents, etc.):

Name	Quantity	Type of Container	Location

Storage:

- Flammable/combustible materials shall be stored in approved flammable storage cabinets. Flammable cabinets are located in _____
- The storage of flammable/combustible liquids shall not physically obstruct any means of egress from the building or work area.
- Rooms used for storing flammable/combustible materials should be well ventilated.
- "NO SMOKING" signs shall be posted near areas where flammable/combustible materials are stored or used.
- The minimum practical amount of flammable/combustible materials should be kept on hand.
- Flammable/combustible solvents shall be stored in the approved safety cans. Portable containers shall not exceed the maximum capacity of 5 gallons.
- Flammable paints and oils used for maintenance purpose, may be stored outside of approved storage areas if kept at the work area for less than 10 calendar days.
- Water-reactive materials shall not be stored in the same room as flammable/combustible liquids.
- Liquified petroleum storage tanks (if applicable) shall be guarded to prevent damage from moving vehicles.
- Fire extinguishers, Class B, shall be located within 10 feet from the flammable storage areas.

Handling:

- Containers of flammable and combustible liquids have to be tightly sealed.
- Combustible waste materials and residues shall be kept to a minimum and disposed of daily.
- Oil- and solvent-soaked rags shall be placed in approved waste containers.
- Spills of flammable/combustible materials shall be cleaned up immediately. Absorbent materials used for spill clean up shall be disposed of properly.
- Flammable materials shall not be used near sources of ignition (e.g., open flames, smoking, lightning, electrical and mechanical sparks, etc.).

ELECTRICAL EQUIPMENT AND FIRE PREVENTION

Any electrical equipment is a potential source of fire. The fire can be caused by short circuits, overheated equipment, and failure of current limiters, thermal sensors or other devices. To prevent these hazards, the following safety practices should be in place:

- **!** Electric wiring and equipment shall be in accordance with the current edition of the National Electrical Code, National Fire Protection Association (NFPA 70) and American National Standards Institute (ANSI) requirements.
- **!** A fuse or a circuit breaker shall not have a rating higher than specified for a circuit.
- **!** Frames of electrical equipment shall be grounded.
- **!** Electrical circuits shall not be overloaded at any time. Only one heat producing appliance may be plugged in the socket.
- **!** Wiring should be covered when joined (e.g., outlets, switches, junction boxes, etc.).
- **!** Utility lights shall be furnished with wire guards.
- **!** Electrical motors shall be kept clean and in good working condition to prevent them from overheating.
- **!** Periodic inspections of electrical equipment shall be performed to detect:
    - a. Damaged electrical cords, wiring and fittings,
    - b. Defective electric tools that spark,
    - c. Loose electrical connections,
    - d. Machinery that comes in contact with flammable materials, and
    - e. Overloaded circuits.

HOUSEKEEPING PRACTICES

The following housekeeping practices should be in place to prevent fire hazards:

- General work areas such as offices and shops must be kept orderly and free of trash.
- Discarded packing material or scrap should not be accumulated inside the buildings.
- A sufficient number of trash receptacles and waste baskets should be placed at each work area and should be emptied daily.
- Oil or chemical-soaked rags should be placed into a covered metal or other approved containers.
- Dust and debris should be kept off machinery or electrical equipment.
- Spills of flammable/combustible materials should be cleaned up promptly.
- Corridors and traffic areas shall be free of boxes or other obstructions. Care should be taken of deliveries - boxes must be kept away from traffic areas.
- Combustible materials should be minimized.

FIRE PROTECTION EQUIPMENT AND SYSTEMS

Types:

The following types of fire protection equipment and/or systems are available at the facility (check applicable):

9 **Portable Fire Extinguishers** (circle applicable and specify quantity)

a. Carbon Dioxide:_____

b. Dry Chemical_____

c. Other _____

NOTE:	Halon is still allowable but is being phased out. There are however a number of alternatives on the market.

Inspection/maintenance: Visual (Monthly) / Mechanical (Annually)

Hydrostatic testing: Carbon Dioxide - Every 5 years

Halon 1301 - Every 12 years

9 **Automatic Sprinkler Systems**

Main drain flow test: Annually

Opening of inspector's test valve: Every two years

9 **Fixed Fire Extinguishing Systems** (circle applicable)

a. Dry Chemical

b. Gaseous Agent

c. Water Spray and Foam

Inspection/maintenance: Semi-annually

(Weight and pressure check of refillable and non-refillable containers)

9 **Fire Detection Systems**

Inspection/maintenance/testing: Annually and as often as needed

Cleaning and sensitivity adjustments: At periodic intervals

Fire Alarm Systems

Maintenance and replacement of power supply: As often as needed

Testing of non-supervised alarm systems: Every two months

Testing of supervised alarm systems: Once a year

Inspection and Maintenance:

The following personnel are ultimately responsible for inspection and maintenance of fire protection equipment and/or systems.

Name or Job Title	**Type of Equipment**

The status of the fire protection equipment inspection/maintenance activities is shown below:

Type of Equipment	**Last Inspection/ Maintenance Date**	**Name and Phone Number of Contractor**

Date___/___/___

ATTACHMENT D

Fire Prevention Plan for

WFO Springfield, MO

DATE PREPARED: September, 14, 1999

LIST OF MAJOR FIRE HAZARDS

The following materials and equipment (check applicable) are present on site and can become the potential fire hazards when handled improperly or if in poor working condition:

9 Electrical circuits, wiring and extension cords.

9 Electrical Equipment

9 Coffee and tea pots

9 Toasters

9 Portable Heaters

9 Flammable/combustible materials.

9 Welding equipment.

.

9 Oil-soaked rags.

9 Other_____

_____

_____

_____

FLAMMABLE/COMBUSTIBLE MATERIALS

STORAGE AND HANDLING

The following flammable/combustible materials are stored or/and used on site (List diesel fuel tanks, heating oils, gasoline, hydrogen, solvents, etc.):

Name	Quantity	Type of Container	Location
Hornet & Wasp Killer	15 oz.	15 oz. spray can	County Warning Area
Insect Repellant	14 oz.	14 oz. spray can	County Warning Area
Isopropyl Alcohol	16 oz.	16 oz. bottle	County Warning Area
Laquer Thinner	32 oz.	32 oz. can	County Warning Area
WD-40	14 oz.	14 oz. spray can	County Warning Area
#2 Diesel Fuel	1000 gallons	1000 gallons	Generator Building
Battery Cleaner	14 oz.	14 oz. can	Generator Building
Battery Protector	4 oz.	4 oz. can	Generator Building
Isopropyl Alcohol	2 gallon	1 gallon containers	Generator Building
Kleen Glean	6oz.	6oz. Can	Generator Building
Lacquer thinner	32 oz.	32 oz. container	Generator Building
Lubricating Oil	1 quart	1 quart container	Generator Building
Spray Laquer	16 oz.	16 oz. can	Generator Building
Spray Paint	10 oz.	10 oz. can	Generator Building
Spray Paint	12 oz.	12 oz. can	Generator Building
Spray Paint	12 oz.	12 oz. can	Generator Building
Spray Paint	24 oz.	12 oz. cans	Generator Building
Torn-Lable	8 oz.	8 oz. can	Generator Building
Truck and Van Paint	11 oz.	11 oz. spray can	Generator Building
Blue Shower	1 can	1 can	On site office
Correction Fluid -	0.68 fl. oz.	0 .68 fl. oz. bottle	On site office
Daal Magnetic eye	4oz.	4oz. bottles	On site office
Freon TP-35	7oz.	7oz. bottle	On site office
Head Cleaner	2oz.	2oz. bottle	On site office
Home Best Insect	1 gallon	1 gallon jug	On site office
Klear Clean	6 oz.	6 oz. bottles	On site office
Lubricating oil	2oz.	2oz. Bottle	On site office
Park Horse	8oz.	1- 8oz. spray can	On site office

Name	Quantity	Type of Container	Location
Spray paint	33 oz.	3- 11oz. cans	On site office
StatFree Spray	96 oz.	3- 32oz. bottles	On site office
Staticide	1qt.	1- 1qt. bottle	On site office
WD-40	12.9 oz.	1- 12.9 oz. can	On site office
#2 Diesel Fuel	500 gallons	250 gallon tank	RDA Shelter
Isopropyl Alcohol	1pt.	1pt. bottle	RDA Shelter
Krylon	12 oz.	12 oz. spray can	RDA Shelter
Paint	1pt.	1pt. can	RDA Shelter
Paint	1pt.	1pt. can	RDA Shelter
Parks	32 oz.	32 oz. spray bottle	RDA Shelter
WD-40	11oz.	11oz. Spray can	RDA Shelter
Hydrogen	60 (2000 psi containers)	2000 psi containers	UAIB
WD-40	9 oz.	9 oz. spray can	UAIB
Propane	250 Gallon	250 gallon tank	WXJ-61Avilla, MO

Storage:

- Flammable/combustible materials shall be stored in approved flammable storage cabinets. Flammable cabinets are located in the generator building storage room.
- The storage of flammable/combustible liquids shall not physically obstruct any means of egress from the building or work area.
- Rooms used for storing flammable/combustible materials should be well ventilated.
- "NO SMOKING" signs shall be posted near areas where flammable/combustible materials are stored or used.
- The minimum practical amount of flammable/combustible materials should be kept on hand.
- Flammable/combustible solvents shall be stored in the approved safety cans. Portable containers shall not exceed the maximum capacity of 5 gallons.
- Flammable paints and oils used for maintenance purpose, may be stored outside of approved storage areas if kept at the work area for less than 10 calendar days.
- Water-reactive materials shall not be stored in the same room as flammable/combustible liquids.
- Liquified petroleum storage tanks (if applicable) shall be guarded to prevent damage from moving vehicles.

- Fire extinguishers, Class B, shall be located within 10 feet from the flammable storage areas.

Handling:

- Containers of flammable and combustible liquids have to be tightly sealed.
- Combustible waste materials and residues shall be kept to a minimum and disposed of daily.
- Oil- and solvent-soaked rags shall be placed in approved waste containers.
- Spills of flammable/combustible materials shall be cleaned up immediately. Absorbent materials used for spill clean up shall be disposed of properly.
- Flammable materials shall not be used near sources of ignition (e.g., open flames, smoking, lightning, electrical and mechanical sparks, etc.).

ELECTRICAL EQUIPMENT AND FIRE PREVENTION

Any electrical equipment is a potential source of fire. The fire can be caused by short circuits, overheated equipment, and failure of current limiters, thermal sensors or other devices. To prevent these hazards, the following safety practices should be in place:

- Electric wiring and equipment shall be in accordance with the current edition of the National Electrical Code, National Fire Protection Association (NFPA 70) and American National Standards Institute (ANSI) requirements.
- A fuse or a circuit breaker shall not have a rating higher than specified for a circuit.
- Frames of electrical equipment shall be grounded.
- Electrical circuits shall not be overloaded at any time. Only one heat producing appliance may be plugged in the socket.
- Wiring should be covered when joined (e.g., outlets, switches, junction boxes, etc.).
- Utility lights shall be furnished with wire guards.
- Electrical motors shall be kept clean and in good working condition to prevent them from overheating.
- Periodic inspections of electrical equipment shall be performed to detect:
    a. Damaged electrical cords, wiring and fittings,
    b. Defective electric tools that spark,
    c. Loose electrical connections,
    d. Machinery that comes in contact with flammable materials, and
    e. Overloaded circuits.

HOUSEKEEPING PRACTICES

The following housekeeping practices should be in place to prevent fire hazards:

- General work areas such as offices and shops must be kept orderly and free of trash.
- Discarded packing material or scrap should not be accumulated inside the buildings.
- A sufficient number of trash receptacles and waste baskets should be placed at each work area and should be emptied daily.
- Oil or chemical-soaked rags should be placed into a covered metal or other approved containers.
- Dust and debris should be kept off machinery or electrical equipment.
- Spills of flammable/combustible materials should be cleaned up promptly.
- Corridors and traffic areas shall be free of boxes or other obstructions. Care should be taken of deliveries - boxes must be kept away from traffic areas.
- Combustible materials should be minimized.

FIRE PROTECTION EQUIPMENT AND SYSTEMS

Types:

The following types of fire protection equipment and/or systems are available at the facility (check applicable):

9 **Portable Fire Extinguishers** (circle applicable and specify quantity)

a. Carbon Dioxide: 4

b. ABC Dry Chemical: 7

NOTE:	Halon is still allowable but is being phased out. There are however a number of alternatives on the market.

Inspection/maintenance: Visual (Monthly) / Mechanical (Annually)

Hydrostatic testing: Carbon Dioxide - Every 5 years

ABC Dry Chemical - Every 12 years

Inspection and Maintenance:

The following personnel are ultimately responsible for inspection and maintenance of fire protection equipment and/or systems.

Name or Job Title

William Davis, Meteorologist In Charge

Larry Dooley, Focal Point

The status of the fire protection equipment inspection/maintenance activities is shown below:

Type of Equipment	**Last Inspection/ Maintenance Date**	**Name and Phone Number of Contractor**
Fire Extinguisher	August 1999	Kenco Fire Equipment 831-7669

Date___/___/___

PROCEDURE 7 - Hazard Communication

Table of Contents Page

Synopsis 7-iii
Hazard Communication Checklist 7-iv

7 HAZARD COMMUNICATION 7-1
7.1 Purpose and Scope 7-1
7.2 Definitions 7-1
7.3 Procedure 7-1
7.4 Quality Control 7-1
7.5 Responsibilities 7-2
7.6 References 7-3
7.7 Addenda 7-3

ADDENDUM I: HAZARD COMMUNICATION PROGRAM KIT 7-1

SECTION A 7-A-1
Executive Summary 7-A-1

SECTION B 7-B-1
Compliance Guidance 7-B-1

SECTION C 7-C-1
National Weather Service Hazard Communication Program 7-C-1

SECTION D 7-D-1
Worksite Hazardous Chemical List 7-D-1

SECTION E 7-E-1
Labeling Information 7-F-1

SECTION G 7-G-1
Work Site Training Records 7-G-1

SECTION H 7-H-1
NWS Hazardous Chemical List Requirements 7-H-1

SECTION I 7-I-1
Material Safety Data Sheets Requirements 7-I-1

SECTION J 7-J-1
NWS Material Safety Data Sheet Request 7-J-1

SECTION K 7-K-1
Training Program 7-K-1

SECTION L 7-L-1
Cleanup and Disposal of Typical Hazardous Materials and Wastes 7-L-1
ADDENDUM II: Hazard Communication WFO Springfield, MO 7-Addendum II-1

Synopsis

The purpose of this procedure is to educate all personnel about chemical hazards in the workplace. This procedure applies to all NWS facilities, work locations, and employees.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operations versus Procedure Requirements**
  - Identify Hazardous Chemicals on site. *(B.3.2, C.1)*
  - Inspect all labels on each container containing a hazardous chemical. *(B 3.4, C.4)*
- **Develop/Obtain Documentation/Information Required for Site**
  - Prepare a list of hazardous chemicals (C.1)
  - Develop site-specific Hazard Communication Program. *(7.3.3)*
    - < Material Safety Data Sheets (MSDS) *(B.3.3, C.2.1)*
    - < Procedures for control of chemical purchases. *(B.3.2, C.3)*
    - < Training Lesson Plans. *(C.5, K)*
    - < Procedure for updating chemical list. *(B 3.2, C.1)*
    - < Procedure for contractor's compliance. *(C.10)*
- **Designate Person to Administer Hazard Communication Program Requirements**
- **Provide Local Training of Site Personnel**
  - MSDS *(C.5, K)*
  - Labeling of Hazardous Chemical Containers. *(K)*
  - Chemical Hazards in the workplace. *(C.5, K)*
  - Emergency Procedures *(C.5, K)*
  - Hazardous Materials Cleanup and Disposal. *(L)*
- **Inventory Material/Equipment (Procure as required)**
  - Container Labels. *(7.5.2b, B.3.4)*
  - Training Videos *(7.5.2b, K)*
  - Spill Cleanup Equipment. *(7.5.2b, L)*

<u>Recurring and Annual Task Requirements:</u>

- **Perform Inspections/Assessment/Testing**
  - Inspect labels on each container containing a hazardous chemical. *(B. 3.4, C.4)*
- **< Review/Update Documentation/Information required for Site**
  - Maintain a list of hazardous chemicals (C.1)
  - Update site-specific Hazard Communication Program. *(7.3.3)*
    - < Material Safety Data Sheets (MSDS) *(B.3.3, C.2.1)*
    - < Procedures for control of chemical purchases. *(B.3.2, C.3)*
    - < Training Lesson Plans. *(C.5, K)*
    - < Procedure for updating chemical list. *(B.3.2, C.1)*
    - < Procedure for contractor's compliance. *(C.10)*
- **< Provide Refresher Hazard Communication Training of Site Personnel** (C.5)
- **Inspect/Replace/Maintain Material/Equipment**
  - Container Labels. *(7.5.2b, B.3.4)*
  - Training Videos *(7.5.2b, K)*
  - Spill Cleanup Equipment. *(7.5.2b, L)*

This Page is Left Intentionally Blank

Hazard Communication Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	7.4.2				
Has a written Hazard Communication Program been developed?	7.3.3, C				
Has the Hazard Communication training been provided to all personnel?	K				
Have all affected employees read, understood and complied with the requirements of this procedure?	7.5.4a				
Has the list of hazardous chemicals been prepared and updated semi-annually?	B.3.2 C.1				
Are employees trained on hazards associated with chemicals present in the workplace and how they can protect themselves from these hazards?	K C.5				
Are all containers containing Hazardous Chemicals labeled, tagged, and include the identity and appropriate warnings of the hazardous chemical?	B.3.4 C.4				
Have facility personnel been trained on the use, interpretation and importance of labeling?	B.3.4 C.5				
Are employees trained in the use and interpretation of Material Safety Data Sheets (MSDS)?	K C.5				

Requirements	Reference	YES	NO	N/A	Comments
Are there complete and legible MSDS for all Hazardous chemicals at this facility?	B.3.3 C.2				
Are MSDS kept in a location(s) so that they are readily available to all personnel on all shifts?	B.3.3 C.2				
Are employees trained on who to contact and what to do in an emergency?	B C.5				

7 HAZARD COMMUNICATION

7.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure to educate all personnel about chemical hazards in the workplace. This procedure applies to all NWS facilities, work locations, and employees.

7.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

MSDS - Material Safety Data Sheet.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

7.3 Procedure

7.3.1 The Station Manager shall ensure that the facility implements a comprehensive Hazard Communication Program which complies with the requirements of OSHA 29 CFR 1910.1200, “Hazard Communication.”

7.3.2 Each facility shall develop a site-specific Hazard Communication Program using the template provided in Addendum I, Section C: “NWS Hazard Communication Program.”

7.3.3 The Safety or Environmental/Safety Focal Point shall oversee the implementation and maintenance of the facility’s Hazard Communication Program.

7.4 Quality Control

7.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

7.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

7.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

7.5 Responsibilities

7.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

7.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and periodic inventory of container labels, training videos, spill clean up and other safety equipment is accomplished and adequate stock is maintained.

7.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall oversee the implementation and maintenance of the facility's Hazard Communication Program.

7.5.4 Employees

a. Employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

7.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1200, "Hazard Communication."

7.7 Addenda

Addendum I: Hazard Communication Program Compliance Kit

Addendum II: Hazard Communication, WFO Springfield MO

ADDENDUM I

HAZARD COMMUNICATION PROGRAM KIT

SECTION A

Executive Summary

A standardized NWS Hazard Communication Program template is found in Section C. It meets the *minimum* OSHA requirements. A complete Hazard Communication Program can be viewed on the NWS Environmental and Safety Compliance Home Page, *http://www.oso3.nws.noaa.gov/safety/hazcom.htm*. The document can be downloaded in WP format.

The Station Manager or his/her designee (e.g., Safety or Environmental/Safety Focal Point) shall review the Hazard Communication Program template presented in Section C and fill in the blanks to include unique information about each work site. The written program shall be available for employees to review. The program consists of the following sections:

Section	Description
A	Executive Summary
B	Compliance Guidance
C	NWS Hazard Communication Program (template)
D	Worksite Hazardous Chemical List
E	Worksite Material Safety Data Sheets (MSDS)
F	Label Information (informative)
G	Worksite Training Records
H	NWS Hazardous chemical List Requirements and Sample Hazardous Chemical list form
I	Material Safety Data Sheet (MSDS) Requirements.
J	NWS Material Safety Data Sheet Requests. (1) Sample letter for requesting a MSDS. (2) Sample letter for requesting additional information about a MSDS, and (3) MSDS Request File sheet
K	Training Program.
L	Cleanup and Disposal of Typical Hazardous Materials and Wastes.

SECTION B

Compliance Guidance

B.1 Introduction. About thirty two-million workers in the United States are potentially exposed to one or more chemical hazards. There are an estimated 575,000 existing chemical products, and hundreds of new ones are being introduced annually. This poses a serious problem for exposed workers and their employers. Chemical exposure may cause or contribute to many serious health effects such as heart ailments, kidney and lung damage, sterility, cancer, burns, and rashes. Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents.

Because of the seriousness of these safety and health problems, and because many employers and employees know little or nothing about them, in 1983 the Occupational Safety and Health Administration (OSHA) issued a standard called **Hazard Communication** that applies to employers in the manufacturing sector of industry. The scope of the standard was expanded in 1987 to include employers in the non-manufacturing sector and Federal Government. The finalized standard was promulgated on August 24, 1987, and amended in March 1997. Further explanations are found in the Federal Register 52 (163): 31852-31886, August 24, 1987. The Hazard Communication Standard can be viewed:

- at http://www.osha-slc.gov/OshStd_data/1910.1200.html, or
- via link from the NWS Environmental and Safety Compliance Home Page, http://www.oso3.nws.noaa.gov/safety/hot.htm

The basic goal of the standard is to ensure that supervisors and employees know about chemical hazards and know how to protect themselves. This knowledge, in turn, should help to reduce the incidence of chemical source illnesses and injuries.

B.2 What the Standard Requires. The Hazard Communication Standard establishes uniform requirements to assure that the hazards of all chemicals imported, produced or used in U.S. workplaces are evaluated for physical and health hazards, and that the resultant hazard information and associated protective measures are transmitted to supervisors and potentially exposed employees by means of labels on containers and material safety data sheets (MSDS).

This Hazard Communication Program ensures that all National Weather Service (NWS) supervisors receive the information they need to inform and train their employees properly and to assure that employee protection programs are in place. It also provides necessary hazard information to the staff, so they can participate in, and support, the protective measures at their workplaces.

B.3 How to Comply with the Standard. The NWS Station Manager shall ensure that the field office complies with the standard and that a site-specific hazard communication program is developed. The Station Manager shall designate personnel who shall be responsible for

development and maintenance of the program. See paragraph B.3.5 for more details. The following is a process to be used by the Safety or Environmental/Safety Focal Point in developing a Hazard Communication Program unique to their office.

B.3.1 Read the Standard. See the NWS Environmental and Safety Compliance Home Page (http://www.oso3.nws.noaa.gov/safety/hot.htm) to view the Standard (29 CFR 1910.1200). Ensure that the provisions of the Standard are understood.

B.3.2 List the Hazardous Chemicals in the Workplace.

- **!** Walk around the workplace, read the labels of all the containers, and list the identity of materials that may be hazardous; the manufacturer's product name, manufacturer, quantity on hand, location where product is stored, and the work area where the product is used (see table in Section D). Be sure to include hazardous chemicals that are generated in the work operation but are not in a container (e.g., welding fumes, soldering fumes, etc.) and compressed gases.
- **!** Ensure that chemical products purchased through the Consolidated Logistics System (CLS) which are classified as hazardous are listed.
- **!** Review the chemical hazards list and determine whether any substances are exempt [see paragraph (b) of the referenced standard for exemptions], e.g., pesticides, food additives, cosmetics.
- **!** Establish a file on hazardous chemical products used in the workplace, and include copies of the latest MSDSs, and any other pertinent information.
- **!** Develop procedures to keep the list current. The Safety or Environmental/Safety Focal Point shall be responsible for maintaining the procedures. When new products are used or purchased, add them to the list. Establish purchasing procedures. See Section C, paragraph C.3, for details.

B.3.3 Obtain Material Safety Data Sheets for All Chemical Substances.

- **!** If there is no MSDS for a hazardous substance in the workplace, request a copy from the chemical manufacturer, distributor or importer as soon as possible (See Section J for a sample letter requesting an MSDS). In addition, the Internet can be used to obtain missing MSDS (e.g., http:\\hazard.com). An MSDS shall accompany or precede the shipment from a distributor or the National Logistics Support Center (NLSC) and shall be used to obtain identifying information such as the chemical name and the hazards of a particular substance.
- **!** Review each MSDS to be sure that it is complete, legible, and clearly written. The MSDS shall contain the physical and chemical properties of a substance, as well as the physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures.

See Section I for MSDS requirements, a sample MSDS, and other information.

- **!** If the MSDS is incomplete or unclear, contact the manufacturer or importer to get clarification on the missing information.
- **!** If the MSDS contains trade secret information, make sure that an emergency number is included.
- **!** Make sure the MSDS is available to facility staff, volunteer observers, contractors, and regional environmental/safety coordinators.
- **!** Upon request, allow a representative of the Assistant Secretary for Occupational Safety and Health (OSHA inspector) to see MSDS files.

B.3.4 Make Sure That All Containers Are Labeled. The manufacturers, importers or distributors are responsible for labeling containers, but both the supervisors and facility staff shall adhere to the following:

- **!** Ensure that all containers of hazardous substances in the workplace are labeled, tagged or marked and include the identity of the hazardous chemical, and the appropriate hazard warnings. Container labels for purchased chemicals shall also include the name and address of the chemical manufacturer, importer, or other responsible party.
- **!** Check all incoming shipments of hazardous chemicals to be sure that they are labeled.
- **!** If a container is not labeled, obtain a label or the label information from the **manufacturer, importer, or other responsible party** or prepare a label using information obtained from these sources. Do not try to "guess" if you are not sure what is in the container.
- **!** Do not remove or deface existing labels on containers unless the container is immediately marked with the required information.
- **!** Remove all old labels before using a container for other products.
- **!** Instruct facility staff on the importance of labeling portable receptacles into which they have poured hazardous substances. If the portable container is for their immediate use, the container does not have to be labeled; however, such a container shall be emptied after the employees leave the area.

B.3.5 Develop and Implement a Written Hazard Communication Program. This program shall include:

- **!** material safety data sheets;
- **!** container labeling and other forms of warnings;

- employee training based upon the hazardous chemicals list, MSDSs, and labeling information; and

- methods for communicating hazards and protective measures to facility staff and others.

Subsequent sections of this kit will discuss each of these steps in more detail and provide samples of the material discussed and lists of products, services, and other resources. See Section C, for the general template of the standardized NWS Hazard Communication Program. Review it, fill in the blanks and add any information specific to the site. In order to implement the Program, the Station Manager and other site supervisors shall be actively involved in the process.

If you need further assistance with program development and training, contact the DOC Regional Safety and Health Manager at the pertinent Administrative Support Center (ASC), the NWS Regional Environmental/Safety Coordinator, or the NWS Safety Officer.

B.4 **Checklist.** The following checklist can assist Station Manager in their evaluation of the Hazard Communication Program.

Yes ___ No ___ Reviewed hazardous chemicals at the worksite.

Yes ___ No ___ Established a master hazardous chemical list.

Yes ___ No ___ Obtained MSDS for each hazardous chemical in use.

Yes ___ No ___ Developed and implemented procedures to ensure that all incoming hazardous chemicals are labeled.

Yes ___ No ___ Reviewed each MSDS for completeness (is all required information there?).

Yes ___ No ___ Ensured MSDS are readily available, where necessary.

Yes ___ No ___ Prepared a written Hazard Communication Program.

Yes ___ No ___ Developed and implemented processes to communicate hazards to facility personnel.

Yes ___ No ___ Informed facility staff of protective measures for hazardous chemicals used in the workplace.

Yes ___ No ___ Alerted facility staff to other forms of warning that may be used.

NOTE:	In order to aid in the management of this procedure, only the minimum and essential hazardous materials and products should be purchased and stored.

SECTION C

National Weather Service Hazard Communication Program

The following written Hazard Communication Program has been established for:

National Weather Service Office: _____

Region: _____

Address: _____

_____

It is prepared to comply with the U.S. Department of Labor, Occupational Safety and Health and Administration Standard Title 29 Code of Federal Regulations (CFR) Part 1910 Section 1200, Hazard Communication standard requirements.

The Station Manager at this site:

(Meteorologist In Charge, Hydrologist in Charge, or Official In Charge)

is responsible for the occupational safety and health of the personnel and the Hazard Communication program at the site. Functional responsibility for the Hazard Communication Program has been delegated to:

_____(Safety or Environmental/Safety Focal Point)

name

The Safety or Environmental/Safety Focal Point shall review and update the program on a semiannual basis. This program applies to all worksites associated with (circle one):

a. Weather Forecast Office (WFO)

b. Weather Forecast Office/River Forecast Center (WFO/RFC)

c. Weather Service Office

d. Data Collection Center

e. Operating Unit (e.g., NCEP, NDBC, etc.)

f. Other

NWS employees, their designated representatives, and contractors at this site, and upon request, the Occupational Safety and Health Administration (OSHA) representatives, emergency and medical service providers have access to this written Hazard Communication Program at the following location:

The worksites listed on this page are sites where NWS personnel may be exposed to the chemical hazards under normal working conditions or during an emergency situation.

Locations Associated with the WFO or WFO/RFC			
Site Location:		**State:**	
List of the offices, WSR-88D Radar Data Acquisition (RDAs) sites, Upper Air Inflation Buildings (UAIBs), Automated Surface Observing System (ASOS) sites, National Oceanic and Atmospheric Administration (NOAA) Weather Radio, cooperative stations, transition power maintenance shelters, storage sites, etc., associated with this Weather Forecast Office (WFO) or WFO/River Forecast Center (RFC) or Operating Unit.			
Type of Facility/Description		**Location**	

C.1. Hazardous Chemical List. The Station Manager has the primary responsibility to ensure that a list of hazardous chemicals used at the field office or Operating Unit and associated sites is prepared

and kept current. The Safety or Environmental/Safety Focal Point or Station Manager's designee _____ _____shall develop and update the master hazardous chemical list semiannually. A new item shall be added on the master chemical list after the Safety or Environmental/Safety Focal Point has reviewed the material safety data sheet (MSDS) and cleared it for purchase (see paragraph C.3 for purchasing requirements). Only the Safety or Environmental/Safety Focal Point or the station manager's designated representative can update the master hazardous chemical list. Personnel in charge of associated sites are responsible for updating the site hazardous chemical list in accordance with the master list.

Section D contains a master list of all known chemical products and items containing chemicals to which employees at this site are or may be potentially exposed (e.g., via spills). Separate lists are available for RDAs, UAIBs, ASOS, NOAA Weather Radio, cooperative stations, etc. and are posted and accessible to fire department or other emergency response organization(s) personnel during emergency situations. (Local municipal fire officials may request specific arrangements for displaying the lists outside the building(s)).

The Worksite Hazardous Chemical List includes the following:

a. product/generic name, as shown on the label and MSDS (names shall be identical);

b. manufacturer's or distributer's address, and, if available, telephone number;

c. generic name;

d. operational area used;

e. quantity on hand;

f. date entered into the system;

g. National Stock Number (NSN)/Agency Stock Number (ASN), if applicable; and

h. location where used or stored.

It is recommended to have list organized alphabetically, by product name and/or by manufacturer.

C.2. Material Safety Data Sheets. MSDS provide specific information on the chemical product. OSHA requirements for MSDS and its format are described in Section E. The MSDS for all chemicals to which employees may be exposed at this site are maintained in *(circle one)*:

a. Section E

b. Under separate cover.

The Safety or Environmental/Safety Focal Point is responsible for compiling and maintaining a complete master set of MSDSs for chemical products identified on the hazardous chemical listing (see Section D). The MSDS shall be a fully completed OSHA form 174 (See Section I) or an equivalent.

For products already in use at NWS facilities for which there are no current MSDS, the Safety and Environmental/Safety Focal Point shall ensure that a corresponding MSDS is obtained from the manufacturer or vendor.

If a product is ordered through the Consolidated Logistics System (CLS), the shipment shall automatically include MSDS(s). If the MSDS is not included with a shipment, the ordering employee shall contact the National Logistics Support Center (NLSC) and request the corresponding MSDS. All purchase requisitions for new chemical products shall be reviewed and cleared by the Safety or Environmental/Safety Focal Point, as described in paragraph 3. The MSDS shall be submitted to the Safety or Environmental/Safety Focal Point, who shall assure that it contains all information required by the standard. An MSDS checklist is included in Section J.

The Safety or Environmental/Safety Focal Point shall contact a manufacturer or vendor if within a reasonable time, an MSDS has not been received, or additional clarification and research is necessary. It is advisable to contact the manufacturer's MSDS Technical Service Department first by telephone. When this approach is not successful, the Safety or Environmental/Safety Focal Point shall contact the manufacturer by letter (see Section I for sample letters requesting MSDS or additional information). A copy of the letter shall be retained to document efforts to obtain the MSDS.

The Safety or Environmental/Safety Focal Point shall ensure that an MSDS containing trade secret chemical components include the manufacturer's emergency number. The manufacturer shall disclose the identity of a trade secret component in case of medical emergency to a treating physician. If the product with a trade secret component requires monitoring or other special protective measures, industrial hygiene professionals have a right to require the identity of trade secret components. The Safety or Environmental/Safety Focal Point shall contact the DOC Regional Safety and Health Manager (RSM) at the pertinent Administrative Support Center (ASC), or the NWS Regional Environmental/Safety Coordinator for technical advice in such cases.

C.2.1 MSDS Sets to Maintain. A master MSDS set shall be maintained at the field office or Operating Unit as part of the Hazard Communication Program. Maintenance of MSDS sets at all collocated sites is recommended. Uniquely defined MSDS subsets shall be available at all remote locations and maintained by the Safety or Environmental/Safety Focal Point or other personnel designated by the Station Manager for the following sites:

- RDA,
- UAIB and/or balloon inflation launching shelter (BILS),

- ASOS
- NOAA Weather Radio
- cooperative stations (if chemical products are used)
- transition power maintenance shelter (TPMS),
- storage sites, and
- other sites associated with the facility: _____

In addition, supervisors shall ensure that applicable MSDS are available within individual work areas under their control.

Copies of MSDS can be obtained from the Safety or Environmental/Safety Focal Point.

C.3 Purchasing Requirements. Purchase orders for products that are hazardous or may contain hazardous chemicals/materials shall include a provision, or be accompanied by a written request, to the vendor or supplier that:

a. An up-to-date MSDS is provided,

b. Containers bear required identification and warning labels (see paragraph C.4 for labeling requirements), and

c. Department of Transportation (DOT) requirements for shipment are met.

Prior to the acquisition of new chemical products, the MSDS for those products shall be obtained and forwarded to the Safety or Environmental/Safety Focal Point for review in order to determine if the potential for physical and health hazards exists, and if there are any special requirements for shipment, disposal, and storage. If working with the product would present more than a minor health hazard and require special preventive measures (local exhaust, air monitoring), the usage of such a product shall be discouraged. The product shall be replaced by less hazardous alternatives, if available. NWS employees are mandated to actively search for viable replacement for hazardous products so as to replace them with environmentally 'friendly' products that are less hazardous to human health and the environment. Product cost estimates shall include all expenditures for operating and disposing of that product. This includes the costs for the initial purchase of the product as well as the use of personal protective equipment and the proper disposal of a used product or residue.

While MSDS are not required to be physically attached to a shipment, they shall accompany or precede the shipment. When the manufacturer/supplier fails to send an MSDS with a shipment, the Safety or Environmental/Safety Focal Point or his/her designee shall obtain one from the manufacturer/supplier.

When purchasing hazardous materials from the foreign companies, NWS personnel shall ensure the following:

a. Import of hazardous material(s) into the U.S. is not prohibited by any U.S. agency and/or regulations.

b. Shipment of hazardous material(s) into U.S. is performed in accordance with applicable U.S. DOT regulations.

C.4. Container Labeling and the Use of Placards. Chemical manufacturers, importers, and distributors are mandated by law to label, tag, or mark all containers leaving their plants or warehouses. Unlike the MSDS, the label is not an exhaustive description of the chemical substance. Rather, the label is meant to warn users of health and/or chemical hazards. At a minimum, labels shall list:

a. name of the chemical, and common names, if any;

b. signal word for hazard; CAUTION, DANGER, WARNING, etc., and hazard statement (see Section F for examples); and

c. the name and address of the manufacturer, importer, distributer, or responsible party.

In most cases, chemical products purchased in retail stores have the required labeling. Products purchased in bulk from wholesale distributors or supply houses are more likely to have labeling problems and, therefore, shall be thoroughly checked.

Personnel who purchase or receive shipments shall verify that each container's label contains all the information specified in subparagraphs a, b, and c. The following additional requirements shall be met:

a. the chemical name shall be identical with the one listed on the MSDS. For items ordered through CLS, there shall be a national stock number (NSN) and agency stock number (ASN) on the label;

b. labels shall be legible and in English;

c. labels shall not be defaced or otherwise damaged; and

d. container labeling shall be in conformance with hazardous material transportation regulations promulgated by Department of Transportation (DOT) and set forth in Title 49 CFR. DOT requires proper shipping name, UN ID #, and hazard labels on shipping container.

If any problems are discovered, shipments shall not be accepted, and the Safety or Environmental/Safety Focal Point shall be notified. If the problem can not be resolved locally, the NWS Regional Environmental/Safety Coordinator, the NOAA Regional Environmental Compliance Officer (RECO), or DOC Regional Safety Manager (RSM) at respective ASC shall be contacted for advice regarding further action.

Station managers and supervisors are responsible for ensuring that personnel use only labeled/marked containers. To comply with this requirement, existing unlabeled containers shall be labeled (if the content is known) and any new purchase or shipment shall be checked before the product is used.

To further ensure that employees are aware of the chemical hazards of materials used in their work areas, supervisors for each work area and/or shift shall ensure that all secondary containers are labeled. Any container label that becomes damaged shall be replaced. This label may be replaced with either an extra copy of the original manufacturer's label, with generic labels [National Fire Protection Agency (NFPA), Department of Defense (DoD)] or any hand printed in indelible ink that correctly states all data required by subparagraphs a, b, and c (see G for label samples). When transferring chemicals from one container to another (e.g., transfer of a solvent from a 5-gallon container into a 1-gallon can), the person responsible for the transfer is also responsible for the proper labeling of the new container.

Labels may not be required on temporary **portable containers** in which chemicals are:

a. transferred from labeled containers,

b. when such a container is intended for the transferring employee's immediate use,

c. the quantity does not exceed a one day supply, and

d. the container is used only when an employee is present.

If all of these conditions are not satisfied, the container shall be labeled. Care shall be taken by an employee and supervisor to assure that chemicals are not disposed into temporary containers that previously held incompatible chemicals, unless the containers are properly cleaned.

NOTE: *No flammable material may be placed into temporary containers not designated for flammables.*

Placards or signs which convey the hazard information may be posted in lieu of container labels for stationary containers within a work area which have similar content and hazards, e.g., hydrogen for generators and hydrogen storage area.

The Safety or Environmental/Safety Focal Point shall inspect container labeling at least semiannually in conjunction with the hazardous list and MSDS update. Any unlabeled containers of an unknown content and surplus chemical products shall be disposed of by a certified disposal company. There are a number of Federal and state regulations that govern the handling, transport, storage, and disposal of hazardous chemicals. Any surplusing activity shall be planned ahead including accumulation, storage, and disposal of surplus chemicals. Surplusing activities shall be coordinated with RECO and the NWS Regional Environmental/Safety Coordinator.

Pesticides, foods, food additives, colorings, drugs, and consumer products that are controlled by other federal agencies and laws do not require labeling under the OSHA Hazard Communication Standard.

C.5. Employee Training and Information. NWS personnel who (even occasionally) work with, purchase, or are potentially exposed to chemicals shall receive initial training on the Hazard Communication Program. The Safety or Environmental/Safety Focal Point shall initially receive comprehensive classroom type environmental and safety training that includes training on the requirements of the Hazard Communication Standard.

The Station Manager, along with the Safety or Environmental/Safety Focal Point shall determine which station or operating unit personnel have not yet received Hazard Communication training and need to be trained. A recommended source of training is the audio/video Federal Hazard Communication Program, specifically developed for the Federal Government personnel. More information can be found in Section K, Training Program. The Safety or Environmental/Safety Focal Point shall assume an active role in personnel training. The training program shall include the following topics:

a. an overview of the requirements contained in OSHA standard 29 CFR 1910.1200;

b. chemical and physical properties (flashpoint, reactivity, etc.) of hazardous materials and associated physical hazards (explosive, flammable, etc.);

c. health hazards, including signs and symptoms of exposure and routes of entry;

d. how to interpret labels and MSDS;

e. methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area (such as monitoring, visual appearance, or odor, etc.);

f. how to lessen or prevent exposure to the hazardous chemicals through usage of safe work practices, engineering controls (ventilation), and personal protective equipment;

g. chemicals present in the work area;

h. location and availability of the written Hazard Communication Program, hazardous chemical lists, and MSDSs; and

i. emergency procedures to follow if an employee is exposed to these chemicals.

j. spill clean up and disposal of typical NWS hazardous materials and wastes.

Each new employee who has not been trained shall receive the initial training. Upon completion of the initial training, each employee shall sign the training form (see Section G) or a form approved by the Station Manager.

When new chemicals or chemical products are introduced into the work area, the Safety and Environmental/Safety Focal Point shall:

a. review the MSDS associated with the chemical products,

b. identify potential hazards and determine hazard control requirements, if applicable, and

c. ensure that all employees working with or exposed to the hazardous chemicals are properly trained in their use.

Additional training of NWS personnel shall be done whenever a new hazard is introduced into a workplace. Refresher training shall take place based upon an evaluation by the Station Manager along with the Safety or Environmental/Safety Focal Point. The need for refresher training shall be based on the employee's demonstration that he/she has less than a thorough understanding of the Hazard Communication Program or based on personnel turnover.

C.6. Hazardous Non-Routine Tasks. Infrequently, NWS employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, affected employees shall be given information by their supervisor and the Safety or Environmental/Safety Focal Point about the hazards to which they may be exposed during such activity. If more technical advice is required, the NWS Regional Environmental/Safety Coordinator, RECO, or RSM at ASC should be contacted.

The information shall include:

- MSDS and description of other physical and health hazards,
- personal protective equipment and safety measures the employee shall use,
- measures that the Station Manager or his designee has taken to lessen the hazards associated with non-routine task, including area ventilation, assignment of a second person or safety observer, spill emergency procedures, etc.

C.7. Chemicals in Unlabeled Pipes. Work activities are often performed by employees in areas where chemicals are transferred through unlabeled pipes. Pipes are not required to be labeled; however, employees shall be informed of their content. The field office or Operating Unit may have the following unlabeled pipes: potable water, sewer, oil piping, air conditioning, equipment piping (e.g., air conditioning piping contains Freon that is asphyxiant; maintenance on such piping shall be done only by certified mechanics with specialized recovery equipment).

Prior to starting work in these areas, employees shall contact the responsible supervisor for information regarding:

- the chemical(s) in the pipes,
- potential health hazards, and
- safety precautions which shall be taken.

C.8. Station Manager Responsibilities. The Station Manager, with assistance of the site Safety or Environmental/Safety Focal Point, shall ensure that each employee has a basic knowledge of the

information contained in MSDS and an understanding of proper use of that information. The Station Manager shall ensure:

- MSDSs are available to employees in their work areas during each work shift, and
- MSDS information is provided for each hazardous chemical.

C.9. Employee Responsibilities. Successful implementation of the Hazard Communication Program depends on active involvement of personnel at the field office or Operating Unit. Every NWS employee who purchases, handles, or uses hazardous chemical products is responsible:

a. To know where to get information about the hazardous chemical labels used in the work area;

b. To read and understand the information on hazardous chemical labels and MSDS;

c. To keep the work area clean;

d. To use protective clothing and equipment, as required;

e. Not to smoke, eat, or drink around hazardous chemicals;

f. To learn the emergency procedures for the work area;

g. To follow the procedures for hazardous chemical disposal and spill cleanup;

h. To practice safe work habits; and

i. To attend required training.

C.10. On-site Contractors. When soliciting a contract, it is the Contracting Officer's Technical Representative (COTR) responsibility to inform the Contracting Officer of any possible hazards associated with work on a contract, so that notification and special conditions can be put into the solicitation prior to contract award. The site Safety or Environmental/Safety Focal Point shall advise the COTR of possible hazards that contractor employees encounter while working at an NWS facility. Contractors working at the field office or Operating Unit shall comply with the state of _____ _____ occupational safety and health regulations.
state (or no entry if state does not have an OSHA approved plan)

(Federal employees on the federal property are not governed by state OSHA).

The Contracting Officer shall obtain from a contractor a list of all chemicals the contractor intends to bring into or on to the work area (interior/exterior paint, sealants, tile or carpet adhesives, cleaning supplies, fertilizers, etc.). This includes construction as well as janitorial and landscaping contracts. A copy of the MSDS(s) shall be provided to the COTR and the Safety or Environmental/Safety Focal Point. MSDS(s) shall be posted in the work area, so that all employees affected by the contract work can have an access to them. If any engineering controls (ventilation, etc.) are required, the contractor

shall describe the method(s) that shall be used to implement these controls and a work schedule for the implementation. This information should be posted or otherwise communicated to affected personnel.

Upon notification by the COTR, the Safety or Environmental/Safety Focal Point shall advise outside contractor employees of any hazards that they may encounter at NWS facilities. Contractor employees shall be informed about the location of this Hazard Communication Program and the availability of MSDS(s). The information provided by the Government shall be sufficient to enable the contractor to satisfy his own Hazard Communication Program responsibilities as promulgated by the_____ _____State OSHA-approved plan (if applicable). state (or no entry if state does not have an OSHA approved plan)

In addition, the COTR shall ensure that contractor personnel have received Hazard Communication training in accordance with the Federal and state OSHA requirements (as applicable).

SECTION D

Worksite Hazardous Chemical List

Site/Location: _____ Region:_____

Address: _____

The following is a master chemical list of all known hazardous chemicals used at this facility. Further information on each noted chemical can be obtained by reviewing the worksite Material Safety Data Sheets (MSDS).

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location**

SECTION E

Worksite Material Safety Data Sheets

The Safety or Environmental/Safety Focal Point shall maintain a complete and accurate set of material safety data sheets (MSDS) for all hazardous chemicals included in the hazardous chemical list. A master MSDS set shall be maintained at the Weather Forecast Office (WFO) or WFO/River Forecast Center (RFC). In addition, uniquely defined sets shall be maintained and updated for:

- Radar Data Acquisition (RDA),
- Upper Air Inflation Building (UAIB) and/or Balloon Inflation Launching System (BILS),
- Automated Surface Observing System (ASOS),
- NOAA Weather Radio,
- cooperative stations,
- Transition Power Maintenance Shelter (TPMS),
- storage sites,
- housing, and
- other sites associated with the WFO or WFO/RFC.

MSDS(s) may be obtained through the manufacturer, shipping documents, NLSC, or from a web site such as: http://www.hazard.com or from the set of MSDSs compiled by the Contractor (EG&G).

SECTION F

Labeling Information

Chemical warning labels may include the following information:

Identity of the Chemical - product name, chemical name, or trade name

Signal Word - stating the degree of hazard, such as "***Caution!***", "***Warning*!"** or "***Danger*!**"

Hazard Statement - stating the major hazards, such as: "***extremely flammable***", "***explosive***", "***corrosive***", or **harmful if inhaled**"

Precautions - what to do to avoid injury or illness, such as: "***acute breathing vapors***" or "***wash thoroughly after handling***"

Instructions in Case of Exposure - first aid information for exposure to the chemical(s).

Fire, Spill, or Leak Instructions - how to put out or control fires and clean up leaks or spills.

Handling and Storage Instructions - special procedures for handling and storing chemical containers.

Antidotes - measures that can be used by medical personnel to counteract the effects of chemical exposure.

Notes to Physician - information for physician concerning exposure to the chemical(s).

Disposal Instructions - special disposal instructions may be provided on the label; however, follow state and local disposal requirements.

Examples of standard labels are found on the following pages.

HAZARDOUS CHEMICAL WARNING LABEL

1. CHEMICAL/COMMON NAME	
2. HAZARD CODE	**3. NSN/LSN**
4. PART NUMBER	
5. ITEM NAME	

7. HAZARDS (*X ALL THAT APPLY*)	(1) Acute (*Immediate*)				(2) Chronic (*Delayed*)
	NONE	**SLIGHT**	**MODERATE**	**SEVERE**	
a. HEALTH					
b. CONTACT					
c. FIRE					
d. REACTIVITY					

7. SPECIFIC HAZARDS AND PRECAUTIONS (Including Target Organ Effects)

(See MSDS for further information)

8. PROTECT (X all that apply)		a. EYES		b. SKIN		C. RESPIRATORY

9. CONTACT: a. COMPANY NAME
b. ADDRESS (*Street, P.O. Box, City, State, Zip Code and Country*)
c. EMERGENCY TELEPHONE NUMBER (Include Area Code)
10. PROCUREMENT YEAR FOR HAZARDOUS CHEMICAL

National Fire Protection Agency (NFPA) 704
Warning Diamond

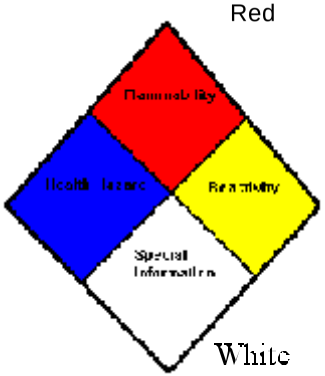
BLUE = TOXICITY

	4	3	2	1
ORAL mg/kg	<5	5-50	50-500	500-2,000
DERM mg/kg	<40	40-200	200-1,000	1,000-2,000
inhl MG/KG	<0.05	0.5-2	2-10	10-200
idhl	1,000	1,000-3,000	3,000-5,000	5,000-10,000
Definition Short term exposure results in:	Death	Serious acte injury or perm. eye damage	If exp. is intense, temp. incapac.	Any exp. leads to irritation

RED=FLAMMABILITY

	4	3	2	1
Flash Point	<73 °F	73-100 °F	100-200	>200 °F
	A Flam. Gas at STP A Liquids under pressure A Ignites in air at STP	A Liquid or solid A Ignites at STP A Expl. in air.	A Require mod. heating A Dusts, fibers	A Require lots of heating
Boiling Point	<100 °F	>100 °F		

Red



Blue

WHITE = OTHER HAZARDS

OX	Oxidizer
W	Water Reactive
	Radioactive
COR	Corrosive
ACD	Acid
AKL	Alkalai

YELLOW = REACTIVITY

4	May detonate at STP
3	Explosive (requires detonation)
2	Unstable (reacts with water)
1	Normally stable, decomposes

SECTION G

Work Site Training Records

SITE NAME: _____

_____

enter name of site, location

HAZARD COMMUNICATION

TRAINING RECORD

This certifies that

_____

Employee name

has received Hazard Communication Training as described in the Hazard Communication Program. The training was conducted on_____

date

_____

Instructor's signature

I understand the Hazard Communication Standard requirements and know where the written NWS Hazard Communication Program is located. I will perform my job in compliance with instructions contained herein.

_____ _____*Employee*

signature *date*

SECTION H

NWS Hazardous Chemical List Requirements

H.1 How to Identify Hazardous Chemicals. The responsibility for determining whether a chemical is hazardous lies with the chemical manufacturer or importer of a chemical. The chemical manufacturer or importer shall pass this information to their customers. As a user of chemicals, NWS employees have to rely on the evaluation received from these suppliers through labels on containers and material safety data sheets (MSDS). To prepare a list of the chemicals at the work site, the site shall be surveyed and the names of chemicals that have a label indicating a potential hazard shall be written down (e.g., "Flammable" or "causes skin irritation") or look for words such as: DANGER, WARNING, CAUTION, or HARMFUL on the warning label. Personnel involved in surveying the site shall also be aware of hazardous substances that are not enclosed in containers and that are generated during work operations (e.g., soldering or welding fumes, dusts, etc.) or in normal administrative tasks (e.g., copier toner, printer cartridges, or pen inks).

Check whether any of the chemicals identified during the survey are listed in the following publications:

- Title 29 Code of Federal Regulations (CFR) Part 1910, Subpart Z, Toxic and Hazardous Substances;
- The American Conference of Government Industrial Hygienists (ACGIH) latest edition of Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment; and
- The latest edition of the Annual Report on Carcinogens for suspected or confirmed carcinogens by the National Toxicology Program, or the International Agency for Research on Cancer (IARC) in the latest edition of their IARC monographs.

The Occupational Safety and Health Administration (OSHA) provides interpretations of the Act and the Hazard Communication Standard for various products, based upon users' requests. The letters requesting information and corresponding interpretations can be found on the Internet at http://www.osha-slc.gov/OSHDoc/toc_interps.html

Once the hazardous chemicals list is completed, it shall be reviewed to determine if any of the materials or chemicals are exempted by 29 CFR Part 1910.1200 paragraph (b)(6). For example, rubbing alcohol maintained at a first-aid station would be exempt under paragraph (b)(6)(vi) of the 29 CFR 1910.1200 standard because it is intended for personal use by employees. To be prudent, some employers include all chemicals even if they are exempted. In general, if there is any question regarding a particular chemical, it is best to include that chemical in the hazardous chemical list. The listing shall include all chemicals at the work site rather than rely on the exemption rule.

H.2 How to List Chemicals in the Workplace. All hazardous chemicals known to be present in the workplace shall be listed, using an identifier that appears on the appropriate MSDS and on label for the chemical. The list may also include common or trade names, Chemical Abstract Service (CAS) Registry numbers, etc. See Section D for NWS Hazardous Chemicals List requirements. The master list shall be

compiled for the entire workplace and shall include the lists developed for individual buildings associated with the facility. This master list is designed to be an inventory of all items for which an MSDS shall be obtained. It shall be a part of the written Hazard Communication program and shall be available to employees upon their request. The following list identifies most common types of potentially hazardous chemicals and chemical products that may be present at the work site:

Acids

Adhesives

Aerosols

Asbestos

Batteries

Battery fluids

Benzene

Catalysts

Caustics

Cleaning agents

Cool tar pitch

Coatings

Compressed gases such as hydrogen, propane, oxygen, etc.

Copier toner (only for those who service the copier)

Degreasing agents

Detergents

Dusts

Etching agents

Fiberglass

Flammables

Foaming resins

Fuels

Gasoline

Glues

Greases

Industrial oils

Inks

Insecticides

Janitorial supplies

Kerosene

Lacquers

Lead

Lye

Metals and welding rods used in welding

Oxalic acid

Paints

Pesticides

Plastics

Process chemicals

Resins

Sealers

Shellacs

Solders

Solvents

Strippers

Surfactants

Thinners

Varnishes

Wood preservatives

Xylene

Interpreted as Exempt, under 29 CFR 1910.1200 (b)(6)(iv)

"white out"

most office products (pens, pencils, adhesive tape)

copier toner - for those who use the copier intermittently

Typical NWS Hazardous Chemical Products

helium

hydrogen

oxygen

propane

acetylene

mercury

potassium hydroxide

lead acid batteries

AFOS toner

solvents

paints

gasoline

lubrication oils and greases

diesel fuel

dielectric oil

SECTION I

Material Safety Data Sheets Requirements

I.1 Introduction. The Material Safety Data Sheet (MSDS) is a detailed information bulletin prepared by the manufacturer or importer of a chemical that describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling, and use, emergency and first aid procedures, and control measures. Information presented in an MSDS can assist in the selection of safe products and can help to prepare employers and employees to respond effectively to daily exposure situations as well as to emergency situations.

MSDSs are a comprehensive source of information for all types of employers. There may be information on the MSDS that is not useful or important in your particular operations. Concentrate on the applicable portions. Generally, hazard information and protective measures shall be the focus of concern.

I.2 OSHA Requirements. Chemical product buyers are entitled to obtain MSDS automatically upon the purchase of the material. When new and significant information concerning a product's hazards or ways to protect against the hazards becomes available, chemical manufacturers, importers, or distributors shall add it to their MSDS within three (3) months and provide it to their customers with the next shipment. Station managers shall ensure that MSDSs for each hazardous chemical used in the workplace are available. If there are multiple suppliers of the same chemical, there is no need to retain multiple MSDSs for that chemical.

I.3 Shipments. While MSDSs are not required to be physically attached to a shipment, they shall accompany or precede the shipment. When the manufacturer/supplier fails to send an MSDS with a shipment labeled as hazardous chemical, the ordering employee shall obtain one from the chemical manufacturer, importer, or distributer as soon as possible. Similarly, if the MSDS is incomplete or unclear, the Safety or Environmental/Safety Focal Point shall contact the manufacturer or importer to obtain clarification or missing information. Section J provides a sample letter for requesting an MSDS or additional information.

I.4 Obtaining MSDS. When the Safety or Environmental/Safety Focal Point is unable to obtain an MSDS from a supplier or manufacturer, he/she shall submit a formal written complaint to the nearest OSHA area office.

I.5 Sections of an MSDS. OSHA specifies the information to be included on an MSDS, but does not provide the precise format. OSHA developed a nonmandatory OSHA Form 174, included in this section, that meets MSDS requirements. The MSDS shall be in English and, at a minimum, include the following information:

a. Section I Chemical Identity

b. Section II Hazardous Ingredients

c. Section III Physical and Chemical Characteristics

d. Section IV Fire and Explosion Hazard Data

e. Section V Reactivity Data

f. Section VI Health Hazards

g. Section VII Precautions for Safe Handling and Use

h. Section VIII Control Measures

I.5.1 Section I - Chemical Identity. The chemical and common name(s) for single chemical substances. The identify on the MSDS shall reflect the name on the label.

I.5.2 Section II - Hazardous Ingredients:

- For a hazardous chemical mixture that has been tested as a whole to determine its hazards, the chemical and common names of the ingredients that are associated with the hazards and the common name of the mixture shall be listed (for hazardous chemical mixtures that have been tested as a whole);
- chemical and common names of all ingredients determined to be health hazards and comprising 1 percent (1%) or greater of the mixture shall be listed (for hazardous chemical mixtures that have not been tested as a whole);
- chemical and common names of carcinogens shall be listed if they are present in the mixture at levels of 0.1 percent (0.1%) or greater;
- all components of a mixture that have been determined to present a physical hazard shall be listed; and
- chemical and common names of all ingredients determined to be health hazards and comprising less than 1 percent (0.1 percent for carcinogens) of the mixture shall also be listed if they can exceed established the Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV) or present a health risk to exposed employees in these concentrations.

I.5.3 Section III Physical and Chemical Characteristics. The physical and chemical characteristics of the hazardous substance shall be listed. These include such items as boiling and freezing points, density, vapor pressure, specific gravity, solubility, volatility, and the product's general appearance and odor. These characteristics provide important information for designing safe and healthful work practices.

I.5.4 Section IV Fire and Explosion Hazard Data. The compound's potential for fire and explosion shall be described. Also, the fire hazards of the chemical and the conditions under which it could ignite or explode shall be identified. Recommended extinguishing agents and fire fighting methods shall be described.

I.5.5 Section V Reactivity Data. This section shall include information about other chemicals and substances with which the chemical is incompatible, or with which it reacts. Information on any hazardous decomposition products, such as carbon monoxide, shall be included.

I.5.6 Section VI Health Hazards. The acute and chronic health hazards of the chemical, together with the signs and symptoms of exposure, shall be listed. In addition, any medical conditions that are aggravated by exposure to the compound shall be included. Specific types of chemical health hazards are defined in the standard and include carcinogens, corrosives, toxins, irritants, sensitizers, mutagens, teratogens, and effects on target organs (liver, kidney, nervous system, blood, lungs, mucous membranes, reproductive system, skin, eyes, etc.).

The primary route of entry shall be described in this section. Three principal routes are: inhalation, skin absorption, and ingestion.

The OSHA PEL, American Conference of Governmental Industrial Hygienists (ACGIH) TLV, and other exposure levels used or recommended by the chemical manufacturer.

This section shall indicate whether the compound is listed as a carcinogen (cancer causing agent) by OSHA, the National Toxicology Program (NTP) or the International Agency for Research on Cancer (IARC).

I.5.7 Section VII Precautions for Safe Handling and Use. Precautions for safe handling and use. Include recommended industrial hygiene practices, precautions to be taken during repair and maintenance of equipment, and procedures for cleaning up spills and leaks. Some manufacturers also use this section to include additional information such as the Environmental Protection Agency (EPA), state, and local requirements.

I.5.8. Section VIII Control Measures. Control measures include engineering controls (ventilation), safe handling procedures, and personal protective equipment. Information often includes the use of goggles, gloves, body suits, respirators, and face shields.

I.6 Material Safety Data Sheet Checklist. The Safety or Environmental/Safety Focal Point shall ensure that each MSDS contains all the required information on this checklist:

1. Product or chemical identity used on the label. _____
2. Manufacturer's name, address, and phone number. _____
3. Chemical and common names of each hazardous ingredient. _____
4. If the product includes a trade secret component, an emergency number and secret ID are available for the product and trade secret components. _____
5. Preparation or revision date. _____
6. Hazardous chemical's physical and chemical characteristics, such as vapor

pressure and flashpoint. _____

7. Physical hazards, including the potential for fire, explosion, and reactivity. _____

8. Known health hazards. _____

9. OSHA permissible exposure limit (PEL), ACGIH threshold limit (TLV) or other exposure limits. _____

10. Emergency and first aid procedures. _____

11. Whether OSHA, NTP, or IARC lists the ingredient(s) as a carcinogen. _____

12. Precautions for safe handling and use. _____

13. Control measures such as engineering controls, work practices, hygienic practices or personal protective equipment. _____

14. Primary routes of entry. _____

15. Procedures for spills, leaks, and clean up. _____

17. Department of Transportation (DOT) shipping name and hazard class. _____

Material Safety Data Sheet	**U.S. Department of Labor**
May be used to comply with	Occupational Safety and Health Administration
OSHA's Hazard Communication Standard,	(Non-Mandatory Form)
29 CFR 1910.1200. Standard shall be	Form Approved
consulted for specific requirements.	OMB No. 1218-0072

IDENTITY (*As Used on Label and List*)	*Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space shall be marked to indicate that.*

Section I

Manufacturer's Name	Emergency Telephone Number
Address (*Number, Street, City, State, and Zip Code*)	Telephone Number for Information
	Date Prepared
	Signature of Preparer (*optional*)

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	Other Limits	
	OSHA PEL	ACGIH
TLV Recommended %(*optional*)		

Section III - Physical/Chemical Characteristics

Boiling Point	Specific Gravity (H_2O = 1)
Vapor Pressure (mm Hg)	Melting Point
Vapor Density (AIR = 1)	Evaporation Rate (Butyl Acetate = 1)
Solubility in Water	
Appearance and Odor	

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

(Reproduce Locally) OSHA 174, Sept. 1985

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		
Incompatibility (*Materials to Avoid)*			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Section VI - Health Hazard Data

Route(s) of Entry	Information?	Skin?	Ingestion?

Health Hazards (*Acute and Chronic*)

Carcinogenicity	NTP?	IARC Monographs?	OSHA Regulations?

Signs and Symptoms of Exposure

Medical Conditions

Generally Aggravated by Exposure

Emergency and First Aid Procedures

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case of Material is Released or Spilled

Waste Disposal Method

Precautions to Be Taken in Handling or Storing

Other Precautions

Section VIII - Control Measures

Respiratory Protection (*Specify Type*)

Ventilation	Local Exhaust	Special
	Mechanical (*General*)	Other

Protective Gloves

Other Protective Clothing or Equipment	Eye Protection

Work/Hygienic Placards

Notice of Alleged Safety or Health Hazards **U.S. Department of Labor**

Occupational Safety and Health Administration

Form Approved
O.M.B. No. 1218-0064

For the General Public:

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the U.S. Department of Labor.

Section 8(f)(I) of the Williams-Steiger Occupational Safety and Health Act, 29 U.S.C. 651, provides as follows: Any employees or representative of employees who believe that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, may request an inspection by giving notice to the Secretary or his authorized representative of such violation or danger. Any such notice shall be reduced to writing, shall set forth with reasonable particularity the grounds for the notice, and shall be signed by the employees or representative of employees, and a copy shall be provided the employer or his agent no later than at the time of inspection, except that, upon request of the person giving such notice, his name and the names of individual employees referred t therein shall not appear in such copy or on any record published, released, or made available pursuant to subsection (g) of this section. If upon receipt of such notification, the Secretary determines there are reasonable grounds to believe that such violation or danger exists, he shall make a special inspection in accordance with the provisions of this section as soon as practicable to determine if such violation or danger exists. If the Secretary determines there are no reasonable grounds to believe that a violation or danger exists, he shall notify the employees or employee representative of the employees in writing of such a determination.

NOTE: Section 11 of the Act provides explicit protection for employees exercising their rights, including making safety and health complaints.

For Federal Employees:

This report format is provided to assist Federal employees or authorized representatives in registering a report of unsafe or unhealthful working conditions with the U.S. Department of Labor.

The Secretary of Labor may conduct unannounced inspections of agency workplaces when deemed necessary if an agency does not have occupational safety and health committees established in accordance with Subpart F, 29 CFR Part 1960; or in response to reports of unsafe or unhealthful working conditions upon request of such agency committees under Sec. 1-3, Executive Order 12196; or in the case of a report of imminent danger when such a committee has not responded to the report as required in Sec. 1-201(h).

INSTRUCTIONS:

Open the form and complete items 2 through 18 as accurately and completely as possible. Describe each hazard you think exists in as much detail as you can. If the hazards described in your complaint are not all in the same area, please identify where each hazard can be found at the worksite. If there is any particular evidence that supports your suspicion that a hazard exists (for instance, a recent accident or physical symptoms of employees at your site) include the information in your description. If you need more space than is provided on the form, continue on any other sheet of paper.

After you have completed the form, return it to your local OSHA office.

NOTE: It is unlawful to make any false statement, representation or certification in any document filed pursuant to the Occupational Safety and Health Act of 1970. Violations can be punished by a fine of not more than $70,000, or imprisonment of not more than six months, or by both. (Section 17(g))

OSHA-7 (Rev 1/90)

Notice of Alleged Safety or Health Hazards

U.S. Department of Labor

Occupational Safety and Health Administration

MOD	Date	**1.** Complaint Number

2. Employer Name

3. State Location (Street, City, State, Zip)

4. Mailing Address (If different) (Street, City, State, Zip)

5. Management Official	**7.** Telephone

7. Type of Business

8. Hazard Description. Describe briefly the hazard(s) which you believe exist. Include the approximate number of employees exposed to or threatened by each hazard.

9. Hazard Location *Specify the particular building or worksite where the alleged violation exists.*

10. Has this condition been brought to the attention of (Mark "X" in all that apply)

9 Employer 9 Other Government Agency

11. Please indicate your desire

9 Do not reveal my name to the Employer 9 My name may be revealed to the Employer

12. The Undersigned (Mark "X" in one box)

9 Employer 9 Federal Safety and Health Committee

9 Representative of Employees 9 Other (specify)

believes that a violation of an Occupational Safety or Health standard exists which is a job safety or health hazard at the establishment named on this form.

13. Complainant Name (Type or print name)	**14.** Telephone Number

15. Address (Address, City, State, ZIP)

17. Signature	**17.** Date

18. If you are an authorized representative of employees affected by this complaint, please state the name of the organization that you represent and your title

Organization Name	Your Title

OFFICIAL USE ONLY

19. Reporting ID	**20.** Previous Activity? 9 Yes 9 No If yes, enter Type Number	**21.** Optional complaint Number

Identification	**22.** Establishment 9	**23**. Site 9	**24. Employer ID (State's Option)**	**25**. City	**27**. County Code

Receipt Information	**27**. Received by	**28**. Send OSHA-7? 9 Yes 9 No	**29**. Date	**30**. Time AM PM	**31**. Supervisor (s) Assigned

					a.	b.

Complaint Evaluation	**34**. Evaluated by **37**. Is this a Valid Complaint? 9 Yes 9 No **37**. Formality 9 Formal 9 Non-formal **38**. 9 Migrant Farm Worker	**35**. Subject and Severity Discrimination 9 Imminent Danger / Serious / Other Safety 9 9 9 Health 9 9 9
Complaint Action	**39**. Send Letter a 9 No inspection - for Invalid Complaints 9 Too Vague or Unsubstantiated 9 Recent Inspection or Objective Evidence (Date of Inspection) 9 Not in OSHA's Jurisdiction b. 9 No Inspection - for Non-formal Complaints 9 No Imminent Danger or No Standard 9 No Direct Relation to S&H 9 Not Enough Information To Evaluate	

47. Optional Information

Type	ID	Value	Type	ID	Value

48. 9 Close Complaint

48. Comments:

CASE FILE COPY **OSHA-7 (Rev 1/90)**

SECTION J

NWS Material Safety Data Sheet Request

SAMPLE LETTER REQUESTING AN MSDS

Weather Forecast Office

National Weather Service

_____

_____

City, State Zip Code

Blitz Manufacturing Company

1923 Oak Grove Lane

Springfield, Massachusetts 02110

Gentlemen:

The Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200) requires employers to obtain material safety data sheets (MSDS) for all hazardous substances used in their facility, and to make these MSDS(s) available to employees potentially exposed to these hazardous substances.

We request a copy of the MSDS for your product listed as Part/Stock Number _____We did not receive an MSDS with the initial shipment of the _____ (list the product name) delivered to us on _____(specify date). We also request any additional information, supplementing the MSDS, or any other relevant data that your company or supplier has concerning the safety and health aspects of using this product.

Please consider this letter as a standing request to your company for any information concerning the safety and health aspects of using this product that may become known in the future. The MSDS and any other relevant information shall be sent to us within 10, 20, 30 days (select appropriate time). Delays in receiving the MSDS information may prevent use of your product. Please send the requested information to:

Mr./Mrs./Ms. _____

Safety or Environmental/Safety Focal Point

Street Address

City, State Zip Code

Please be advised that if we do not receive the MSDS on the above chemical by _____(date), we shall notify OSHA of our inability to obtain this information. It is our intent to comply with all provisions of the Hazard Communication Standard (1910.1200). Availability of MSDS(s) is integral to this effort.

Your cooperation is greatly appreciated. Thank you for your timely response to this request. If you have any questions concerning this matter, please contact Mr./Mrs./Ms. _____ at (area code) _____

Sincerely,

Safety or Environmental/Safety Focal Point

SAMPLE LETTER REQUESTING

ADDITIONAL INFORMATION ON MSDS

Weather Forecast Office

National Weather Service

_____

Street Address

_____

City, State, Zip Code

ACE Chemical Company, Incorporated

214 Capitol Drive

Richmond, Virginia 23230

Dear Mr. Winston:

In an effort to comply with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard set forth in 29 CFR 1910.1200, the National Weather Service is seeking additional information on a chemical produced by ACE Chemical Company. The material safety data sheets (MSDS) forwarded to us appear to be deficient in the following:

1. Clear-VU 210 - no health effects listed.
2. Cleanup 34 - Solvent - no physical hazard listed.

Please be advised that in order to comply with the Hazard Communication Standard and to provide adequate training for our employees, we shall have complete MSDSs, particularly for the above-named items. Thank you for timely response to this request. Your cooperation is greatly appreciated.

Sincerely,

_____

Safety or Environmental/Safety Focal Point

MSDS REQUEST FILE

Date Sent	Date Received	Chemical Name	Location(s)				
			WFO	WFO/RF	RDA	TPMS	UAIB

SECTION K

Training Program

K.1 Introduction. Training is an integral part of the Hazard Communication Program. NWS employees need to know about the hazardous materials and chemicals with which they work. They need to know whether these materials and chemicals present a risk to their safety or health, and how to minimize or eliminate such risks.

The Station Manager shall ensure that all employees receive initial Hazard Communication training and re-training, as appropriate. The following are available and recommended training resources.

K.1.1 Available Training Resources

- 3-Day Environmental Compliance with OSHA Overview Course. This course is available for the station Environmental and Safety Focal Points. It includes a section on the OSHA Hazard Communication Standard. Upon completion of the course, the Safety and Environmental/Safety Focal Points shall be able to develop the site-specific written Hazard Communication Program as well as arrange OSHA-mandated training of site personnel.
- 2-Day Refresher Environmental Compliance with OSHA Overview Course
- Video Tape, Right-to-Know Update (21 minutes). The video tapes have been purchased by NWS Headquarters Safety Office and distributed to NWS sites. The tape describes the Hazard Communication Program, MSDS, hazards of workplace chemicals, protective measures, and accident procedures and first aid.

K.1.2 Additional Training Resources

- Coastal Video Communications Corporation. Clarity Media of Coastal Video Communications Corporation developed CD-ROM training materials on the Hazard Communication Standard. The CD-ROM can be purchased through a Government Services Agency (GSA) contract number GS-02F-9309C (9/99) at:

  Coastal Video Communications Corporation

  3083 Brickhouse Course

  Virginia Beach, Virginia 23452-9942

  804-498-9014 or 800-767-7703

  FAX: 804-498-3657

  e-mail: sales@coastal.com

The CD-ROM Hazard Communication Course requires the following to operate:

Pentium PC

Small Computer System Interface (SCSI) 2 Hard Drive with 112 MB of free space

32-bit PCI bus slot operating at 33MHz

Super Video Graphics Adapter (SVGA) card

One free serial port

Windows 3.11 or later

DOS 7.0 or later

! Federal Government Hazard Communication Training Program. The Federal Government Hazard Communication Training Program provides excellent resources to help in complying with training requirements of the Hazard Communication Standard. The program includes:

The Federal Hazard Communication Training Program, Trainer's Guide;

The Federal Hazard Communication Training Program, Student's Workbook; and 90 minute videotape.

Copies of this technical program can be obtained from:

National Technical Information Service (NTIS)

5285 Port Royal Road

Springfield, Virginia 22161

NTIS No. AVA 17251KK00

Sales Desk: (703) 487-4650 8:30 am - 5:00 pm, Eastern time

This training course may be provided by an instructor in a classroom environment or as a self- study. The student workbook contains easy-to-follow directions and applicable exercises. The course includes all training sections required by the Standard. It consists of the following seven lessons:

! Lesson 1: The Federal Hazard Communication Standard

This lesson provides an introduction to the Standard issued by the Occupational Safety and Health Act, as it applies to Federal agencies. It identifies the goals of the Hazard Communication Standard and describes each of the actions required.

! Lesson 2: Chemical Forms and Exposure Hazards

This lesson describes various forms of chemical materials. It helps to recognize potential sources of exposure to chemicals in the workplace. It also describes how chemicals can enter the body when exposure occurs.

- Lesson 3: Types of Physical and Health Hazards

  Chemical materials can present physical and/or health hazards. This lesson describes specific types of chemical hazards in each category and helps in understanding the risks associated with each type of hazard.

- Lesson 4: Controlling Chemical Hazards

  This lesson introduces the ways in which chemical hazards can be controlled. It describes engineering/mechanical controls, types of personal protective equipment, and various administrative/procedural controls. It tells about ways to detect uncontrolled chemical hazards in the workplace and what to do about them.

- Lesson 5: Introduction to MSDS and MSDS Physical Hazard Information.

  Material Safety Data Sheets (MSDS) are required by law to identify chemical materials, describe important physical properties, known hazards, and required controls. This lesson shows how to use those sections of the MSDS that identify chemical materials, physical properties, physical hazards, ways of controlling physical hazards, and correct procedures to follow if a fire, spill, or leak occurs.

- Lesson 6: MSDS Health Hazard Information

  This lesson shows how to use information on the MSDS describing health hazards and protective equipment required to guard against hazard exposure. It also covers special precautions given on the MSDS, such as correct procedures for safe material handling and storage.

- Lesson 7: Using Labels and The Hazardous Chemical List.

  The Hazard Communication Standard requires every workplace to use warning labels and maintain a Hazardous Chemicals List. This lesson identifies the information that these resources shall contain and shows how to use these documents to provide protection from chemical hazards.

Additionally, NWS training shall include information on how to report leaks and spills and which entities shall be notified if a spill occurs (e.g., local fire department, local emergency planning commission, National Response Center, etc.). This is applicable to diesel oil spills, big mercury spills (broken barometers), etc. (See Section L)

K.2 Training Checklist.

		Complete	Incomplete
1.	Establish Hazard Communication training program.	_____	_____
2.	Identify employees who need training.	_____	_____
3.	Establish training program that ensures new employees are informed and trained at the time of their initial assignment and whenever new hazards are introduced.	_____	_____
4.	Inform employees of the requirements of the Hazard Communication standard.	_____	_____
5.	Inform employees of the location and availability of the written Hazard Communication Program, including the required list(s) of hazardous chemicals and Material Safety Data Sheets (MSDS).	_____	_____
7.	Inform employees of any operations in their work areas where hazardous chemicals are present.	_____	_____
7.	Train employees about the measures that can be used to protect them from the chemical hazards.	_____	_____
8.	Train employees about the physical and health hazards of the chemicals in the work area.	_____	_____
9.	Train employees about the methods to detect the presence or release of hazardous chemicals in the workplace.	_____	_____
10.	Train employees in the use of proper work practices, personal protective equipment and clothing, and other controls to reduce or eliminate their exposure to the chemicals in their work areas.	_____	_____
11.	Train employees in emergency and first aid procedures and signs of overexposure.	_____	_____
12.	Train employees to understand labeling system and MSDS and how to obtain and use the appropriate hazard information.	_____	_____

K.2 Training Checklist.

		Complete	Incomplete
13.	Establish procedures to ensure proper labeling for containers that hold hazardous chemicals.	_____	_____
14.	Establish procedures to identify and inform employees of new hazardous chemicals before they are introduced into a work area.	_____	_____
15.	Establish a way to inform employees of new hazards associated with the chemicals they already use.	_____	_____
16.	Establish a procedure to train employees involved in performing hazardous non-routine tasks (e.g., confined space entry, etc.).	_____	_____
17.	Establish procedures to evaluate the effectiveness of the training program and to keep track of personnel training.	_____	_____

SECTION L

Cleanup and Disposal of Typical Hazardous Materials and Wastes

L.1 Hazardous Materials Used in the National Weather Service:

The following is the list of hazardous materials typically used by NWS personnel:

- hydrogen (for balloon launching),
- potassium hydroxide (for hydrogen generators),
- mercury (applicable to barometers, thermostats, mercury switches, rotary joints),
- printer plotter module (PPM) toner/dispersant [Automation of Field Operations and Services (AFOS)],
- lead acid, mercury-oxide, and other batteries,
- propylene glycol when contaminated by oil (for precipitation gages),
- dielectric oil (for doppler weather surveillance radar, WSR-88D),
- solvents and degreasers,
- diesel fuel,
- paints, and
- cleaners.

The above listed hazardous materials have a potential for release during routine NWS operations. A release is defined as any spilling, leaking, pumping, emitting, emptying, discharging, injection, escaping, leaching, dumping, or disposing into the environment. The term excludes release of nuclear materials and normal application of fertilizers.

L.2 Material Safety Data Sheets (MSDS)

Material safety data sheets (MSDS) for most of hazardous materials utilized by NWS personnel acquired through the Consolidated Logistics System (CLS) are available at the National Logistics Support Center (NLSC). When ordering an item, the Safety and Environmental/Safety Focal Point shall request an MSDS unless it is already available at the site.

If any chemical product or item containing a chemical is purchased at a local specialty store, the purchaser shall ask the vendor for the MSDS. The instructions specified in the written NWS Hazard Communication Program shall be followed. Certain items in stock at NLSC are identified as potentially hazardous to human health; however, they are not assigned hazardous codes in CLS. Currently, hazardous material codes in CLS are based upon Department of Transportation classifications. Changes are proposed which include health and other environmental hazard codes. A book of MSDS(s) for items in the CLS system shall be available in the future for NWS field personnel. It is

good operational practice to obtain MSDS even for the items that do not display typical hazardous characteristics, but may present health hazards.

L.3 Small Spill Cleanup (General guidelines). The following are general steps for NWS personnel to minimize the hazards generated by a small spill of hazardous or potentially hazardous substances:

- evaluation,
- site security,
- notification,
- personal protective equipment,
- controlling the spill,
- containing the spill,
- clean up,
- waste transportation.

Each of the above steps is composed of subsections that are described below. A thorough pre-planning is necessary to ensure a safe response to hazardous materials spills.

L.3.1 Evaluation. The process of evaluation allows the situation to be sized up and the most ***immediate hazard*** to be identified. The following steps shall be followed:

- Identify spill "transportation" mechanism.

  Spill "transportation" mechanisms are routes by which the spilled material shall move. These routes may include drains, sumps, channels, ducts, and exposed soils. Consider the physical/chemical properties of the material that has been released. For instance, if the spill is a powdered material, a breeze might create a hazardous dust as particles become airborne. Liquids and heavier than air gases will tend to flow along low areas. Lighter than air gases will dissipate unless weather conditions or obstructions (such as buildings) prevent the escape of the gas.

- Identify labeling, container's material and condition, or other relevant information.

  Look for labels, especially Department of Transportation (DOT) warning labels or National Fire Protection Association (NFPA) 704 Warning Diamonds.

  Note the type and construction material of the container (e.g., open head, steel 55-gallon drum or tight head polypropylene 5-gallon can).

  If possible, note the condition of the container. Check for the following: dents, ruptures, physical damage, valve or bung leaking, and container corrosion.

- Obtain the MSDS for the product.

L.3.2 Secure the Area. In order to secure the area, barriers such as caution tape or cones may be put up. If more than one NWS employee is available, one may perform a security role, keeping other employees out of the area while a second employee notifies a supervisor.

L.3.3 Notify Supervisor(s). When the area is secured so that an unsuspecting individual shall not be harmed by chancing upon the spill, the person who discovered the spill shall notify their Safety or Environmental/Safety Focal Point and the Station Manager.

Important information that needs to be conveyed to the Safety or Environmental/Safety Focal Point and the Station Manager includes:

- exact ***location*** of the spill,
- ***volume*** of material released,
- ***rate*** of release,
- ***direction*** of spill movement, and
- ***product*** involved.

Other important information may include:

- color, appearance, and form of spilled substances (for unknowns),
- fires or ignition sources,
- chemical reactions, and
- spill running off the property.

L.3.4 Personal Protective Equipment (PPE). For hazardous materials that can be released into the environment, all potentially affected NWS employees shall have training regarding the proper use of personal protective equipment. For most small spills, the extent of personal protective equipment is limited to chemical resistant gloves, protective eye wear, possibly a respirator (air purifying), and a chemical resistant apron. Steel-toed shoes and other equipment, including non-sparking tools and chemical resistant clothing, may also be required.

L.3.5 Control the Spill. Simply closing a valve on a pipe that is upstream from the release, tightening a bung on a drum, or up-righting a container can easily control many small spills. Employees are not encouraged to take unsafe steps to control spills. For instance, no one shall attempt to upright a 55-gallon drum without assistance or without using a drum cradle.

L.3.6 Contain the Spill. Where “control the spill” refers to stopping the release at the source, “containing the spill” refers to stopping the movement of the spilled material once it has been released. Spill containment may include such things as using dikes, booms, pads, or other materials to stop the flow of the spilled chemical. Spill containment devices are typically specific for the type of chemical. For instance, a boom manufactured for petroleum spills will not be effective in the containment of a caustic material release.

The appropriate spill containment devices shall be placed in the close proximity to the area where these chemicals are stored or used. At NWS facilities, this applies to the emergency generator spill kit, or the mercury spill kit located near a barometer. A spill kit works well for this purpose and may combine the features and equipment necessary to perform spill clean up steps described in Section L.3.

L.3.7 Clean Up. Basically, there are three means of cleaning up a spill. The material may be recovered, absorbed, or neutralized. Once the spill is cleaned up, the debris generated during this operation needs to be disposed of properly. Also, any contaminated equipment (including personal protective equipment) and personnel shall be decontaminated.

- Recovery.

  The recovery of a spill requires appropriate equipment, such as a special vacuum unit. Usually, recovery requires some filtering or other means of separating out the debris from the product. For example, there is a special vacuum unit designed to vacuum mercury spills.

- Absorption.

  Absorption of a spill requires the use of a material which will not react with the spill but will soak it up, collecting it into a form which may be safely handled.

  Pads or booms made of absorbent material are commonly used (this applies to oil spills). Clay-based litters such as a kitty box litter, once commonly used, have been replaced for several reasons. First, the clay-based litters do not absorb many materials. They generate a heavy waste with high disposal cost. Also, they tend to produce dusts, which, in combination with the spilled material, may create a respiratory hazard.

- Neutralization.

  If the spilled material is corrosive (either an acid or a base), neutralizing the spill before attempting to containerize the debris may be safest.

  Acids may be neutralized with bases such as metallic carbonates (sodium carbonate is known as soda ash) and bicarbonates (sodium bicarbonate is baking soda), or lime (calcium hydroxide).

  Bases may be neutralized with acids such as acetic acid (vinegar). For example, potassium hydroxide spills shall be neutralized by a 5 percent vinegar solution.

- Disposal.

  Containment debris may meet the Environmental Protection Agency (EPA) regulatory definition of a hazardous waste or hazardous debris [as defined in the Resource Conservation and Recovery Act, (RCRA)]. If so, specific steps shall be taken to ensure the safe disposal of this waste material in accordance with applicable regulatory requirements. Many local jurisdictions have established programs for the collection of hazardous waste from small businesses, small Government facilities, households, etc. Municipal landfill or hazardous material transfer stations shall be contacted to verify if they can accept hazardous waste generated at small Government facilities.

If the debris does not meet the regulatory definition of a hazardous waste, it may be disposed of along with commercial rubbish. If there are any questions regarding the disposal of hazardous waste, the National Oceanic and Atmospheric Administration (NOAA) Regional Environmental Compliance Officer (RECO) or the State Department of Environment or the state public health officer shall be contacted by RECO. Local landfill may also be able to help with determining the best way to dispose the waste (note: accepting liquid waste is illegal for landfills).

! Decontamination.

Equipment and personnel decontamination is typically very easy. The following is a simplified overview of decontamination procedures. The actual steps taken shall be appropriate for the chemical being handled during the spill cleanup. MSDS give specific recommendations on decontamination.

a. PPE (e.g., gloves) utilized during cleanup can be thrown away (preferably with the contaminated debris). The gloves shall be inverted so that the contamination is "contained" inside the glove.

b. Respirators shall be washed with a mild soap and water, thoroughly dried, and inspected prior to storage (cartridges shall be removed in most instances). Alcohol shall not be used to clean respirators because it can degrade the face piece material. Respirators shall be stored in a clean, dry bag away from sources of heat, chemicals, light, and dust.

c. Tools may also be washed in a mild soap-and-water solution (trisodium phosphate is a very common cleaner used to decontaminate equipment).

d. If NWS personnel come into contact with chemical (skin, eyes, etc.), the affected area shall be washed, generally by using plenty of water and a mild soap (for skin). MSDS recommendations shall be followed.

e. NWS personnel involved in a spill cleanup shall be especially careful of material which may be on the soles of their shoes. The "decontamination" area shall be near the spill site to avoid tracking contamination into clean areas. Certain materials, such as leather, are difficult to decontaminate adequately.

! Reporting.

Section 304 of the Superfund Amendments and Reauthorization Act (SARA) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) require generators of waste to report a release of hazardous substance equal to or greater than reportable quantities. The release shall be reported only to the National Response Center (1-800-424-8802) and the State Emergency Response Commission. Regional Environmental/Safety Coordinator and RECO must be immediately notified when the spill occurs. This is applicable to 1 pound of mercury, 100 pounds of spent solvent (tetrachloretheylene), 1pound of polychlorinated biphenyls (PCB), and other regulated substances.

! Waste Transportation

If the field office and Operating Unit does not generate more than 100 kg (220 lbs.) of hazardous waste or 1 kg of acute waste, it is defined as a Conditionally Exempt Small Quantity Generator (CESQG). The CESQG facility is excluded from full EPA requirements applicable to hazardous waste transportation, labeling, and manifesting. However, DOT regulations apply when waste is transported to the disposal facility.

The CESQG status is applicable to each NWS office, except the National Reconditioning Center (NRC) and the National Data Buoy Center (NDBC). CESQG status may not apply to some NWS leased facilities (e.g., at universities, FAA offices, etc.). If NWS offices have CESQG status, NWS employees can self-transport small quantities of hazardous waste. Otherwise, certified waste transporters shall be used.

Hazardous materials or waste can be transported ***only in the Government vehicles***. When self-transporting the waste to a disposal/collection site, NWS personnel shall be aware that rules imposed by the Department of Transportation (DOT) and by the Environmental Protection Agency (EPA) shall be followed.

L.4 Mercury Cleanup. Mercury is a naturally occurring metal found throughout the environment as the normal breakdown of minerals in the earth's crust. Mercury is a heavy metal that, in a liquid state, can readily evaporate even at room temperature. An increase in room temperature would raise the rate of mercury evaporation. Vapors are colorless and odorless, therefore, they cannot be detected by human senses. Only mercury detectors (sniffers) can detect actual levels of mercury vapors in the surrounding air. Most exposures on the job occur as a result of inhaling mercury vapor or by getting mercury on the skin when cleaning up a spill of metallic mercury. The Occupational Safety and Health Administration (OSHA) regulates the level of mercury vapors to which workers can be exposed. That level is called the Permissible Exposure Limit (PEL) and it is 0.1 mg of mercury in one cubic meter of air. Several studies conducted at the National Institute of Safety and Health (NIOSH) showed that a short exposure to a higher level of mercury vapors is less dangerous than a prolonged exposure to a lower level of mercury vapors. NIOSH recommends a PEL of 0.05 mg of mercury in one cubic meter of air.

NWS employees can encounter mercury spills from broken thermometers, switches, old radars' rotary joints, Fortin barometers, and standard barometers.

L.4.1 Small Mercury Spills from Broken Thermometers/Mercury Switches. It is easier to clean up small mercury spills from broken thermometers and mercury switches, than larger spills from broken barometers. The level of mercury vapors from small spills will most likely not exceed the PEL, unless the spill occurs in an extremely small space without any ventilation. However, to be on the safe side, when a spill occurs, one shall lower the space temperature and ventilate the space if possible. Opening windows and using portable exhaust fans to improve ventilation is advisable.

It is required that each field office, Operating Unit, and headquarters office have a "mercury spill kit," which includes a small manual vacuum pump, a jar of mercury absorption powder, and proper eye and hands protective equipment. A kit can be purchased from Lab Safety Supply (1-800-356-0783) for approximately $155. Usage instructions are attached to the kit. The procedures for cleaning up mercury spills are as follows:

- Read the MSDS before beginning the clean up procedure.
- Wear polyethylene, rubber, or polyvinyl chloride (PVC) gloves, plastic disposal boot protectors, and safety glasses when performing a cleanup.
- Use the manual vacuum pump to vacuum a mercury puddle and droplets of mercury.
- If spill occurred on a hard surface and the removal of small droplets by vacuum pump is almost impossible, use mercury absorbent sponges to finish the clean up.
- In deep cracks mercury absorbent powder shall be wiped over the contaminated areas to ensure that all residual mercury droplets will be converted into a mercury amalgam. The amalgam then can be collected and removed.
- The removal of mercury from carpeted areas is very difficult. All visible droplets of mercury shall be picked up by a mercury vacuum pump. After that, a carpet shall be treated with a paste of mercury absorbent powder and water. The level of mercury vapors shall be checked as described in the clean up procedure for barometer spills in succeeding paragraphs.
- Mercury recovered from a spill can be stored in plastic or glass bottles. All mercury residues shall be collected into a plastic zip-lock bag. Usage of plastic bags is not sufficient if broken glass is involved.
- Sponges designed to absorb small mercury spills on hard surfaces can be used. They can be bought separately, for $16, from Lab Safety Supply. A sponge needs to be moistened and small droplets can be simply wiped up. The sponge and its container shall be properly disposed of as described below.
- If field office and Operating Unit has an arrangement with a local hazardous waste disposal company and the company handles mercury, arrange for pick up. Otherwise, find other local companies that can provide mercury pickup and disposal. Also, check with local recycling facilities if they accept small quantity of mercury.
- Arrange with your local Hazardous Material Transfer Station (usually associated with a landfill station) for mercury disposal. Many counties have program in place to accept wastes from small businesses and small federal facilities. The Hazardous Material Division at a Transfer Station usually requires advance notice for hazardous material acceptance. They will accept pure mercury as well as broken thermometers and mercury switches. To prevent any spill accidents and mishandling of waste, use proper containers and keep the appropriate MSDS on hand while transporting mercury waste.
- Always place the mercury container in a secondary container (a metal or plastic drum with a lid) to prevent any leaks or spills in case of an accident. Affix the proper label to the container:

WASTE MERCURY, UN 2809, RQ. EPA hazardous waste identification number for mercury is U151.

- When self-transporting the waste, allowed only for CESQG, the rules of DOT Title 49 of the Code of Federal Regulations, Parts 100-199 (49 CFR 100-199) shall be followed. The personnel involved in transporting hazardous waste shall receive required DOT training. Otherwise, a local certified waste transporter shall be used.

L.4.2 Large Mercury Spills from Broken Barometers. The barometers used by personnel at NWS facilities contain a large amount of mercury. The Fortin barometer contains approximately 1.6 pounds of mercury, and the standard barometer can hold up to 4-5 pounds of mercury. These amounts of mercury, if spilled over the large floor area, can evaporate rapidly even at the room temperature. Since mercury vapors present a serious health hazard, immediate spill response actions are required. Facilities that have mercury barometers shall make arrangements for emergency cleanup with the local Fire Department or local spill cleanup company. A person in charge of the spill response (e.g., Safety and Environmental/Safety Focal Point or other NWS personnel) shall attempt to contain the spill and to reduce mercury evaporation. Once the spill is contained, the Regional Environmental/Safety Coordinator, RECO, and NWS Safety Officer shall be notified.

The following steps shall be followed in case of a large mercury spill:

- Do not disturb a mercury puddle (any mercury movement will increase evaporation). Evacuate personnel if the spill is extensive, the room is small and the ventilation is poor. Isolate the spill area with signs, barriers, or tapes.
- Decrease room temperature, if possible.
- Prevent mercury vapors from entering the heating, ventilation, and air conditioning (HVAC) system by blocking return air registers.
- Ventilate area as much as possible (e.g., open windows). Use portable exhaust fans to increase air movement and to disperse the mercury vapors.
- The levels of mercury vapors in the air shall be monitored as soon as possible. A mercury sniffer is only device that can detect mercury concentration in the air surrounding the spill area. The local safety equipment rental stores shall be called to check if they have a mercury monitor available immediately. If measured mercury concentration is below 0.05 mg/m^3, the spill is contained, and the area is ventilated adequately, personnel can remain in the office. If mercury reading exceeds 0.05mg/m^3, all employees shall immediately evacuate the office.
- If you are unable to monitor the air and, therefore, assure employees safety, call a local hazardous spill cleanup company to provide emergency cleanup or local Fire Department if prior arrangements have been made. Each field office and Operating Unit shall have a list of such companies on hand. Services of the companies that can provide cleanup of barometer spill shall be used at all NWS facilities.

All NWS employees working with mercury-containing equipment need to understand that mercury presents a serious danger to their health and safety. Therefore, the mercury-containing equipment,

especially barometers, shall be handled with extreme care. In the event of a spill, the primary goal is to protect the employees from exposure to mercury vapors.

Mercury spills shall be properly reported. For example, if one pound of mercury is released into the environment (this does not apply if spill occurred within enclosed building or enclosed containment structure where there is no release to air, water, or soil), it shall be reported within 24 hours to the National Response Center (tel. 1-800-424-8802), and/or state or local environmental agencies. A respective RECO shall be contacted to report a spill.

L.5 Printer Plotter Module Toner Disposal.

L.5.1 Utilization of Safety Kleen or Other Hazardous Waste Disposal Company. Arrange for a semi annual pick up of used toner. This is a more expensive option, however, it decreases NWS liabilities. Regional headquarters have a list of Safety Kleen offices in the vicinity of each WFO or WFO/RFC. Used toner shall be stored in small double walled containers with the lid closed and properly labeled as "WASTE TONER." The date when the container was first used shall be posted. As AFOS equipment from the spin-down WFOs is decommissioned, the amount of toner/dispersant disposal effort is expected to decline.

L.5.2 Local Collection Facility. A local hazardous material transfer station may accept waste toner. If NWS facility has CESQG status, waste toner can be self-transported to such facility. According to DOT standards, the toner is classified as a combustible liquid, packing group III. Containers for transporting toner shall be no more than 1 gallon, and can be made of plastics, glass, earthenware or metal when shipped by commercial shipping companies (Federal Express, UPS, etc.). The reuse of the original containers is encouraged; otherwise, small waste drums can be used for self-transporting to the local collection facility (e.g., hazardous material transfer station). It is recommended that the container be placed in an additional outer container filled with absorbing materials. The container shall be marked:

Waste combustible liquid n.o.s.

(Isoparaphinic hydrocarbon mixture)

NA 1993

No other container labels or car placards are required when using ground transportation. Note that if the waste is transported by highway, placards are not required for vehicles carrying less than 1,000 lbs. of hazardous waste (up to two 55-gallons drums, depending upon specific weight of the substance, 8-10 lb./gallon). However, MSDS shall be placed near the container.

L.5.3 Empty Toner Container. A bottle or other container is classified as "empty" when all waste has been removed using common practices such as pouring, pumping, aspirating, etc. Bottles of toner are "legally" empty, and, therefore, not regulated when all contents have been transferred. Since original toner containers are relatively small, all toner can be removed by pouring. There shall be no visible residue on the bottom of the container. Such container is considered to be empty and , therefore, not regulated, and can be disposed into regular trash. Note that a container with residue (as is often the case with AFOS toner) is not legally "empty" and shall be disposed as a hazardous debris.

L.6 Cleanup Towels. The EPA classifies any cleanup towels as hazardous when they display "hazardous characteristics." Towels contaminated with toner, diesel fuel, and solvents display ignitable characteristics. The following is the EPA definition of ignitability:

> Non-liquids "capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burn so vigorously and persistently that it creates a hazard."

Cleanup towels soaked with the hazardous substances would meet the definition and are identified as a hazardous waste. In some states, towels contaminated with mineral oils are classified as hazardous waste. Also, some states allow the cleanup towels to be washed by industrial cleaning facility and then re-used. In any case, call the state environmental agency to determine current regulatory requirements applicable to cleanup towels. Since regulations vary so much, the best management practice would be to collect and store towels at the site and dispose of them properly. Disposal options include a municipal hazardous material transfer/collection site or a licensed disposal company. Cleanup towels contaminated with flammable or other hazardous substances shall be stored and transported in fire-safe containers. The containers shall be made from compatible materials and marked "contaminated towels." Local fire departments may require specific types of containers, colors, and labels. Contaminated towels shall not be accumulated on-site for more than 180 days.

L.7 Batteries.

The paragraphs below describe general requirements applicable to batteries. NWS personnel shall always consult with the state agency regarding current status of the rules for batteries.

L.7.1 Automotive lead acid batteries. These batteries are special hazardous waste regulated by EPA and shall be taken by NWS personnel to local collection sites or retailers for recycling.

L.7.2 Mercury-Containing and Rechargeable Batteries. Mercury-containing and Rechargeable Battery Act was passed by Congress and signed by the President in 1997.

This Act:

- Requires batteries to be labeled: "Battery shall be recycled or disposed of properly".
- Prohibits the sale of alkaline, magnesium, and carbon-zinc batteries that contain mercury and mercury oxide batteries.
- Prohibits the sale of nickel-cadmium and sealed lead-acid batteries if they are not labeled properly.

Recyclable Battery Recycling Corporation (RBRC) has been created to establish a national battery recycling program. The RBRC information service is available at 1-800-8-Battery.

L.7.3 Other Batteries. As there are so many different types of batteries used at NWS offices, it would be costly and time-consuming to conduct a laboratory test of each battery. Such tests would determine if a particular type of battery is "hazardous" (e.g., lead acid batteries). EPA does not provide data

regarding which batteries are "hazardous waste batteries." It is a good operating practice to classify all batteries as "hazardous," and dispose of them at a collection site or a recycling facility.

L.7.4 General Precautions. Batteries shall be handled in such a manner that a release of the battery's contents to the environment is prevented. Under no circumstances shall batteries be disposed of in the trash.

- Keep batteries in a closed container compatible with the content of the batteries. The container shall not show leaks, spills and damage that could cause future spills. A specialized plastic container can be purchased from commercial distributors such as:

  Lab Safety Supply

  P.O. Box 1368

  Janesville, Wisconsin 53547-1368

  Telephone: 1-800-356-0783

  http://www.labsafety.com

  New Pig

  One Pork Avenue

  Tipton, Pennsylvania 16684-0304

  Telephone: 1-800-621-7447

- Do not break up batteries or open the closed cells.

- Different batteries can be placed in the same container; however, some collection sites require batteries to be separated by type.

- Clearly mark the container: "Used battery(ies)."

L.7.5 Transporting Batteries. Arrange with a local waste disposal company to pick up the batteries for disposal/recycling. This is a preferable method of disposal. When picking up batteries by an outside contractor is not feasible, either of the two methods described below is recommended:

- Check if local department or retail specialty stores accept used batteries for recycling and obtain any specific conditions for battery acceptance. As an infrastructure for universal waste collection develops, there will be more collection sites available. When NWS employees self-transport batteries to a collection site, they become a universal waste transporters. The corresponding MSDSs shall be kept in the vehicle during transport. Small transported quantities are excluded from full regulatory requirements (e.g., vehicle placarding, shipping papers) *only when Government vehicles are used*.

- Deliver used batteries to a municipal transfer station/collection facility which may be associated with a municipal landfill.

L.8 Shipping Instructions for Decommissioned Equipment.

L.8.1 Transport of Unbroken Thermometers and Mercury Switches. The Instrument Decommissioning Plan prepared at WSH, by Engineering Division personnel, includes a requirement to return unbroken thermometers, mercury switches, and mercury batteries from equipment replaced by ASOS to NRC.

Shipping materials can be ordered from NLSC by contacting the shipping department at 1-816-926-3990. Please be prepared to provide the following information when ordering shipping materials from NLSC:

- Organizational Code
- Address of ordering unit
- Amount of items to be shipped
- ASN
- Accounting Code
- Any Special Instructions

L.8.2 Shipping Mercury Barometers. Mercury spills resulting from the breakage of barometers must be prevented by following proper shipment procedures. The procedures for preparing the barometer for shipment using Princo packing material are described below. Special packing material for the G010D barometer shall be ordered from NLSC. Packing material included all required labels and markings.

- Before removing the barometer to be shipped from its mountings, adjust the mercury column all the way up to prevent breakage or loss of vacuum during shipment. This can be done by a series of three or four turns of the cistern screw. Pause for about thirty (30) seconds between each series of turns to assure that the air has time to bleed out of the cistern. When the mercury column gets to the top of the glass tube, you will feel a marked resistance to any further turning of the cistern screw. At that point, wait about five minutes and try the cistern screw again to make sure the column is all the way up. The barometer can now be packed for shipment.
- With the barometer hanging only by the top hanger, slide the plastic bag up over it.
- Remove the barometer from the hanger.
- Remove excess air from the bag and place a tie wrap around the top of the plastic bag to seal it.
- Place the bagged barometer into a foam, rubber-lined inner carton.
- Insert the inner carton containing the bagged barometer into the cardboard sleeve by turning it upside down and sliding it into the sleeve.
- Mark “Cistern End” of the sleeved barometer.
- Place a foam end cap over each end of the sleeve and insert the sleeve into the outer carton.
- Wrap wide filament tape around the outer carton at the center and near each end.

- Mark “Cistern End” of the outer carton, and label the outer carton with “LAY FLAT” and “FRAGILE” stickers or write it with a large red felt pen.
- The barometer can now be safely shipped.
- Fill out the Shippers’ Declaration of Dangerous Goods form:

NOTE: Ask NLSC to prepare Government Bill of Lading

Proper Name:	Mercury Contained in Manufactured Articles
Class or Division:	8
UN No. :	UN 2809
Quantity and Type of Packing:	Cardboard Crate Containing 698.5 g (1.54 lb)Mercury Inside Sealed Plastic Liners
Packing Instruction:	805

ADDENDUM II

Hazard Communication WFO Springfield, MO

January 20, 2000

Section C- NATIONAL WEATHER SERVICE

HAZARD COMMUNICATION PROGRAM

The following written Hazard Communication Program has been established for:

National Weather Service Office:: Springfield, MO

Central Region

National Weather Service

National Oceanic and Atmospheric Administration

U.S. Department of Commerce

It is prepared to comply with the U.S. Department of Labor, Occupational Safety and Health and Administration Standard Title 29 Code of Federal Regulations (CFR) Part 1910 Section 1200, Hazard Communication standard requirements.

The Station Manager (Meteorologist In Charge (MIC) at this site:

William Davis (Meteorologist In Charge)

name

is responsible for the occupational safety and health of the personnel and the Hazard Communication program at the site. Functional responsibility for the Hazard Communication Program has been delegated to:

Larry Dooley (Safety or Environmental/Safety Focal Point)

name

The Safety or Environmental/Safety Focal Point shall review and update the program on a semiannual basis. This program applies to all worksites associated with (circle one):

a. Weather Forecast Office (WFO)

b. Weather Forecast Office/River Forecast Center (WFO/RFC)

NWS employees, their designated representatives, and contractors at this site, and upon request, the Occupational Safety and Health Administration (OSHA) representatives, emergency and medical service providers have access to this written Hazard Communication Program at the following location:

Hazardous Materials Reference Binder

and Station Duty Manual in the:

Operations Room Reference Library

The worksites listed on this page are sites where NWS personnel may be exposed to the chemical hazards under normal working conditions or during an emergency situation.

Locations Associated with the WFO or WFO/RFC			
Site Location:	Springfield	**State:**	Missouri
List of the offices, WSR-88D Radar Data Acquisition Subsystems (RDAs), Upper Air Inflation Buildings (UAIBs), Automated Surface Observing System (ASOS) sites, National Oceanic and Atmospheric Administration (NOAA) Weather Radio, cooperative stations, transition power maintenance shelters, storage sites, etc., associated with this Weather Forcast Office (WFO) or WFO/River Forecast Center (RFC).			

Type of Facility/Description	**Location**
National Weather Service Office	5805 W. Hwy. EE, Springfield, MO 65802-5400
Upper Air Inflation Building	same
WSR-88D (RDA bldg. and Radar dome)	same
NWS storage bldg.	same
KSGF ASOS	Springfield-Branson Regional Airport
KJLN ASOS	Joplin Regional Airport, Joplin, MO
KVIH ASOS	Rolla/Vichy Airport, MO
KUNO ASOS	West Plains, Airport, Pomona, MO

Locations Associated with the WFO or WFO/RFC			
Site Location:	Springfield	**State:**	Missouri

List of the offices, WSR-88D Radar Data Acquisition Subsystems (RDAs), Upper Air Inflation Buildings (UAIBs), Automated Surface Observing System (ASOS) sites, National Oceanic and Atmospheric Administration (NOAA) Weather Radio, cooperative stations, transition power maintenance shelters, storage sites, etc., associated with this Weather Forcast Office (WFO) or WFO/River Forecast Center (RFC).

Type of Facility/Description	**Location**
Wind profiler	near Conway, MO
NWR WXJ-46 (SGF)	Fordland, MO (KY-3 TV tower)
NWR WXJ-61 (JLN)	Avilla, MO (KAMO tower)
NWR WXM-81 (HER)	Lake Pomme-de-Terre Dam (COE tower)
NWR WXJ-90 (AIZ)	Osage Beach, MO (Sky Tech Comm. tower)
NWR WWF-76 (SUM)	Summersville, MO (Howell-Oregon Elec. Co-op tower)
Resistance “E” gage	Galena, MO
Limited Automatic Remote Collection (LARC)	River gage
	1. Eminenance, MO (co-located near Co-op)
	2. Jerome, MO (co-located near Co-op)
	3. Fulton, KS
Limited Automatic Remote Collection (LARC)	Rain gage (belongs to COE)
	4. Garrison, MO
	5. Isabella, MO (co-located near Co-op)
	6. Dora, MO (co-located near Co-op)
	7. Vanzant, MO
	8. Wassola, MO (co-located near Co-op)

Locations Associated with the WFO or WFO/RFC			
Site Location:	Springfield	**State:**	Missouri

List of the offices, WSR-88D Radar Data Acquisition Subsystems (RDAs), Upper Air Inflation Buildings (UAIBs), Automated Surface Observing System (ASOS) sites, National Oceanic and Atmospheric Administration (NOAA) Weather Radio, cooperative stations, transition power maintenance shelters, storage sites, etc., associated with this Weather Forcast Office (WFO) or WFO/River Forecast Center (RFC).

Type of Facility/Description	**Location**
	9. Willow Springs, MO
Cooperative Observing Sites	with Fisher-Porter rain gages:
	1. Columbus, KS
	2. Uniontown, KS
	3. Alley Spring, MO (at Ranger station)
	4. Appleton City, MO
	5. Bolivar, MO
	6. Cassvile, MO (at Ranger station)
	7. Dora, MO (co-located near Co-op)
	8. Lakeside, MO
	9. Lebanon, MO
	10. Licking, MO
	11. Lockwood, MO
	12. Marshfield, MO
	13. Miller, MO
	14. Mountain Grove, MO
	15. Nevada, MO (at Water Plant)
	16. Osceola, MO

Locations Associated with the WFO or WFO/RFC			
Site Location:	Springfield	**State:**	Missouri

List of the offices, WSR-88D Radar Data Acquisition Subsystems (RDAs), Upper Air Inflation Buildings (UAIBs), Automated Surface Observing System (ASOS) sites, National Oceanic and Atmospheric Administration (NOAA) Weather Radio, cooperative stations, transition power maintenance shelters, storage sites, etc., associated with this Weather Forcast Office (WFO) or WFO/River Forecast Center (RFC).

Type of Facility/Description	Location
	17. Ozard Beach, MO
	18. Lake Pomme-de-Terre Dam
	19. Rolla, MO (at University of MO Rolla)
	20. Salem, MO
	21. Senaca, MO
	22. Spring City, MO
	23. Stockton Lake Dam
	Table Rock Lake Dam
	Truman Lake & Reservoir Dam
	Vienna, MO
	West Plains, MO

C.1. Hazardous Chemical List. The Station Manager has the primary responsibility to ensure that a list of hazardous chemicals used at the WFO or WFO/RFC and associated sites is prepared and kept current. The Safety or Environmental/Safety Focal Point,

Larry Dooley, is delegated the responsibility and authority to establish and update the Safety or Environmental/Safety Focal Point)

master hazardous chemical list semiannually. A new item shall be added on the master chemical list after the Safety and Environmental/Safety Focal Point has reviewed the material safety data sheet (MSDS) and cleared it for purchase (see paragraph C.3 for purchasing requirements). Only the Safety or Environmental/Safety Focal Point or the station manager's designated representative can update the master hazardous chemical list. Personnel in charge of associated sites are responsible for updating the site hazardous chemical list in accordance with the master list.

Section D of the NWS Hazard Communication Program Kit contains a master list of all known chemical products and items containing chemicals to which employees at this site are or may be potentially exposed (e.g., via spills). Separate lists are available for RDAs, UAIBs, ASOS, NOAA Weather Radio, cooperative stations, etc. and are posted and accessible to fire department personnel during emergency situations. Local municipal fire officials may request specific arrangements for displaying the lists outside the building(s).

The Worksite Hazardous Chemical List includes the following:

a. product/generic name, as shown on the label and MSDS (names shall be identical);

b. manufacturer's or distributer's address, and, if available, telephone number;

c. generic name;

d. operational area used;

e. quantity on hand;

f. date entered into the system;

g. NSN/ASN, if applicable; and

h. location where used or stored.

C.2. Material Safety Data Sheets. MSDS provide specific information on the chemical product. OSHA requirements for MSDS and its format are described in Section E. The MSDS for all chemicals to which employees may be exposed at this site are maintained in *(circle one)*:

a. Section E

b. Under separate cover.

The Safety or Environmental/Safety Focal Point is responsible for compiling and maintaining a complete master set of MSDSs for chemical products identified on the hazardous chemical listing (see Section D). The MSDS shall be a fully completed OSHA form 174 (See Section I) or an equivalent.

For products already in use at NWS facilities for which there are no current MSDS, the Safety and Environmental/Safety Focal Point shall ensure that a corresponding MSDS is obtained from the manufacturer or vendor.

If a product is ordered through the Consolidated Logistics System (CLS), the shipment shall automatically include MSDS(s). If the MSDS is not included with a shipment, the ordering employee shall contact the National Logistics Support Center (NLSC) and request the corresponding MSDS. All purchase requisitions for new chemical products shall be reviewed and cleared by the Safety or Environmental/Safety Focal Point, as described in paragraph 3. The MSDS shall be submitted to the Safety or Environmental/Safety Focal Point, who shall assure that it contains all information required by the standard. An MSDS checklist is included in Section J.

The Safety or Environmental/Safety Focal Point shall contact a manufacturer or vendor if within a reasonable time, an MSDS has not been received, or additional clarification and research is necessary.

It is advisable to contact the manufacturer's MSDS Technical Service Department first by telephone. When this approach is not successful, the Safety or Environmental/Safety Focal Point shall contact the manufacturer by letter (see Section I for sample letters requesting MSDS or additional information). A copy of the letter shall be retained to document efforts to obtain the MSDS.

The Safety or Environmental/Safety Focal Point shall ensure that an MSDS containing trade secret chemical components include the manufacturer's emergency number. The manufacturer shall disclose the identity of a trade secret component in case of medical emergency to a treating physician. If the product with a trade secret component requires monitoring or other special protective measures, industrial hygiene professionals have a right to require the identity of trade secret components. The Safety or Environmental/Safety Focal Point shall contact the DOC Regional Safety and Health Manager (RSM) at the pertinent Administrative Support Center (ASC), or the NWS Regional Environmental/Safety Coordinator for technical advice in such cases.

C.2.1 MSDS Sets to Maintain. A master MSDS set shall be maintained at the WFO or WFO/RFC as part of the Hazard Communication Program. In addition, uniquely defined MSDS subsets shall be established and maintained by the Safety or Environmental/Safety Focal Point for the:

- RDA,
- UAIB and/or balloon inflation launching shelter (BILS),
- ASOS
- NOAA Weather Radio
- cooperative stations
- transition power maintenance shelter (TPMS),
- storage sites, and
- other sites associated with the facility.

In addition, supervisors shall ensure that applicable MSDS are available within individual work areas under their control.

Copies of MSDS can be obtained from the Safety or Environmental/Safety Focal Point.

C.3 Purchasing Requirements. Purchase orders for products that are hazardous or may contain hazardous chemicals/materials shall include a provision, or be accompanied by a written request, to the vendor or supplier that:

a. an up-to-date MSDS is provided,

b. containers bear required identification and warning labels (see paragraph C.4 for labeling requirements), and

c. Department of Transportation (DOT) requirements for shipment are met.

Prior to the acquisition of new chemical products, the MSDS for those products shall be obtained and forwarded to the Safety or Environmental/Safety Focal Point for review in order to determine if the

potential for physical and health hazards exists, and if there are any special requirements for shipment, disposal, and storage. If working with the product would present more than a minor health hazard and require special preventive measures (local exhaust, air monitoring), the usage of such a product shall be discouraged. The product shall be replaced by less hazardous alternatives, if available. NWS employees are mandated to actively search for viable replacement of hazardous products with environmentally 'friendly' products that are less hazardous to human health and the environment. Product cost estimates shall include all expenditures for operating and disposing of that product. This includes the costs for the initial purchase of the product as well as the use of personal protective equipment and the proper disposal of a used product or residue.

While MSDS are not required to be physically attached to a shipment, they shall accompany or precede the shipment. When the manufacturer/supplier fails to send an MSDS with a shipment, the Safety or Environmental/Safety Focal Point shall obtain one from the manufacturer/supplier.

When purchasing hazardous materials from the foreign companies, NWS personnel shall ensure the following:

a. Import of hazardous material(s) into the U.S. is not prohibited by any U.S. agency and/or regulations.

b. Shipment of hazardous material(s) into U.S. is performed in accordance with applicable U.S. DOT regulations.

C.4. Container Labeling and the Use of Placards. Chemical manufacturers, importers, and distributors are mandated by law to label, tag, or mark all containers leaving their plants or warehouses. Unlike the MSDS, the label is not an exhaustive description of the chemical substance. Rather, the label is meant to warn users of health and/or chemical hazards. At a minimum, labels shall list:

a. name of the chemical, and common names, if any;

b. signal word for hazard; CAUTION, DANGER, WARNING, etc., and hazard statement (see Section F for examples); and

c. the name and address of the manufacturer, importer, distributer, or responsible party.

In most cases, chemical products purchased in retail stores have the required labeling. Products purchased in bulk from wholesale distributors or supply houses are more likely to have labeling problems and, therefore, shall be thoroughly checked.

Personnel who purchase or receive shipments shall verify that each container's label contain all the information specified in subparagraphs a, b, and c. The following additional requirements shall be met:

a. the chemical name shall be identical with the one listed on the MSDS. For items ordered through CLS, there shall be a national stock number (NSN) and agency stock number (ASN) on the label;

b. labels shall be legible and in English;

c. labels shall not be defaced or otherwise damaged; and

d. container labeling shall be in conformance with hazardous material transportation regulations promulgated by Department of Transportation (DOT) and set forth in

   Title 49 CFR. DOT requires proper shipping name, UN ID #, and hazard labels on shipping container.

If any problems are discovered, shipments shall not be accepted, and the Safety or Environmental/Safety Focal Point shall be notified. If the problem can not be resolved locally, the NWS Regional Environmental/Safety Coordinator, the RECO, or DOC RSM at ASC shall be contacted for advice regarding further action.

Station managers and supervisors are responsible for ensuring that personnel use only labeled/marked containers. To comply with this requirement, existing unlabeled containers shall be labeled (if the content is known) and any new purchase or shipment shall be checked before the product is used.

To further ensure that employees are aware of the chemical hazards of materials used in their work areas, supervisors for each work area and/or shift shall ensure that all secondary containers are labeled. Any container label that becomes damaged shall be replaced. This label may be replaced with either an extra copy of the original manufacturer's label, with generic labels [National Fire Protection Agency (NFPA), Department of Defense (DoD)] or any hand printed in indelible ink that correctly states all data required by subparagraphs a, b, and c (see G for samples). For help with labeling, supervisors shall call the Safety and Environmental/Safety Focal Point at the Central Office. When transferring chemicals from one container to another (e.g., transfer of a solvent from a 5 gallon container into a 1 gallon can), the person responsible for the transfer is also responsible for the proper labeling of the new container.

Labels may not be required on temporary **portable containers** in which chemicals are:

a. transferred from labeled containers,

b. when such a container is intended for the transferring employee's immediate use,

c. the quantity does not exceed a one day supply, and

d. the container is used only when an employee is present.

If all of these conditions are not satisfied, the container shall be labeled. Care shall be taken by an employee and supervisor to assure that chemicals are not disposed into temporary containers that previously held incompatible chemicals, unless the containers are properly cleaned.

Note: *No flammable material may be placed into temporary containers not designated for flammables.*

Placards or signs which convey the hazard information may be posted in lieu of container labels for stationary containers within a work area which have similar content and hazards, e.g., hydrogen for generators and hydrogen storage area.

The Safety or Environmental/Safety Focal Point shall inspect container labeling at least semiannually in conjunction with the hazardous list and MSDS update. Any unlabeled containers of an unknown content and surplus chemical products shall be disposed of by a certified disposal company. There are a number of Federal and state regulations that govern the handling, transport, storage, and disposal of

hazardous chemicals. Any surplusing activity shall be planned ahead including accumulation, storage, and disposal of surplus chemicals. Surplusing activities shall be coordinated with RECO and the NWS Regional Environmental/Safety Coordinator.

Pesticides, foods, food additives, colorings, drugs, and consumer products that are controlled by other federal agencies and laws do not require labeling under the OSHA Hazard Communication Standard.

C.5. Employee Training and Information. NWS personnel who (even occasionally) work with, purchase, or are potentially exposed to chemicals shall receive initial training on the Hazard Communication Program. The Safety or Environmental/Safety Focal Point shall initially receive comprehensive classroom type environmental and safety training that includes training on the requirements of the Hazard Communication Standard.

The Station Manager, along with the Safety or Environmental/Safety Focal Point shall determine which WFO or WFO/RFC personnel have not yet received Hazard Communication training and need to be trained locally. A recommended source of training is the audio/video Federal Hazard Communication Program, specifically developed for the Federal Government personnel. More information can be found in Section K, Training Program and Appendix IV, References. The Safety or Environmental/Safety Focal Point shall assume an active role in personnel training. The training program shall include the following topics:

a. an overview of the requirements contained in OSHA standard 29 CFR 1910.1200;

b. chemical and physical properties (flashpoint, reactivity, etc.) of hazardous materials and associated physical hazards (explosive, flammable, etc.);

c. health hazards, including signs and symptoms of exposure and routes of entry;

d. how to interpret labels and MSDS;

e. methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area (such as monitoring, visual appearance, or odor, etc.);

f. how to lessen or prevent exposure to the hazardous chemicals through usage of safe work practices, engineering controls (ventilation), and personal protective equipment;

g. chemicals present in the work area;

h. location and availability of the written Hazard Communication Program, hazardous chemical lists, and MSDSs; and

i. emergency procedures to follow if an employee is exposed to these chemicals.

Each new employee that has not been trained shall receive the initial training. Upon completion of the initial training, each employee shall sign the training form (see Section G) or a form approved by the Station Manager.

When new chemicals or chemical products are introduced into the work area, the Safety and Environmental/Safety Focal Point shall:

- review the MSDS associated with the chemical products,

- identify potential hazards and determine hazard control requirements, if applicable, and
- ensure that all employees working with or exposed to the hazardous chemicals are properly trained in their use.

Training of NWS personnel shall be done whenever a new hazard is introduced into a workplace. Refresher training shall take place based upon an evaluation by the Station Manager along with the Focal Point. The need for refresher training shall be based on employee demonstration that he.she has a thorough understanding of the Hazard Communication Program or based on personnel turnover.

C.6. Hazardous Non-Routine Tasks. Infrequently, NWS employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, affected employees shall be given information by their supervisor and the Safety or Environmental/Safety Focal Point about the hazards to which they may be exposed during such activity. If more technical advice is required, call the NWS Regional Environmental/Safety Coordinator, RECO, or RSM at ASC.

The information shall include:

- MSDS and description of other physical and health hazards,
- personal protective equipment and safety measures the employee shall use,
- measures that the Station Manager or his designee has taken to lessen the hazards associated with non-routine task, including area ventilation, assignment of a second person or safety observer, spill emergency procedures, etc.

C.7. Chemicals in Unlabeled Pipes. Work activities are often performed by employees in areas where chemicals are transferred through unlabeled pipes. Pipes are not required to be labeled; however, employees shall be informed of their content. The WFO or WFO/RFC may have the following unlabeled pipes: potable water, sewer, oil piping, air conditioning, equipment piping (e.g., air conditioning piping contains Freon that is asphyxiant; maintenance on such piping shall be done only by certified mechanics with specialized recovery equipment).

Prior to starting work in these areas, employees shall contact the responsible supervisor for information regarding:

- the chemical(s) in the pipes,
- potential health hazards, and
- safety precautions which shall be taken.

C.8. Station Manager Responsibilities. The Station Manager, with assistance of the site Safety or Environmental/Safety Focal Point, shall ensure that each employee has a basic knowledge of the information contained in MSDS and an understanding of proper use of that information. The Station Manager shall ensure:

- MSDSs are available to employees in their work areas during each work shift, and
- MSDS information is provided for each hazardous chemical.

C.9. Employee Responsibilities. Successful implementation of the Hazard Communication Program depends on active involvement of personnel at the WFO or WFO/RFC. Every NWS employee who purchases, handles, or uses hazardous chemical products is responsible:

a. To know where to get information about the hazardous chemical labels used in the work area;

b. To read and understand the information on hazardous chemical labels and MSDS;

c. To keep the work area clean;

d. To use protective clothing and equipment, as required;

e. Not to smoke, eat, or drink around hazardous chemicals;

f. To learn the emergency procedures for the work area;

g. To follow the procedures for hazardous chemical disposal and spill cleanup;

h. To practice safe work habits; and

i. To attend required training.

C.10. On-site Contractors. When soliciting a contract, it is the Contracting Officer's Technical Representative (COTR) responsibility to inform the Contracting Officer of any possible hazards associated with work on a contract, so that notification and special conditions can be put into the solicitation prior to contract award. The site Safety or Environmental/Safety Focal Point shall advise the COTR of possible hazards that contractor employees encounter while working at an NWS facility. Contractors working at the WFO or WFO/RFC shall comply with the state of Missouri occupational safety and health regulations, Federal employees on the federal property are not.

The Contracting Officer shall obtain from a contractor a list of all chemicals the contractor intends to bring into or on to the work area (interior/exterior paint, sealants, tile or carpet adhesives, cleaning supplies, fertilizers, etc.). This includes construction as well as janitorial and landscaping contracts. A copy of the MSDS(s) shall be provided to the COTR and the Safety or Environmental/Safety Focal Point. MSDS(s) shall be posted in the work area, so that all employees affected by the contract work can have an access to them. If any engineering controls (ventilation, etc.) are required, the contractor shall describe the method(s) that shall be used to implement these controls.

Upon notification by the COTR, the Safety or Environmental/Safety Focal Point shall advise outside contractor employees of any hazards that they may encounter at NWS facilities. Contractor employees shall be informed about the location of this Hazard Communication Program and the availability of MSDS(s). The information provided by the Government shall be sufficient to enable the contractor to satisfy his own Hazard Communication Program responsibilities as promulgated by the

Missouri State OSHA-approved plan. In addition, the COTR shall ensure that contractor personnel have received Hazard Communication training in accordance with the Federal and state OSHA requirements (as applicable).

Section D - WORKSITE HAZARDOUS CHEMICAL LIST

Site/Location: Springfield, MO Region: Central

Address: 5805 W. Highway EE

Springfield-Branson Regional Airport

Springfield, MO 65802-5400

The following is a master chemical list of all known hazardous chemicals used at this facility. Further information on each noted chemical can be obtained by reviewing the worksite Material Safety Data Sheets (MSDS).

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Windshield lock de-icer	Tradeco	De-icer	On site office	1- 12 oz. spray can	1/17/00		WFO storeroom
Adhesive cyannoscrylate	Chemence Inc.	Cyanoconylate Adhesive	On site office	1- 1 oz. bottle	1/17/00	NSN8040-00-142-9193	WFO storeroom
Formula 409	The Clorox Co.	All purpose cleaner	On site office	2- 1 qt. bottles 1- 20 qt. refill bottle	1/17/00		WFO storeroom
X-14		Max Strength Mildew stain remover	On site office	1- 1 pt. spray bottle	1/17/00	2605718036	WFO storeroom
Polyurethane oil gloss enamel	Valspar	Enamel paint Bright red 23827	On site office	1- ½ pint can	1/17/00	PCI #762137	WFO storeroom
Liquid Seal	Macco Adhevisves	Clear Sealant	On site office	1- 5.5 oz. tube	1/17/00	CS 145	WFO storeroom
Carpenter's wood glue	Elmer's	Wood glue	On site office	1- 7.6 oz. bottle	1/17/00	2600000701	WFO storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Mercury Thermometers		Thermometer	On site office	8	1/17/00		WFO storeroom
Max/Min thermometers	Taylor	Thermometer	On site office	12	1/17/00	Model 5458	DAPN storage
Max thermometers	Kessler Instruments	Thermometer	On site office	10	1/17/00	Cat#WSNC102-2	Instrument shelter
Min thermometers	Kessler Instruments	Themometer	On site office	10	1/17/00	Cat#WSNC102-1	WFO storeroom
Tube Psychometer	Kessler Instruments	Themometer	On site office	5	1/17/00	Cat#WSNH000-3-1	WFO storeroom
Sling Psychometer	Kessler Instruments	Themometer	Instrument shelter	5	1/17/00	Cat#H055-1A	WFO storeroom
Sives Psychometer	Kessler Instruments	Themometer	On site office	2	1/17/00		WFO storeroom
BBGU Battery	Walters Industrial Electronics	Sealed rechargeable battery 6V	Rain gage	2	1/17/00	BP 10-6	WFO storeroom
Cyclan sealed rechargeable battery	Shelley-Regon	Sealed rechargeable battery 6V	Rain gage	2	1/17/00	9118	WFO storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Power Sonic Sealed Rechargeable battery	Power Sonic Corp.	Sealed rechargeable battery 6V	Rain gage	1	1/17/00	Model PS-6100	WFO storeroom
Cyalumme lightsticks	Omniglow Corp.	Snap lightsticks		5- 10 unit cases	1/17/00	Part # 9-27017	WFO storeroom
Cyalumme lightsticks	Omniglow Corp.	Snap lightsticks	UAIB	42- 10 unit cases	1/17/00	Part #9-27021	WFO storeroom
Gard SAE 10 API SA	Gard Corp.	Lubricating Oil	On site office	13 - 1 qt. bottles	1/17/00		WFO storeroom
Vaisala RS80 radiosonde	Vaisala	Radiosond battery	UAIB	400 units	1/17/00	RS80-57H	WFO storeroom
Propylene glycol		Antifreeze	Rain gage	8 quarts	1/17/00	NSA 6850-01-288-7922	WFO storeroom
ProMar 200	Sherwin Williams	Interior latex paint	On site office	1 gallon	1/17/00	4536-99993	WFO storeroom
Oil	Gard	Oil	On site office	5- 2oz. Bottles	1/17/00		WFO storeroom
Oil	Dow Corning	Oil	On site office	3- 2oz. Bottles	1/17/00	6850-00904-3237	WFO storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Oil-silicone	Armistead	Oil	On site office	1- 4oz. Bottles	1/17/00	A-5601-4	WFO storeroom
Oil dash pot	Bel Fort	Oil	On site office	2- 3.5 oz. Bottles	1/17/00	No.6	WFO storeroom
Spray paint	Krylon	Paint	On site office	3- 11oz. Cans	1/17/00	RTA 9200	WFO storeroom
Ink/stamp pad	MTK Marking	Ink	On site office	2 oz.	1/17/00		WFO storeroom
Ink/stamp pad	American Writing	Ink	On site office	2 oz.	1/17/00	T510-00-161-4237	WFO storeroom
Ink/Instrument	Esterline Augus	Ink	On site office	16 oz.	1/17/00		WFO storeroom
Ink	Minneapolis Honeywell	Ink	On site office	1 oz.	1/17/00	74637-1	WFO storeroom
Ink	Bel Fort	Ink	On site office	½ oz.	1/17/00	#10 blk	WFO storeroom
Ink	Armistead Tech	Ink	On site office	1 oz.	1/17/00	5592-1	WFO storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Ink	NLSC	Ink	On site office	1 12 oz. bottle	1/17/00	751000-551-8394	WFO storeroom
Ink		Ink	On site office	1- 1 oz. bottle	1/17/00		WFO storeroom
Ink	Bristols	Ink	On site office	½ oz.	1/17/00	6883	WFO storeroom
Ink Pens	Graphic Controls	Ink	On site office	3 packs of 6	1/17/00	82-72-3181-06	WFO storeroom
Correction Fluid - Photo	Lee Products	Correction fluid	On site office	8- .68 fl. oz.	1/17/00	84417-18710	WFO storeroom
Ross Stik	American Glue Co.	Glue Stick	On site office	10- 1.41.oz. sticks	1/17/00	8040-01-360-8079	WFO storeroom
Real Kill wasp & hornet	Reclex	Bug spray	On site office	6- 1lb. 1oz. Cans	1/17/00	70116-10005	WFO storeroom
WD-40	WD-40	WD-40	On site office	1- 12.9 oz. can	1/17/00	10011	WFO storeroom
Home Best Insect Killer	Baytech	Bug Killer	On site office	1- 1 gallon jug	1/17/00	42384-36620	WFO storeroom
Print Cartridge	Hewlett Packard	Ink	Copy Room	6- 1.4 oz.	1/17/00	#HP576424	Copy Room

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Print Cartridge	Hewlett Packard	Ink	Copy Room	1- 1.4oz.	1/17/00	#HP51640M	Copy Room
Print Cartridge	Hewlett Packard	Ink	Ops	1- 1.4oz.	1/17/00	27X	Ops
Print Cartridge	Hewlett Packard	Ink	Computer room	1- 1.4oz.	1/17/00	92A	Computer Room
Print Cartridge	Hewlett Packard	Ink	Computer room	1- 1.4oz.	1/17/00	27X	Computer Room
Head Cleaner	Realistic	Head cleaner	On site office	1- 2oz. Bottle	1/17/00	cat# 44-10100	ET Shop
Professional tape head cleaner fluid	Realistic	Head cleaner	On site office	3- 2oz. Bottles	1/17/00	cat# 44-1113	ET Shop
Daal Magnetic eye cleaner		Head cleaner	On site office	2- 4oz. Bottles	1/17/00	NSN 7440-00336-3450	ET Shop
Regular glass Cleaner	Lighthouse for the blind	Glass cleaner	On site office	1- 8oz. Bottle	1/17/00	7930-00-664-6910	ET Shop
Adhesive cyanoacrylate	Chemence Inc.	Glue	On site office	4- 1 oz. Bottles	1/17/00	NSN 8040-00-142-9193	ET Shop

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Park Horse	The Piemler Co.	Video and Tape head cleaner	On site office	1- 8oz. Spray can	1/17/00		ET Shop
Heavy Duty Engine Degreaser	O'Reilly	Degreaser	On site office	1- 15oz. Spray can	1/17/00	part #72415	ET Shop
Staticide	ACL Inc.	Anti-static spray	On site office	1- 1qt. Bottle	1/17/00	#2010	ET Shop
H2SO4 Battery Cleaner	Noco	Battery cleaner	On site office	1- 14oz. Spray bottle	1/17/00	#E-404	ET Shop
Misty	Amrep Inc.	Contact/circuit board cleaner	On site office	6- 14oz. Spray cans	1/17/00	#362-16	ET Shop
Anderol Lubricant	Tenneco Chemicals	Synthetic time fuse oil	On site office	1- 3oz. Can	1/17/00	NA82WE-A-03521	ET Shop
Insecticide aerosol Synergized Pyrethring Type 1	Alosol Co.	Insect Killer	On site office	1- 12oz. Can	1/17/00	$6840-823-7848	ET Shop

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Pemert Heet	Dement & Dougherty	Fuel system antifreeze	On site office	1- 12oz. Spray can	1/17/00		ET Shop
Freon TP-35	Texwipe Co.	Solvent Cleaner	On site office	1- 7oz. Bottle	1/17/00	TX116	ET Shop
Flux Remover and Cleaner	GC Electronics	Flux remover	On site office	1- 16oz. Can	1/17/00	#22-270	ET Shop
Johnson's De icer	Technical Chemicals	De-icer	On site office	1-12oz. Can	1/17/00	Part #3282	ET Shop
Blue Shower	Tech Spray Inc.	1,1,1 Trichloroethane	On site office	1 can	1/17/00	1677-125	ET Shop
Gray concrete crack sealer	The Quickrete Co.	Crack Sealer	On site office	1- 1qt. Bottle	1/17/00	#8640	ET Shop
Scotch Seal	3M Company	Industrial sealant	On site office	1- 24 oz. can	1/17/00	#612	ET Shop
Kester Soldering Flux	Litton Division	Soldering flux	On site office	1- 1 pt. bottle	1/17/00	Formula #1544	ET Shop
Multi-purpose Lithium	Cost to Cost	Grease	On site office	1- 14 ½ oz. can	1/17/00		ET Shop

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
All Temp grease	Texcco	Grease	On site office	1- 14 ½ 0z. Tube	1/17/00	MIL-G-10924A	ET Shop
Molykote 33 grease	Dow Corning	Silicone grease	On site office	1- 5.3oz. Tube	1/17/00	#14710-99	ET Shop
Anemometer oil			On site office	1- ½ oz. tube	1/17/00		ET Shop
DE-OX-ID	GC Electronics	Contact cleaner	On site office	1- 2oz. Bottle	1/17/00	#210-2	ET Shop
Lubricating oil	Honeywell	Oil	On site office	1- 2oz. Bottle	1/17/00	B-15260	ET Shop
Polystyrene Q-dope	GC Electronics	Pipe dope	On site office	1- ½ oz tube	1/17/00	37-2	ET Shop
Plastic Rubber	Duro	Plastic Rubber	On site office	1- 1oz. Tube	1/17/00	PR-1	ET Shop
Dash Pot Liquid	BelFort Instrument	Oil	On site office	1- 1oz. Tube	1/17/00	#6	ET Shop
Epoxy Hardening Resin	GC Electronics	Super Glue	On site office	1- 3/4 oz. tube	1/17/00	40-100	ET Shop

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Instant Bonding Adhesive	Archer	Glue	On site office	1- .11 oz. tube	1/17/00	64-2308 A	ET Shop
StatFree Spray	Perfect Dater	Static spray	On site office	3- 32oz. Bottles	1/17/00	PD6# 104578-1	Computer Room
Kleen Screen	Sunshine Chemicals	Cleaner	On site office	1- 18 oz. bottle	1/17/00		Computer Room
Soft Scrub w/ lemon cleanser	The Clorox Co.	Sink, Tub & Tile Cleaner	On site office	1- 31 oz. bottle	1/17/00	27543-IJJ	Break Room
Anti-bacterial disinfectant	Dow	Floor disinfectentant	On site office	1- 4.3 oz. bottle	1/17/00	101406-0697CL	Break Room
Mr. Clean	Procter & Gamble	Floor cleaner	On site office	1- 28 oz. bottle	1/17/00	40080091	Break Room
Lysol Disinfectant spray	Lehn & Fink Products	Disinfectant spray	On site office	2- 18oz. Spray bottles	1/17/00		Break Room
General Purpose Detergent	Lighthouse for the Blind	General Purpose Cleaner	On site office	1- 16oz. Spray bottle	1/17/00	7930-00-926-5280	Break Room

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Meter Mist Green Apple	Zep Manufacturing Company	Scent spray	On site office	1- 7oz. Spray can	1/17/00	3318	Break Room
Lime-a-way	Benckiser Consumer Products	Bathroom Cleaner	On site office	1- 20 oz. bottle	1/17/00	739854155021	Break Room
Dove Dishwashing Liquid	Lever Bros. Co.	Dishwashing soap	On site office	1- 22oz. Bottle	1/17/00		Break Room
Ultra Palmolive	Colgate-Palmolive Company	Dishwashing soap	On site office	1- 46oz. Bottle	1/17/00		Break Room
Eye wash	Bausch & Lomb	Eyewash	On site office	1- 4oz. Bottle	1/17/00	620252	Break Room
Neosporin Plus	Warner Wellcome Consumer Health Products	Antibiotic ointment	On site office	1- 1oz. Tube	1/17/00		Break Room
Tums EX	Smith Kline Beecham	Calcium Tablets	On site office	1- 250 tablet bottle	1/17/00	0701XF	Break Room

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Extra strength Tylenol Tablets	McNeil Consumer Health Products	Acetamenophe n	On site office	1- 200 tablet bottle	1/17/00	7821211	Break Room
Sting Relief Pads	Physicians & Nurses Mfg. Corp.	Sting relief pads	On site office	10 pads	1/17/00	90100	Break Room
The Itch Eraser	Tender Corp.	Sting relief pads	On site office	12 pads	1/17/00	053600R2	Break Room
Clorox Bleach	Clorox	Bleach	On site office	1 quart bottle	1/17/00		Janitor's Closet
Hand and Body Soap	Springfield Janitorial Supply	Soap	On site office	½ gallon container	1/17/00		Janitor's Closet
Bathroom Cleaner	Dow	Cleaner	On site office	25 oz. bottle	1/17/00		Janitor's Closet
Raid Bug Killer	Johnson & Johnson	Bug Killer	On site office	11 oz. bottle	1/17/00	46500-01672	Janitor's Closet
Sott Scrub	Clorox	Cleaner	On site office	26 oz. bottle	1/17/00	27454-IJJ	Janitor's Closet
Pennzoil	Pennzoil	Oil	On site office	1 quart	1/17/00	3653	Janitor's Closet

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Klear Clean	Kleerite Mfg.	Cleaner	On site office	2- 6 oz. bottles	1/17/00		Janitor's Closet
409	Clorox	Cleaner	On site office	2 quarts	1/17/00		Janitor's Closet
Glade Plug-In	Glade	Air freshener	On site office	7 boxes @ 7 oz. ea.	1/17/00		Restrooms
3M Cleaner	3M		On site office	1-.45 oz. spray can	1/17/00		Restrooms
Meter Mist	Zep Manufacturing Co.	Air freshener	On site office	1 7 oz. can	1/17/00		Restrooms
Bathroom Cleaner	Dow	Cleaner	On site office	1- 25 oz. cleaner	1/17/00		Restrooms
Incredible	Incredible	Stain remover	On site office	1- 16 oz.	1/17/00		Restrooms
Moles & Gophers Bait	WR Sweeney Inc.	Poison	On site office	2- 40 oz. containers	1/17/00		Restrooms
Hi Yield	Voluntary Purchasing	Poison	On site office	1- 16 oz. bottle	1/17/00		Restrooms

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Tilex	Clorox Co.	Cleaner	On site office	1- 16 oz. bottle	1/17/00		Restrooms
Formula Pro 409	The Clorox Co.	Multi Purpose Cleaner	On site office	1- 22 oz. bottle	1/17/00	06366-JJ	Multi-Purpose Room
Windex Multi Surface Cleaner	SC Johnson Wax Co.	Cleaner	On site office	1- 22 oz. bottle	1/17/00	407580	Multi-Purpose Room
Clean Sweep	Stempel Man. Co.	Dry Ink Board Cleaner	On site office	1- 8 oz. spray bottle	1/17/00	60-600	Multi-Purpose Room
Soft Scrub w/lemon	The Clorox Co.	Cleaner	On site office	1- 31.2 oz. bottle	1/17/00	62869.106JJ	Multi-Purpose Room
Spot Shot	Spot Shot Products	Carpet Stain Remover	On site office	1- 14 oz. spray can	1/17/00		Multi-Purpose Room
De-Solv-It	Orange-Sq 1 Household Products, Inc.	Cleaner	On site office	1- 12 oz. spray	1/17/00		Multi-Purpose Room
Glass Plus	Dow Chemicals	Glass/Surface cleaner	On site office	1- 32 oz. spray bottle	1/17/00	KG211216212	Multi-Purpose Room

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Woolite Heavy Traffic Carpet Cleaner	Reckitt & Colman Inc.	Carpet Cleaner	On site office	1- 22 oz. spray bottle	1/17/00	955530	Multi-Purpose Room
Expo White Board Cleaner	Anewell Company	Dry erase board cleaner	On site office	1- 8 oz. spray bottle	1/17/00	81803	Multi-Purpose Room
WD-40	WD-40 Company	Lubericant	RDA Shelter	1- 11oz. Spray can	1/17/00	1011	RDA Shelter
Wisk	Lever Co.	Detergent	RDA Shelter	1- 3.12 qt. bottle	1/17/00	62459-8351	RDA Shelter
Pro Formula 409	Clorox Company	Cleaner	RDA Shelter	1 32 oz. spray bottle	1/17/00	62459.1445	RDA Shelter
Parks	Parks Corp.	Cleaner	RDA Shelter	1- 32 oz. spray bottle	1/17/00	2125	RDA Shelter
Baby Powder	H & H Labs	Talc powder	RDA Shelter	1- 14 oz. bottle	1/17/00	3563-14007	RDA Shelter
Zinc-Rich	Rust-oleum	Paint	RDA Shelter	2- 20 oz. spray cans	1/17/00	U2185	RDA Shelter
American Accent	Rust-oleum	Paint	RDA Shelter	3- 20 oz. spray cans	1/17/00	7942	RDA Shelter
Silicon Sealant	Dow Corning	Silicone	RDA Shelter	2- tubes	1/17/00	732	RDA Shelter

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Tecstar Fibrebond	PPG	Spray paint	RDA Shelter	1- 12 oz. spray can	1/17/00		RDA Shelter
Krylon	Sherwin Williams Co.	Paint	RDA Shelter	1- 12 oz. spray can	1/17/00	1502	RDA Shelter
Koeler Cream	Kohler Co.	Paint	RDA Shelter	1- 12 oz. spray can	1/17/00	15723	RDA Shelter
Paint		Interior tan paint	RDA Shelter	1- 1qt. Can	1/17/00	12595	RDA Shelter
Paint		Interior white paint	RDA Shelter	1- 1qt. Can	1/17/00	12845	RDA Shelter
Paint		Roofstop coat	RDA Shelter	1- 1qt. Can	1/17/00	13682	RDA Shelter
Paint		Aggrebrite Rock coating	RDA Shelter	1- 1 pt. can	1/17/00	11369	RDA Shelter
Paint	FibreBond Inc.	Floor Paint Part A	RDA Shelter	1- 1pt. Can	1/17/00		RDA Shelter
Adhesive	FibreBond Inc.	Expxy glue part A	RDA Shelter	1- 1pt. Can	1/17/00	11371	RDA Shelter
Paint	FibreBond Inc.	Floor paint Part B	RDA Shelter	1- 1pt. Can	1/17/00		RDA Shelter

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Adhesive	FibreBond Inc.	Expoxy glue part B	RDA Shelter	1- 1pt. Can	1/17/00		RDA Shelter
Paint	FibreBond Inc.	Thorulastic mesatan	RDA Shelter	1- 1qt. Can	1/17/00	11243	RDA Shelter
Paint	FibreBond Inc.	Thoroseal texturizer	RDA Shelter	1- 1pt. Can	1/17/00		RDA Shelter
Lightweight Spackling Paste	Bondex International		RDA Shelter		1/17/00		RDA Shelter
Isopropyl Alcohol	Perrigo	Alcohol	RDA Shelter	1-1pt. Bottle	1/17/00	0113-3804-43	RDA Shelter
Shell Diala Oil AX	Ashland Chemical	Oil	RDA Shelter	3 - 5 gallon containers	1/17/00	7125999	RDA Shelter
Premium Blue	Valvoline	SAE 15-40W	RDA Shelter	1- 1gallon container	1/17/00	70509	RDA Shelter
Zerex	Valvoline	Antifreeze	RDA Shelter	1- 1 gallon container	1/17/00	2888250001	RDA Shelter
#2 Diesel Fuel	Maynard Oil Co.	Diesel Fuel	RDA Shelter	500 gallons	1/17/00	NSN 9140-00-286-5294	RDA Shelter

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
#2 Diesel Fuel	Maynard Oil Co.	Diesel Fuel	Generator Building	1000 gallons	1/17/00	NSN 9140-00-286-5294	Generator building
Exsorbet	Exsorbet Industries	Oil Clean	Generator Building	2 bags	1/17/00		Generator building
Motor Oil	Valvoline	Oil	Generator Building	4- 1 gallon containers	1/17/00	70509	Generator building
Tex Wipes	Tex Wipes Co.	Wipe	Generator Building	37 boxes	1/17/00	Tx-801	Generator building
Acrylic Latex Gloss Enamel	Valspar	Paint	Generator Building	1 quart	1/17/00		Generator Bdlg. Storeroom
Gunk	Radiator Speciality Co.	Gunk	Generator Building	1- 13 ounce can	1/17/00	78698-13095	Generator Bdlg. Storeroom
Behr	Behr Process	Oil stain remover	Generator Building	1- 1 quart container	1/17/00		Generator Bdlg. Storeroom
Lyt-All	Pratt & Lambert	Paint	Generator Building	1 30 oz. can	1/17/00	675	Generator Bdlg. Storeroom
Lig- Nails	MACCOA Adhesives	Glue	Generator Building	1 tube	1/17/00	0600413	Generator Bdlg. Storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Silicone Rubber	General Electric	Caulk	Generator Building	1 tube	1/17/00	GE-012	Generator Bdlg. Storeroom
Ice Melt	Scottwood Inc.	Sodium Chloride	Generator Building	120 lbs.	1/17/00		Generator Bdlg. Storeroom
House Paint	Colgny	Paint	Generator Building	1 gallon	1/17/00	8500	Generator Bdlg. Storeroom
Lacquer thinner	Klean Strip	Mineral Spirits	Generator Building	1- 32 oz. container	1/17/00	ML-170	Generator Bdlg. Storeroom
Isopropyl Alcohol	Meda List	Alcohol	Generator Building	2 - 1 gallon containers	1/17/00	NOC-37937-005-40	Generator Bdlg. Storeroom
Battery Protector	Sherwin Williams	Cleaner	Generator Building	1- 4 oz. can	1/17/00	1307	Generator Bdlg. Storeroom
Enamel	Krylon Sherwin Williams	Spray paint	Generator Building	2- 11 oz. cans	1/17/00		Generator Bdlg. Storeroom
Truck and Van Paint	Cutter Products	Spray paint	Generator Building	1- 11 oz. spray can	1/17/00		Generator Bdlg. Storeroom
Spray Paint	Wal Mart	Spray paint	Generator Building	1- 12 oz. can	1/17/00		Generator Bdlg. Storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Spray Laquer	Pacific Aerosol	Spray paint	Generator Building	1- 16 oz. can	1/17/00		Generator Bdlg. Storeroom
Spray Paint	Dupli- Color	Paint	Generator Building	1- 12 oz. can	1/17/00	OFE-16	Generator Bdlg. Storeroom
Spray Paint	Krylon	Paint	Generator Building	2- 12 oz. cans	1/17/00	8102	Generator Bdlg. Storeroom
Battery Cleaner	NOCO	Cleaner	Generator Building	1- 14 oz. can	1/17/00	E-404	Generator Bdlg. Storeroom
Spray Paint	Dupli-Color	Paint	Generator Building	1- 10 oz. can	1/17/00	LF129	Generator Bdlg. Storeroom
Acetone	Klean-strip	Acetone	Generator Building	1 quart	1/17/00	AC-18	Generator Bdlg. Storeroom
Ultra Hide	Glidden	Latex Paint	Generator Building	1 gallon can	1/17/00	UH5800	Generator Bdlg. Storeroom
Ultra Hide	Glidden	Latex Paint	Generator Building	6- 1 gallon cans	1/17/00	UX6800	Generator Bdlg. Storeroom
Ultra Hide	Glidden	Latex Paint	Generator Building	1 gallon can	1/17/00	UH6810	Generator Bdlg. Storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Preen-Green	Greenview	Weed killer	Generator Building	22 lbs.	1/17/00	30465	Generator Bdlg. Storeroom
Paint	Benjamin Moore	Paint	Generator Building	1 gallon can	1/17/00	5-235-5A	Generator Bdlg. Storeroom
Paint	Glidden	Latex Paint	Generator Building	1 gallon can	1/17/00	6780	Generator Bdlg. Storeroom
Lubricating Oil	Caid Corp	Oil	Generator Building	1 quart container	1/17/00		Generator Bdlg. Storeroom
Lubriplate	Fiske Bros.	Grease	Generator Building	2- 14 oz containwea	1/17/00		Generator Bdlg. Storeroom
Anderol	Tenneco	Synthetic lubricant	Generator Building	1 pound	1/17/00		Generator Bdlg. Storeroom
33 Grease	Dow Corning	Grease	Generator Building	1 5.3 oz. tube	1/17/00		Generator Bdlg. Storeroom
Form-a-gasket	Permatex	Gasket material	Generator Building	1 tube	1/17/00	#2	Generator Bdlg. Storeroom
Kleen Glean	Kleerite	Cleaner	Generator Building	1 - 6oz. Can	1/17/00	7510-00-616-9580	Generator Bdlg. Storeroom

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Torn-Lable	Lighthouse	Alcohol	Generator Building	1 8 0z. Can	1/17/00		Generator Bdlg. Storeroom
2 cycle Engine Oil	Sears	Oil	Generator Building	6 - 3.2 oz. cans	1/17/00	36552	Generator Bdlg. Storeroom
Windshield Washer	Homestar	Cleaner	Generator Building	2 - 1 gallon containers	1/17/00		Generator Bdlg. Storeroom
Spectracide	Spectracide	Weed Killer	Generator Building	1 6.4 oz. bottle	1/17/00	71121-56100	Generator Bdlg. Storeroom
Muriatic Acid	Sunnyside	Hydronic Acid	Generator Building	1- 1 gallon container	1/17/00	7652-00056	Generator Bdlg. Storeroom
Miracid	Miracle- Gro	Fertilizer	Generator Building	3 lbs.	1/17/00	FKKB0720-1014	Generator Bdlg. Storeroom
Miracle Gro	Miracle-Gro	Fertilizer	Generator Building	10 lbs.	1/17/00	15-30-15	Generator Bdlg. Storeroom
Road Runner Ice Melt			UAIB	1 50 lb. Bag	1/17/00		UAIB
Hydrogen	Air Products Chemicals	Hydrogen	UAIB	60 2000 psi containers	1/17/00	NSN 6830-00-NO7-5377	UAIB
Helium			UAIB		1/17/00		UAIB

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
WD-40	WD-40 Co.	Lubricant	UAIB	1- 90z. Spray can	1/17/00		UAIB
Isopropyl Alcohol	Cumberland	Isopropyl Alcohol	County Warning Area	1- 16 oz. bottle	1/17/00	816-25	ET Van
Laquer Thinner	W. M. Barrt Co.	Mineral Spirits	County Warning Area	1- 32 oz. can	1/17/00	ML-170	ET Van
Super Color 134 Plus	MC Chemicals	1,1,1,2 tetraflouroethane	County Warning Area	3- 14 oz. spray cans	1/17/00	40-3A4007	ET Van
Hornet & Wasp Killer	Ortho	Bug killer	County Warning Area	1- 15 oz. spray	1/17/00	816-25	ET Van
WD-40	WD-40 Company	Lubricant	County Warning Area	1- 14 oz. spray can	1/17/00	10011	ET Van
Insect Repellant Spray	Cutter	Bug Spary	County Warning Area	1- 14 oz. spray can	1/17/00	0161-0536-54	ET Van

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Battery Protector	Krylon	Paint	County Warning Area	1 - 11 oz. spray can	1/17/00	1307	ET Van
Round Up Weed and Grass Killer	Solaris Group	Weed Killer	County Warning Area	1- 32 oz. spray bottle	1/17/00	70183-50010	ET Van
LCR 12V17CP	Panasonic	Battery	KSGF ASOS	5	1/17/00	NSN 6140-01-417-9154	KSGF ASOS
LCR 12V17CP	Panasonic	Battery	ASOS	1	1/17/00	NSN 6140-01-417-9154	ASOS
PS-1270	Power Sonic	Battery	LARC	1	1/17/00	NSN-6140-01-108-7120	ET Storage room
LCR 12V17CP	Panasonic	Battery	KSGF ASOS	5	1/17/00	NSN 6140-01-417-9154	KSGF ASOS (field)
LRC 12v17CP	Panasonic	Battery	KJLN ASOS	4	1/17/00	NSN 6140-01-417-9154	KJLN ASOS (field)
LRC 12v17CP	Panasonic	Battery	KJLN ASOS	4	1/17/00	NSN 6140-01-417-9154	KJLN ASOS (field)
LRC 12v17CP	Panasonic	Battery	KVIH ASOS	4	1/17/00	NSN 6140-01-417-9154	KVIH ASOS (field)

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
LRC 12v17CP	Panasonic	Battery	KVIH ASOS	4	1/17/00	NSN 6140-01-417-9154	KVIH ASOS (field)
Motor Oil	Havoline	OIl10W30	Avilla, MO	3 quarts	1/17/00	NSN 9150-00-NO2-1986	WXJ-61
Propane	Maynard Fuel Oil Co.	Propane	Avilla, MO	250 Gallon tank	1/17/00	NSN 6830-00-NO3-2803	WXJ-61
Autolite	AC Delco	12V lead acid battery	Avilla, MO	1	1/17/00	NSN 6140-01-355-2013	WXJ-61
PS-12260	Power Sonic	12V - 7AH		1each	1/17/00	NSN 6140-01-346-8316	Jerome & Fulton
PS-12260	Power Sonic	12V - 7AH		1each	1/17/00	NSN 6140-01-108-2159	Other 7 LARC
DESC		Lubricating Oil	RAMDOM E	10 gallons	1/17/00	NSN 9150-01-000-0001-X	RANDOME
Molyybdenum Disulfide		Grease	RAMDOM E	3 - 14 oz. cannisters	1/17/00	NSN 9150-00-935-4018	RANDOME
Shell Diala Oil Ax	Ashland Chemical Co	Lubricating Oil	Radome	5 Gal Container	1/17/00	7125999	Radome

HAZARDOUS CHEMICAL LIST							
Product Name on Label	**Manufacturer Listed on Label**	**Generic Name**	**Operation/ Work Area Used**	**Quantity on Hand (oz., gal, ltr, lbs., tons)**	**Date entered into system**	**ASN, NSN, or Part #**	**Location Stored**
Exorbet	Exorbet Industries	Oil Absorbent	Radome	Trial Size Bag	1/17/00	nsn:mn59-70-590-6004	Radome
Lubrimatic	Lubrimatic Start Corp	Multi-purpose Lithium Grease	Radome	3 oz. tube	1/17/00		Radome
Sta-Lubs	CRC	Lithium General Purpose Grease	Radome	14 oz. tube	1/17/00		Radome
GMD	Shell Oil	Grease Molybdenum Disulfide	Radome	2-14 oz tubes	1/17/00		Radome
Lube Oil	Cage: NLB48	Lube oil	Radome	5 gal container	1/17/00		Radome
Hornet & Wasp Killer	Ortho	Bug srpay	Radome	1 - 15 oz. spray can`	1/17/00		Radome

Section G - WORK SITE TRAINING RECORDS

SITE NAME: Springfield, MO Weather Forecast Office

Title	Name	Training Date
Administrative Assistant	Snell, Dee	**April 24, 1998**
Electronic Technician	Tomash, Mark	
Forecasters	Albert, Drew	**July 29, 1999**
Forecasters	Shumway, Steve	**March 15, 1998**
Forecasters	Steinmetz, Dean	**March 15, 1998**
Forecasters	Taggart, Jim	**February 28, 1998**
Forecasters	Terry, Megan	**August 26, 1998**
Management	Gaede, Dave	**March 3, 1998**
Management	Lyon, Charlie	**March 25, 1998**
Management	Murphy, Paul	**March 15, 1998**
Management	Runnels, Steve	**April 19, 1998**
Metoroligical Technicians and Interns	Bookbinder, Evan	**June 30, 1999**
Metoroligical Technicians and Interns	Cissell, David	**June 15, 1999**
Metoroligical Technicians and Interns	Dooley, Larry	**April 15, 1999**
Metoroligical Technicians and Interns	Hatch, Fred	**August 4, 1999**
Metoroligical Technicians and Interns	Johnson, Gary	**April 20, 1998**
Metoroligist in Charge	Davis, William	**April 15, 1999**
Senior Forecasters	Foster, Andy	**May 15, 1999**
Senior Forecasters	Hudson, Mike	
Senior Forecasters	Lindenberg, Steve	**March 15, 1998**
Senior Forecasters	Rickard, Chuck	**September 30, 1998**
Senior Forecasters	Sutton, Mike	**February 28, 1998**

PROCEDURE 8 - Personal Protective Equipment

Table of Contents Page

Synopsis 8-ii
Personal Protective Equipment Checklist 8-iii

8 PERSONAL PROTECTIVE EQUIPMENT 8-1
8.1 Purpose And Scope 8-1
8.2 Definitions 8-1
8.3 Procedure 8-2
8.4 Quality Control 8-11
8.5 Responsibilities 8-11
8.6 References 8-12
8.7 Attachments 8-13

ATTACHMENT A 8-A-1
Eye Protectors Selection Chart 8-A-1

ATTACHMENT B 8-B-1
Guide for Selection of Proper Shade Number 8-B-1

ATTACHMENT C 8-C-1
Hazard Assessment Form 8-C-1

ATTACHMENT D 8-D-1
Rubber Insulating Equipment Voltage Requirements 8-D-1

ATTACHMENT E 8-E-1
NWS PPE Training Certification Form 8-E-1

ATTACHMENT F 8-F-1
Glove Selection Table 8-F-1

ATTACHMENT G 8-G-1
Hazard Assessment Forms for PPE (WFO Springfield, MO) 8-G-1

Synopsis

This procedure defines the requirements for selection, training, application and usage of personal protective equipment (PPE) at NWS facilities. The PPE covered in this procedure includes eye and face protection, head protection, foot protection, hand protection, protective clothing, and protective shields and barriers. Respiratory protection, hearing protection, and fall protection is covered in separate procedures. This procedure applies to all NWS facilities and work locations where PPE is used and to all NWS employees who use PPE in the performance of their jobs.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operations versus Procedure Requirements**
  - Perform a Hazard Assessment. *(8.3.2)*
    - < Review Injury/Accident Data. *(8.3.2a(1)*)
    - < Conduct a walk-through of problem areas to identify sources of hazards. *(8.3.2a(2) & 8.3.2a(3)(a-j)*)
    - < Prepare an analysis of the information gathered from hazard assessment to enable selection of PPE. *(8.3.2a(4))*
- **Develop/Obtain Documents/Information required for Site**
  - Prepare a Hazard Assessment Form. *(8.3.2a(2))*
- **Designate Person to Administer PPE Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - PPE Training/Certification *(8.3.4g & 8.3.10)*
- **Inventory Material/Equipment (Procure as required)**
  - PPE (safety glasses, hard hats, safety shoes, face shields, electrical safety gloves, welding helmets, eyewash stations, body/face rinsing facilities, etc.). *(8.5.2e, 8.3.4)*

<u>Recurring and Annual Task Requirements:</u>

- **< Perform Inspection/Assessment/Testing**
  - Re-Assess Hazards on site. *(8.3.2.5c)*
    - < Review Injury/Accident Data. *(8.3.2a(1)*)
    - < Conduct a walk-through of problem areas to identify sources of hazards. *(8.3.2a(2) & 8.3.2a(3)(a-j)*)
    - < Prepare an analysis of the information gathered from hazard assessment to enable selection of PPE. *(8.3.2a(4))*
- **Review/Update Documentation/Information required for Site**
  - File the Hazard Assessment Form. *(8.3.2a(2)*)
- **Provide Refresher Training of Site Personnel (If Required)**
- **Inspect/Replace/Maintain Material/Equipment**
  - PPE (safety glasses, hard hats, safety shoes, face shields, electrical safety gloves, welding helmets, eyewash stations, body/face rinsing facilities, etc.). *(8.5.2e, 8.3.4)*

Personal Protective Equipment Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	8.4.2				
Are all Personal Protective Equipment (PPE) used at this facility appropriate for the intended use?	8.3.1h				
Has a Hazard Assessment been performed to determine the hazards that are present and to determine the appropriate PPE needed?	8.3.2				
Has the Station Manager certified that a Hazard Assessment has been performed with a written "Hazard Assessment Form"?	8.3.2b				
Has a walk-through survey been conducted in accordance with this procedure to identify the hazard sources?	8.3.2a.2 & 8.3.3a-j				
Has an analysis of the hazards found during the Hazard Assessment been prepared to enable proper selection of PPE?	8.3.2a(4)				
Is the selection of appropriate PPE for the employees done by a "Qualified Person"?	8.3.1b				
Are PPE used only when engineering and/or administrative controls cannot be adopted to control the hazard?	8.3.1				
Has the previous injury/accident data been reviewed to help identify problem areas on site?	8.3.2a.1				

Requirements	Reference	YES	NO	N/A	Comments
Are employees provided with and required to use properly selected and fitted PPE?	8.3.1a				
Are all damaged and worn PPE removed from service and disposed of properly?	8.3.1e				
Are all PPE distinctly marked with its manufacturer's identification?	8.3.1g & 8.3.4d				
Are all PPE periodically cleaned and maintained?	8.3.1k & 8.3.4j				
Are all eye and face protection in compliance with this procedure?	8.3.4b				
Are warning signs posted, in accordance with this procedure, in areas where potential eye hazards can occur?	8.3.4e				
Do employees use appropriate eye or face protection when exposed to potential face hazards?	8.3.4a				
Are protective goggles or face shields provided and worn where there is any danger of flying particles or corrosive materials?	8.3.8a.1				
Have all personnel been trained in the purpose and use of eye protection?	8.3.4g				
Are facilities for flushing/rinsing eyes, face and body located within 10 seconds of unobstructed travel within the work area where employees are exposed to injurious corrosive materials?	8.3.4m				

Requirements	Reference	YES	NO	N/A	Comments
Are approved safety glasses required to be worn at all times in areas where there is a risk of eye injuries such as punctures, abrasions, contusions or burns?	8.3.4				
Are employees who need corrective lenses (glasses or contacts) in working environments having harmful exposures, required to wear only approved safety glasses, protective goggles, or use other medically approved precautionary procedures?	8.3.4				
Are all employees wearing hand protection, when there is a potential for injury?	8.3.5a				
Does all protective footwear comply with this procedure?	8.3.6a,b				
Is appropriate foot protection required where there is the risk of foot injuries from hot, corrosive, or poisonous substances, falling objects, crushing or penetrating actions?	8.3.6b				
Are all electrical PPE maintained in safe, reliable condition?	8.3.7a				
Are all requirements concerning insulating blankets, covers, etc being met?	8.3.7b				
Are all employees dressed appropriately when using machinery?	8.3.8a.2 & 3				
Have employees been trained on personal protective equipment procedures?	8.3.10a-d				

Requirements	Reference	YES	NO	N/A	Comments
Are hard hats provided and worn where danger of falling objects exists?	8.3.3				
Are hard hats inspected periodically for damage to the shell and suspension system?	8.3.3				

8 PERSONAL PROTECTIVE EQUIPMENT

8.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure to define the requirements for selection, use and maintenance of personal protective equipment (PPE) at NWS facilities. The PPE covered in this procedure includes eye, face, head, foot and hand protection equipment, protective clothing, and protective shields and barriers. Respiratory, hearing and fall protection equipment are covered in separate procedures. This procedure applies to all NWS facilities and work locations where PPE is used and to all NWS employees who use PPE in the performance of their jobs.

8.2 Definitions

Class A Hard Hat. Hard hats which provide impact and penetration resistance and provide electrical protection from low voltage conductors (tested to 2,200 volts).

Class B Hard Hat. Hard hats which provide impact and penetration resistance and provide electrical protection from high voltage conductors (tested to 20,000 volts).

Class C Hard Hat. Hard hats which provide impact and penetration resistance and should not be used around electrical hazards.

Class 0 Gloves. Gloves having the following properties: Maximum use voltage a-c rms-- 1,000 V, Retest voltage a-c rms-- 5,000 V, Retest voltage d-c avg -20,000 V.

Class 00 Gloves. Gloves having the following properties: Maximum use voltage a-c rms-- 500 V, Retest voltage a-c rms - 2,500 V, Retest voltage d-c avg - 10,000 V.

Class 1 Gloves. Gloves having the following properties: Maximum use voltage a-c rms-- 7,500 V, Retest voltage a-c rms-- 10,000 V, Retest voltage d-c - 40,000 V.

Compression. Injury caused when a body part or the entire body is pinched or crushed in or by a machine, heavy object or vehicle.

Face Shield. Secondary eye and face protectors utilized in conjunction with primary protectors, i.e., safety glasses, to protect the wearer's face and eyes from flying objects or chemical hazards.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Gloves. Hand protection designed to protect the hands and forearms from various hazards. The specific hazard anticipated will determine which glove to utilize.

Goggles. Protective devices worn over safety glasses and designed to fit snugly around the wearer's eyes to protect against certain hazards, i.e., chemical splashes.

Hard Hat. Headgear also known as a protective helmet. Hard hats are rigid headgear of varying materials designed to protect the wearer's head from falling objects, other impact hazards or electrical hazards.

Hazard Assessment. A survey of work site hazards to determine proper selection of personal protective equipment.

Impact. To impinge or make contact especially forcefully.

Maximum Use Voltage. The a-c voltage (rms) classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Personal Protective Equipment (PPE). Devices worn by the worker to protect against hazards in the environment. These devices include but are not limited to the following: protective helmets, spectacles, face shields, gloves and safety shoes.

Qualified Person. An individual who is qualified by appropriate education, training, and experience to select the appropriate personal protective equipment to provide protection against various workplace hazards.

Safety Glasses. A protective eyeware, also known as spectacles, worn to shield the wearer's eyes from a variety of hazards.

Safety Shoes. Protective footwear designed to protect the foot from external forces.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Welding Helmet. A protective shield for the eyes and face of the wearer to guard against optical radiation and impact. Welding helmets are secondary protection and shall be used only in conjunction with primary protectors determined by the factors of electrode size, arc current, or plate thickness.

8.3 Procedure

8.3.1 Personal protective equipment (PPE) shall be used when engineering and/or administrative controls cannot be adopted to control the hazards of a process or the environment that may cause injury or impairment to employees. PPE shall only be used when other forms of hazard control are not feasible or adequate. The NWS shall

select, and have each affected employee use, the types of PPE that will adequately protect the affected employee.

a. For those hazards which necessitate the use of PPE, the NWS shall select, and have each affected employee use, the types of PPE that will protect the affected employees. The NWS shall communicate selection decisions to each affected employee and shall select PPE that properly fits each affected employee.

b. All PPE used at NWS facilities shall be selected for use with assistance of the Safety or Environmental/Safety Focal Point, personnel qualified to perform the specific job requiring PPE and in conjunction with NOAA Regional Safety Manager (RSM), if required.

c. All PPE used by NWS employees in the performance of their jobs shall be subject to inspection by the Safety or Environmental/Safety Focal Point.

d. PPE that has been worn to the point that it has reached the end of its useful life, or PPE that is defective or damaged, shall be immediately removed from service and disposed of properly. For example, gloves soaked with grease, oil or other chemicals shall be disposed of in accordance with EPA regulations. (Refer to NWS Occupational Safety and Health Procedure #7, "Hazard Communication Program").

e. All PPE shall be of safe design and construction for the work to be performed.

f. All PPE shall be distinctly marked to identify the manufacturer.

g. All PPE used by the NWS shall comply with all applicable guidelines such as ANSI, ASTM, NFPA, NIOSH, etc.

h. All protective equipment, including personal protective equipment, shall be provided by the NWS at no cost to employees. NWS employees shall not provide and/or use their own PPE while performing work for the NWS.

i. In fitting PPE, careful consideration must be given to comfort and fit. Care should be taken to ensure that the right size of the PPE is selected.

j. PPE shall be kept clean and properly maintained.

8.3.2 Each facility shall perform a hazard assessment of the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE.

a. In order to assess the need for PPE the following steps should be taken:

(1) Review injury/accident data to help identify problem areas.

(2) Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers (Attachment

C, “Hazard Assessment Form”). Consideration should be given to the basic hazard categories:

i Impact

ii Penetration

iii Compression (roll-over)

iv Chemical

v Heat

vi Harmful dust

vii Light (optical) radiation

viii Electrical

(3) During the walk-through survey, the person performing the assessment should observe:

i Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects.

ii Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.

iii Types of chemical exposures.

iv Sources of harmful dust.

v Sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.

vi Sources of falling objects or potential for dropping objects.

vii Sources of sharp objects which might pierce the feet or cut the hands.

viii Sources of rolling or pinching objects which could crush the feet.

ix Layout of workplace and location of workers.

x Any electrical hazards.

(4) Following the walk-through survey, organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

(5) Having gathered and organized the data, an estimate of the potential for injuries shall be made. Each of the basic hazards should be reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the work area. The possibility of exposure to several hazards simultaneously shall be considered.

b. The Station Manager or his/her designee shall certify that the workplace hazard assessment has been performed with a written "Hazard Assessment Form" that contains the following information: the workplace evaluated; the name and signature of the person certifying that the evaluation has been performed; the date(s) of the hazard assessment.

c. NWS facilities shall be re-assessed as necessary by identifying and evaluating new equipment and processes, reviewing accident records, and re-evaluating the suitability of previously selected PPE.

8.3.3 Head Protection.

a. Hard hats shall be worn when there is a potential for injury to the head from falling objects. Some examples include ice falling from a NEXRAD dome, working below other workers where there is a potential for tools or materials to fall; working on, around or below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors. An example would include replacing equipment or performing maintenance on ROHN Towers.

b. All head protection shall meet the requirements of ANSI Z89.1-1986 or the latest revision. When selecting head protection, knowledge of potential electrical hazards in the work area must be considered.

8.3.4 Eye and Face Protection.

a. Employees shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, chemical gases or vapors, during electrical "hot" work, or potentially injurious light radiation.

b. Eye and face protection shall conform to ANSI Z87.1-1989, or the latest revision.

c. With respect to eye protection, such equipment shall not have an adverse effect on employee performance or otherwise increase the health or safety risk to the employee.

d. Eye and face PPE shall be distinctly marked to facilitate identification of the manufacturer.

e. All eye hazard areas shall be posted with appropriate warning signs in accordance with 29 CFR 1910.145.

f. Eye protection shall be worn by employees, contractors, and visitors passing through eye hazard areas.

g. All personnel working in eye hazard areas shall be trained on the need for and use of eye protection.

h. Safety glasses shall have side protection when there is a hazard from flying objects such as grinding, drilling and machining operations. Detachable side protectors are acceptable.

i. Each employee who typically wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection that incorporates the prescription in its design or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

j. Protective eye wear shall be properly maintained in clean and a fully operational condition.

k. Welding helmets shall have filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation (see Attachment A, "Eye Protection Selection Chart" and Attachment B, "Guide for Selection of Proper Shade Number.")

l. Photochromatic safety glasses (glasses that change color with exposure to sun light) are not permitted to be used for protection against potentially injurious light radiation due to their slow change properties.

m. Emergency eyewash and or deluge shower facilities shall be provided in all areas where employees can be exposed to corrosive materials (e.g., hydrogen generators, battery charging areas). Note: Per ANSI Z3581-1998, eye/face wash units shall be in accessible locations that require no more than 10 seconds to reach.

8.3.5 <u>Hand Protection</u>.

a. Hand protection (gloves) shall be worn when there is a potential for injury to the hands from exposure to hazards such as but not limited to those from skin

absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns and harmful temperature extremes.

b. Attachment F, "Glove Selection Table" is a generic glove selection table which can be referenced when selecting hand protection for different situations.

8.3.6 Foot Protection.

a. Protective footwear shall be worn in areas where there is a danger of falling or rolling objects, or objects piercing the sole such as but not limited to:

(1) Routinely lifting or moving heavy or cumbersome objects or materials.

(2) Using landscaping devices, i.e., lawnmowers, trimmers.

(3) Working in areas where forklifts or powered vehicles are used.

b. Non-conductive foot protection shall be worn where the employee's feet are exposed to electrical hazards.

c. Protective footwear shall meet the requirements of ANSI Z41-1991 or the latest revision.

NOTE: Electronic Technicians and Sector Facilities Technicians shall be provided with nonconductive safety shoes. At least two pairs of toe guards shall be provided at each office to be used by other personnel as required.

8.3.7 Electrical Protective Devices.

a. Electrical protective equipment shall be maintained in a safe, reliable condition.

b. The following specific requirements apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber:

(1) Maximum use voltages shall conform to those listed in Attachment D, "Rubber Insulating Equipment Voltage Requirements."

(2) Insulating equipment shall be inspected by a qualified person for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.

(3) Insulating equipment with any of the following defects may not be used:

i A hole, tear, puncture, or cut.

ii Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress resulting in a series of interlacing cracks).

iii An embedded foreign object.

iv Any of the following texture changes: swelling, softening, hardening, or becoming sticky or inelastic.

v Any other defect that damages the insulating properties.

(4) Insulating equipment found to have other defects that might affect its insulating properties shall be removed from service and returned for testing.

(5) Insulating equipment shall be cleaned as needed to remove foreign substances.

(6) Insulating equipment shall be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.

(7) Protector gloves shall be worn over insulating gloves, except as follows:

i Protector gloves should not be used with Class 0 gloves, under limited-use conditions, where small equipment and parts manipulation necessitate unusually high finger dexterity.

NOTE: Extra care is needed in the visual examination of the glove and in the avoidance of handling sharp objects.

ii Any other class of glove may be used for similar work without protector gloves if the employer can demonstrate that the possibility of physical damage to the gloves is small and if the class of glove is one class higher than that required for the voltage involved. Insulating gloves that have been used without protector gloves may not be used at their rated voltage until they have been tested.

(8) Electrical protective equipment shall be subjected to periodic electrical tests at a certified testing facility. For equipment that is in use, testing shall be conducted every six months (e.g., rubber insulating gloves) or 12 months (e.g., rubber insulating blankets or sleeves). Equipment in storage or not in use shall be tested annually.

(9) Insulating equipment failing to pass inspections or electrical tests may not be used by employees, except as follows:

i Rubber insulating line hose may be used in shorter lengths with the defective portion cut off.

ii Rubber insulating blankets may be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket.

iii Rubber insulating blankets may be salvaged by severing the defective area from the undamaged portion of the blanket. The resulting undamaged area may not be smaller than 22 inches by 22 inches (560 mm by 560 mm) for Class 1, 2, 3, and 4 blankets.

iv Rubber insulating gloves and sleeves with minor physical defects, such as small cuts, tears, or punctures, may be repaired by the application of a compatible patch. Also, rubber insulating gloves and sleeves with minor surface blemishes may be repaired with a compatible liquid compound. The patched area shall have electrical and physical properties equal to those of the surrounding material. Repairs to gloves are permitted only in the area between the wrist and the reinforced edge of the opening.

(10) Repaired insulating equipment shall be re-tested by a certified testing facility before it may be used by employees.

(11) The Safety or Environmental/Safety Focal Point shall maintain equipment test or inspection records. The records shall identify the equipment that passed the test or inspection and the date of the action.

8.3.8 Shop Safety

a. Safety glasses with side shields shall be used by each machine operator. Goggles shall be worn when grinding. Contact lenses are not permitted to be used in areas where welding or cutting operations are taking place.

b. The use of close-fitting garments by machine operators and service personnel is required. Loose clothing such as ties, dangling cuffs, jewelry and lab coats, is prohibited.

c. Personnel with long hair shall wear close-fitting, stiff-brim caps, hats or hair nets while working around moving machine parts.

d. Gloves shall not be worn when there is a possibility that the gloves will become entangled in a machine or tool, creating an additional hazard.

e. A leather glove or glove rated for the service shall be used when working in areas with hot surfaces. While grinding, leather gloves shall be worn unless it can be shown that the gloves create a greater hazard. Welding or cutting operations require the use of welding gloves.

f. Welding helmets shall be used during all arc welding or arc cutting operations. Helpers or attendants shall also wear proper eye protection. Safety glasses or goggles shall be worn in conjunction with welding helmets. (See Attachment B, "Guide for the Selection of Proper Shade Numbers").

8.3.9 Construction Sites

At all construction sites, hard hats, safety shoes and safety glasses are required for all personnel, both NWS and contractor. Hard hats designed to reduce electrical shock hazard shall be worn when exposed electrical conductors could contact the head. Other PPE (respirators, gloves, etc.) are dependent upon the type of construction being performed.

8.3.10 Training

a. PPE training shall be provided for each employee required to use PPE by this procedure.

b. The content of the PPE training shall consist of but not be limited to the following:

(1) When the PPE is necessary.

(2) What PPE is necessary.

(3) How to properly put on, take off, adjust, and wear the PPE.

(4) The limitations of the PPE.

(5) The proper care, maintenance, useful life and disposal of the PPE.

(6) Circumstances where re-training is required include, but are not limited to, situations where:

i Changes in the workplace render previous training obsolete.

ii Changes in the types of PPE to be used render previous training obsolete.

iii Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

c. Personnel having received PPE training shall demonstrate an understanding of the training and the ability to use the PPE properly before performing any work requiring the use of the PPE.

d. A written certification shall be generated by the Station Manager or his/her designee that states the name of the employee trained, the date of the training and the PPE for which the employee was trained. (See Attachment E, "NWS PPE Training Certification Form").

8.4 Quality Control

8.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

8.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

8.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

8.5 Responsibilities

8.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

8.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that a PPE hazard assessment has been performed as required by this procedure.

c. Shall ensure that NWS personnel wear the PPE required for the task they are performing.

d. Shall ensure that NWS personnel are properly trained to wear the PPE required for a particular task.

e. Shall ensure that initial and periodic inventory of PPE is accomplished and adequate stock is maintained.

8.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

8.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE:	* - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

8.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

8.6.1 American National Standards Institute, ANSI Z89.1-1986, "American National Standard for Personal Protection-Protective Headwear for Industrial Workers-Requirements".

8.6.2 American National Standards Institute, ANSI Z87.1-1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection."

8.6.3 American National Standards Institute, ANSI Z41-1991, "American National Standard for Personal Protection-Protective Footwear."

8.6.4 American National Standards Institute, ANSI Z358.1-1998, "Emergency Eyewash and Shower Equipment."

8.6.5 Department of Commerce (DOC) Safety Manual.

8.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.95, "Occupational Noise Exposure."

8.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.145, "Specifications for Accident Prevention Signs and Tags."

8.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910 Subpart I, "Personal Protective Equipment."

8.6.9 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart Q, "Welding, Cutting and Brazing."

8.6.10 NWS Occupational Safety and Health Procedure #7, "Hazard Communication Program."

8.7 Attachments

Attachment A. Eye Protectors Selection Chart, ANSI Standard Z87.1-1989

Attachment B. Guide for Selection of Proper Shade Number, 29 CFR 1910.252

Attachment C. Hazard Assessment Form

Attachment D. Rubber Insulating Equipment Voltage Requirements

Attachment E. NWS PPE Training Certification Form

Attachment F. Glove Selection Table

Attachment G. Hazard Assessment Forms for PPE (WFO Springfield, MO)

ATTACHMENT A

Eye Protectors Selection Chart

(ANSI Z87.1-1989)

(OSHA 29 CFR 1910.133)

Operations	Electrode Size 1/32 in. (mm)	Arc Current	Minimum Protective Shade	Shade* Number
Shielded metal arc welding	<3 (2.5)	<60	7	-
	3-5 (2.5-4)	60-160	8	10
	5-8 (4-6.4)	160-250	10	12
	>8 (6.4)	250-550	11	14
Gas metal arc welding and flux cored arc welding		<60	7	-
		60-160	10	11
		160-250	10	12
		250-550	10	14
Gas tungsten arc Welding		<50	8	10
		50-100	8	12
		150-500	10	14
Air Carbon Arc cutting	(Light)	<500	10	12
	(Heavy)	500-1,000	11	14
Plasma arc welding		<20	6	6 to 8
		20-100	8	10
		100-400	10	12
		400-800	11	14
Plasma arc cutting	(Light)**	<300	8	9
	(Medium)**	300-400	9	12
	(Heavy)**	400-800	10	14
Torch brazing		-	3 or 4	-

Operations	Electrode Size 1/32 in. (mm)	Arc Current	Minimum Protective Shade	Shade* Number
Torch soldering		-	2	-
Carbon arc welding		-	14	-

ATTACHMENT B

Guide for Selection of Proper Shade Number

(29 CFR 1910.252)

	Plate Thickness		Shade Number*
	Inches	mm	
Gas Welding			
Light	<1/8	<3.2	4 or 5
Medium	1/8-1/2	3.2-12.7	5 or 6
Heavy	>1/2	>12.7	6 or 8
Oxygen Cutting			
Light	<1	<25	3 or 5
Medium	1-6	25-150	4 or 5
Heavy	>6	>150	5 or 6

* As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

** These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the workpiece.

This Page is Left Intentionally Blank

ATTACHMENT C

Hazard Assessment Form for Personal Protective Equipment

Location/Operation: _____**Date:** _____

Type of Hazard	Source of Hazard	Injury Potential			PPE Recommended	Comments
		High	Med	Low		
Temp. Extremes						
Chemical Exposure						
Harmful Dusts						
Light Radiation						
Falling Objects						
Sharp Objects						
Nip Points						
Flying Objects						
Electrical						
Fire/Explosion						

Assessment Completed By: _____

This Page is Left Intentionally Blank

ATTACHMENT D

Rubber Insulating Equipment Voltage Requirements

Class of Equipment	Maximum use voltage (1) a-c-rms	Retest voltage (2) a-c-rms	Retest voltage (2) d-c-avg
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

Footnote (1): The maximum use voltage is the a-c voltage (rms) classification of the protective equipment which designates the maximum nominal design voltage of the energized system that may be safely worked.

Footnote (2): The proof-test voltage shall be applied for at least one minute, but no more than three minutes.

This Page is Left Intentionally Blank

ATTACHMENT E

NWS PPE Training Certification Form

Location: _____

Course: _____

Date of Training: _____

Pursuant to the National Weather Service Occupational Safety & Health Procedure

Number _____ and title _____I certify I have received training on the

following personal protective equipment

(PPE):_____

Printed Name of Employee: _____

Signature of Employee: _____

Signature of Instructor: : _____

Distribution:

Employee's Supervisor

Safety or Environmental/Safety Focal Point

This Page is Left Intentionally Blank

ATTACHMENT F

Glove Selection Table

Resistance of Chemicals of Common Glove Materials

E = Excellent G = Good F = Fair P = Poor

Chemical	Natural Rubber	Neoprene	Nitrile	Vinyl
Acetaldehyde	G	G	E	G
Acetic acid	E	E	E	E
Acetone	G	G	G	F
Acrylonitrile	P	G	-	F
Ammonium hydroxide (sat)	G	E	E	E
Aniline	F	G	E	G
Benzaldehyde	F	F	E	G
Benzene [a]	P	F	G	F
Benzyl chloride [a]	F	P	G	P
Bromine	G	G	-	G
Butane	P	E	-	P
Butyraldehyde	P	G	-	G
Calcium hypochlorite	P	G	G	G
Carbon disulfide	P	P	G	F
Carbon tetrachloride [a]	P	F	G	F
Chlorine	G	G	-	G
Chloroacetone	F	E	-	P
Chloroform [a]	P	F	G	P
Chromic acid	P	F	F	E

Chemical	Natural Rubber	Neoprene	Nitrile	Vinyl
Cyclohexane	F	E	-	P
Dibenzyl ether	F	G	-	P
Dibutyl phthalate	F	G	-	P
Diethanolamine	F	E	-	E
Diethyl ether	F	G	E	P
Dimethyl sulfoxide[b]	-	-	-	-
Ethyl acetate	F	G	G	F
Ethylene dichloride[a]	P	F	G	P
Ethylene glycol	G	G	E	E
Ethylene trichloride[a]	P	P	-	P
Fluorine	G	G	-	G
Formaldehyde	G	E	E	E
Formic acid	G	E	E	E
Glycerol	G	G	E	E
Hexane	P	E	-	P
Hydrobromic acid (40%)	G	E	-	E
Hydrochloric acid (conc)	G	G	G	E
Hydrofluoric acid (30%)	G	G	G	E
Hydrogen peroxide	G	G	G	E
Iodine	G	G	-	G
Methylamine	G	G	E	E
Methyl cellosolve	F	E	-	P
Methyl chloride[a]	P	E	-	P
Methyl ethyl ketone	F	G	G	P
Methylene chloride[a]	F	F	G	F

Chemical	Natural Rubber	Neoprene	Nitrile	Vinyl
Monoethanolamine	F	E	-	E
Morpholine	F	E	-	E
Naphthalene [a]	G	G	E	G
Nitric acid (conc)	P	P	P	G
Perchloric acid	F	G	F	E
Phenol	G	E	-	E
Phosphoric acid	G	E	-	E
Potassium hydroxide (sat)	G	G	G	E
Propylene dichloride [a]	P	F	-	P
Sodium hydroxide	G	G	G	E
Sodium hypochlorite	G	P	F	G
Sulfuric acid (conc)	G	G	F	G
Toluene [a]	P	F	G	F
Trichloroethylene [a]	P	F	G	F
Tricresyl phosphate	P	F	-	F
Triethanolamine	F	E	E	E
Trinitroltoluene	P	E	-	P

[a] Aromatic and halogenated hydrocarbons will attack all types of natural and synthetic glove materials. Should swelling occur, the user should change to fresh gloves and allow the swollen gloves to dry and return to normal.

[b] No data on the resistance to dimethyl sulfoxide of natural rubber, neoprene, nitrile rubber, or vinyl materials are available; the manufacturer of the substance recommends the use of butyl rubber gloves.

This Page is Left Intentionally Blank

ATTACHMENT G

Hazard Assessment Forms for PPE (WFO Springfield, MO)

Table of Contents

Attachment G-1. Extreme Weather Activities

Attachment G-2. Upper Air

Attachment G-3. Work at Heights

Attachment G-4. Soldering

Attachment G-5. Equipment Maintenance

Attachment G-6. Battery Charging and Replacement

ATTACHMENT G-1

Hazard Assessment Form for Personal Protection Equipment

Location/Operation **Extreme Weather Activities** **Date:**_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes	Weather	9 High 9 X Med 9 Low	Yes	Rain Gear, Insulated Overalls, Insulated Boots
Chemical Exposure		9 High 9 Med 9 Low		
Harmful Dusts		9 High 9 Med 9 Low		
Light Radiation		9 High 9 Med 9 Low		
Falling Objects		9 High 9 Med 9 Low		
Sharp Objects		9 High 9 Med 9 Low		
Nip Points		9 High 9 Med 9 Low		
Flying Objects		9 High 9 Med 9 Low		
Electrical		9 High 9 Med 9 Low		

Assessment by:_____

ATTACHMENT G-2

Hazard Assessment Form for Personal Protection Equipment

Location/Operation __Upper Air_____ **Date:**_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes		9 High 9 Med 9 X Low		
Chemical Exposure		9 High 9 Med 9 Low		
Harmful Dusts		9 High 9 Med 9 Low		
Light Radiation		9 High 9 Med 9 Low		
Falling Objects		9 High 9 Med 9 Low		
Sharp Objects		9 High 9 Med 9 Low		
Nip Points		9 High 9 Med 9 Low		
Flying Objects	Ruptured Balloon Fragments	9 High 9 Med 9 X Low	Yes	Safety Glasses or Safety Goggles
Electrical		9 High 9 Med 9 Low		

Assessment by:_____

ATTACHMENT G-3

Hazard Assessment Form for Personal Protection Equipment

Location/Operation __Work at Heights____ **Date:**_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes		9 High 9 Med 9 Low		
Chemical Exposure		9 High 9 Med 9 Low		
Harmful Dusts		9 High 9 Med 9 Low		
Light Radiation		9 High 9 Med 9 Low		
Falling Objects	Falling Debris, Tools, etc.	9 High 9 X Med 9 Low	Yes	Hard hat
Sharp Objects	Sharp aspects of structures or equipment being climbed	9 High 9 X Med 9 Low	Yes	Gloves
Nip Points		9 High 9 Med 9 Low		
Flying Objects		9 High 9 X Med 9 Low	Yes	Safety Glasses or Safety Goggles
Electrical		9 High 9 Med 9 Low		

Assessment by:_____

ATTACHMENT G-4

Hazard Assessment Form for Personal Protection Equipment

Location/Operation Soldering_____ Date:_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes	Hot Iron	9 High 9 Med 9 X Low	No	
Chemical Exposure		9 High 9 Med 9 Low		
Harmful Dusts	Lead and Tin Fume	9 High 9 Med 9 X Low	No	Exposure Potential low in reference to PEL
Light Radiation		9 High 9 Med 9 Low		
Falling Objects		9 High 9 Med 9 Low		
Sharp Objects		9 High 9 Med 9 Low		
Nip Points		9 High 9 Med 9 Low		
Flying Objects	Splattering of hot solder	9 High 9 X Med 9 Low	Yes	Safety Glasses or Safety Goggles
Electrical		9 High 9 Med 9 Low		

Assessment by:_____

ATTACHMENT G-5

Hazard Assessment Form for Personal Protection Equipment

Location/Operation Equipment Maintenance Date:_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes		9 High 9 Med 9 X Low		
Chemical Exposure	Lubricants and Solvents	9 High 9 Med 9 X Low	Yes	Gloves, and Safety Glasses or Safety Goggles
Harmful Dusts		9 High 9 Med 9 Low		
Light Radiation		9 High 9 Med 9 Low		
Falling Objects	Falling materials or tools	9 High 9 X Med 9 Low	Yes	Hard hat
Sharp Objects		9 High 9 Med 9 Low		
Nip Points		9 High 9 Med 9 Low		
Flying Objects	Scrap from use of power or hand tools	9 High 9 X Med 9 Low	Yes	Safety Glasses or Safety Goggles
Electrical	High and Medium Voltage	9 High 9 X Med 9 Low	Yes	Rubber Gloves Boots without metal eyelets, fiberglass toes

Assessment by:_____

ATTACHMENT G-6

Hazard Assessment Form for Personal Protection Equipment

Location/Operation Battery Charging and Replacement Date:_____

Type of Hazard	Source of Hazard	Potential of Injury	Recommend PPE	Comments
Temperature Extremes		9 High 9 Med 9 Low		
Chemical Exposure	Lubricants and Solvents	9 High 9 X Med 9 Low	Yes	Chemical Resistant Gloves, Chemical Resistant Apron and Safety Glasses or Safety Goggles
Harmful Dusts		9 High 9 Med 9 Low		
Light Radiation		9 High 9 Med 9 Low		
Falling Objects	Falling materials or tools	9 High 9 Med 9 Low		
Sharp Objects		9 High 9 Med 9 Low		
Nip Points		9 High 9 Med 9 Low		
Flying Objects	Scrap from use of power or hand tools	9 High 9 Med 9 Low	Yes	
Electrical	High and Medium Voltage	9 High 9 Med 9 Low	Yes	

Assessment by:_____

PROCEDURE 9 - Compressed Gas Safety

Table of Contents Page

Synopsis 9-ii
Compressed Gas Safety Checklist 9-iii

9 COMPRESSED GAS SAFETY 9-1
9.1 Purpose and Scope 9-1
9.2 Definitions 9-1
9.3 Procedure 9-1
9.4 Quality Control 9-6
9.5 Responsibilities 9-6
9.6 References 9-7
9.7 Attachments 9-8

Synopsis

The purpose of this procedure is to provide guidelines for hazards associated with the use, handling and storage of compressed gases. This procedure applies to all NWS facilities and work locations where compressed gases are used and/or stored, and to the employees using compressed gases.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Obtain Copies of Material Safety Data Sheets for Compressed Gases. *(9.5.3d)*
- **Designate Person to Administer Compressed Gas Safety Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Hydrogen Generator Training, if applicable. *(9.3.6a)*
  - Training of personnel working with Compressed Gas Cylinders. (*9.5.3b)*
  - Fire Extinguisher Use Training (if Emergency Action Plan (Procedure #5) calls for employees fighting the fire). *(9.5.2c, 9.3.1u)*
- **Inventory Material/Equipment (Procure as required)**
  - Warning Signs *(9.5.3c, 9.3.1u, 9.3.5e)*

Recurring and Annual Task Requirements:

- **Perform Inspections/Assessment/Testing**
- **Review/Update Documentation/Information required for Site**
  - Maintain Training Records for personnel handling Compressed Gases. (*9.5.2b)*
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Hydrogen Generator Training. *(9.3.6a)*, as required
  - Training of personnel working with Compressed Gas Cylinders. (*9.5.3b)*
  - Fire Extinguisher Use Training (if Emergency Action Plan calls for employees fighting the fire). *(9.5.2c, 9.3.1u)*
- **Replace/Maintain Material/Equipment**
  - Warning Signs *(9.5.3c, 9.3.1u, 9.3.5e)*

Compressed Gas Safety Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	9.4.2				
Do only “Qualified Personnel” handle, use, and store compressed gas cylinders?	9.3.1a				
Have employees working with Hydrogen Generator systems received appropriate training?	9.3.6a				
Are periodic Inspections of Compressed Gas storage and usage areas performed and deficiencies corrected?	9.5.3b				
Are all Cylinders visually inspected upon delivery?	9.3.1b				
Are all Cylinders legibly marked to identify the gas contained?	9.3.1f				
Are all empty Cylinders marked as “empty”?	9.3.1s				
Are work areas maintained in clean and orderly condition?	9.3.1d				
Are “No Smoking” signs posted inside storage areas and at the entrances to storage areas?	9.3.1u				
Are hydrogen storage areas marked with “Hydrogen-Flammable Gas - No Smoking - No Open Flames”	9.3.5e				

Requirements	Reference	YES	NO	N/A	Comments
Are Material Safety Data Sheets available for all compressed gases used?	9.5.3c				
Are Cylinders handled, stored and used appropriately depending on the type of gas used?	9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5				
Are adequate fire extinguishers available for fire emergencies at storage areas?	9.3.1t				

9 COMPRESSED GAS SAFETY

9.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure related to the hazards associated with the use, handling and storage of compressed gases. This procedure applies to all NWS facilities, work locations, and employees where compressed gases are used and/or stored.

9.2 Definitions

Compressed Gas. Any material or mixture contained at a pressure of 40 psi at 70º F or 104 psi at 13º F. Any liquid material having a pressure exceeding 40 psi at 100º F.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Handling. An activity in which the employee is involved in the storage, transportation or use of compressed gas cylinders.

Housekeeping. Maintaining the general cleanliness of the work area, which includes the proper and safe storage of all compressed gas cylinders.

Inflation Gas System. A system in which gas is delivered, stored and discharged to consumer piping. The system includes stationary or moveable containers, pressure regulators, safety relief devices, interconnection piping and controls.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Personal Protective Equipment (PPE). Safety devices worn by the workers to protect against hazards in the environment.

Qualified Employee. A person who has received specific training in the inspection, storage, and use of compressed gases.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

9.3 Procedure

9.3.1 Compressed Gases - General Instructions

a. Only qualified employees shall handle, use and store compressed gas cylinders.

b. Employees shall visually inspect compressed gas cylinders upon delivery and before each use. Damaged cylinders shall be marked and the supplier shall be contacted to arrange for disposal.

c. Smoking, eating or drinking shall be prohibited in compressed gas storage and working areas.

d. Work and storage areas shall be kept in clean and orderly condition at all times.

e. Employees shall ensure that the compressed containers with which they are working carry legible labels or markings identifying the contents. The primary means of identification shall be by chemical name or the commercially accepted name of the material legibly marked on the container.

f. Containers not bearing any legible written identification shall not be used and shall be picked up by the supplier.

g. Compressed gas cylinders shall not be rolled or stored on their side, dragged or slid.

h. Compressed gas cylinders shall be stored in accordance with all state and local regulations and in accordance with OSHA, National Fire Protection Association (NFPA) and the Compressed Gas Association (CGA).

i. Where removable caps are provided by the supplier for valve protection, the user shall keep such caps on containers, except when containers are connected to dispersing units.

j. Compressed gas cylinders shall be stored upright (valve end up) and shall be secured with approved restraining device.

k. The user shall keep container valves closed at all times when not in use.

l. Compressed gas cylinders shall not be subjected to indoor temperatures above 125° F (51° C).

m. Storage areas shall be dry and well ventilated and built of a fire-resistant material. Combustible materials shall not be stored within 20 feet (6.1 meters) of compressed gas cylinders.

n. Where compressed gas cylinders are connected to a manifold system, the manifold and its related equipment shall be of a proper design for the products they are to contain.

NOTE: *A manifold system shall not be used with hydrogen.*

o. Regulators, gauges, hoses and other appliances provided for use with a particular gas, or groups of gases shall not be used on containers containing

gases having different chemical properties unless information obtained from the supplier indicates that it is permissible.

p. Valves should be opened slowly and pointed away from persons or sources of ignition. On valves without wheels, only non-sparking wrenches provided by or recommended by the supplier shall be used.

q. Connections to piping, regulators and other appliances shall be tight to prevent leakage. If leak is suspected, a gas detection fluid, soapy water or other commercially available solution shall be used for leak detection (e.g., "Snoop" leak detection solution).

r. Release of gas pressure within system shall be done before removal of appliances, hoses or regulators.

s. Empty cylinders shall be legibly marked as empty.

t. Adequate portable fire extinguishers of carbon dioxide or dry chemical types shall be available for fire emergencies at storage areas .

u. “No Smoking” signs shall be posted in the storage areas and entrances to storage areas.

v. Each cylinder bearing a DOT specification marking must be inspected, re-tested and marked in conformance with 49 CFR 173.34, “Qualifications, Maintenance and Use of Cylinders.”

w. Cylinders shall not be lifted by their caps.

9.3.2 Oxygen compressed gases

a. Containers, valves, regulators, hose and oxygen appliances shall be free from oil or grease and shall not be handled with oily hands, oily gloves or with greasy equipment.

b. Oxygen containers shall be separated from flammable gas containers or combustible materials a minimum of 20 feet or by a noncombustible barrier at least 5 feet high having a fire resistance rating of at least ½ hour.

c. Bulk oxygen storage systems shall be located above ground and outdoors, or shall be installed in a building of noncombustible construction, adequately vented, and used for that purpose only.

9.3.3 Acetylene compressed gases

a. In-plant transfer, storage, and utilization of acetylene cylinders shall be in accordance with Compressed Gas Association Pamphlet G-1, Acetylene, 1996.

b. Acetylene tanks shall be transported, stored and utilized only in an upright position.

c. Only regulators designed for acetylene gases shall be used on acetylene tanks.

d. Storage near oxidizers shall be prohibited.

9.3.4 Liquified petroleum gases. (LPG)

a. Storage of LPG within buildings is prohibited.

b. When stored outside of buildings, containers awaiting use shall be located away from the nearest building or group of buildings, in accordance with the following:

Quantity of LP-Gas Stored	Distance (feet)
500 lbs. or less	0
501 to 6,000 lbs.	10
6,001 to 10,000 lbs.	20
Over 10,000 lbs.	25

c. Containers shall be stored in a suitable ventilated enclosure or otherwise protected against tampering.

d. Storage locations shall be provided with at least one approved portable fire extinguisher having a rating of not less than 20-B:C.

9.3.5 Hydrogen Compressed Gases. Specific procedures for filling weather balloons with hydrogen can be found in Observing Handbook No.10 (WSOH-10), Rawisonde Observations, Federal Meteorological Handbook No.3 (FMH-3), Rawisonde and Pibal Observations and NWS Operations Manual (WSOM), draft Chapter B-45, Upper Air Operations. The following paragraphs provide general safety guidance on the handling of compressed hydrogen.

a. Hydrogen containers shall comply with the DOT specifications or ASME Boiler and Pressure Vessel Code, Section VIII.

b. Each container shall be marked with the name “Hydrogen.”

c. Only spark-proof tools shall be used in and around hydrogen environment.

d. A static dissipative mat shall be placed at the end of inflation table in the Upper Air Building to prevent static electricity buildup when filling balloons.

e. Hydrogen storage areas shall be permanently placarded as follows: “DANGER-HYDROGEN-NO SMOKING” (ASN P810-3).

f. Bottled hydrogen cylinders shall be kept within the storage room.

g. Hydrogen systems shall be located so that they are readily accessible to delivery equipment and to authorized personnel.

h. Manifold systems shall not be used with compressed hydrogen. Only helium systems may be manifolded.

i. Safety posters shall be prominently displayed in the inflation room and cylinders storage area. The entire set of five posters can be ordered from NLSC using ASN P810-4:

P810-4A - General rules for hydrogen fire prevention

P810-4B - Safety rules for hydrogen cylinders

P810-4C - Balloon rupture procedures

P810-4D - Hydrogen-fed fires

P810-4E - Non-hydrogen fires

j. A limited number of hydrogen cylinders should be stored on site. This should be limited to 15 cylinders (or no more than 3,000 cu feet of hydrogen). Any exception to this should be approved by Regional or National Safety Officer.

k. At least two fire extinguishers shall be placed in Upper Air building inflation room. One of these two extinguishers shall be at least 20-lbs and be placed near the exit of inflation room. Additional fire extinguishers shall be placed in the cylinder storage room and radome.

9.3.6 Hydrogen Generator Systems

a. Only personnel completed the Hydrogen Generator training course shall perform operations and maintenance on such units.

b. Operators will use static dissipative mats to prevent static electricity buildup between the operator and gas lines with filling balloons and between the operator and the hydrogen generator when operating or performing routine maintenance.

c. Hydrogen Generator Systems areas shall be permanently placarded as follows: "HYDROGEN-FLAMMABLE GAS-NO SMOKING-NO OPEN FLAMES."

d. There shall be no use of electric tools or power equipment while operating the hydrogen generator. The area should be monitored for hydrogen gas prior to maintenance. Telephones, flashlights, pagers, etc. shall not be used unless intrinsically safe.

e. All electrical connections shall conform with 29 CFR 1910, Subpart S, for Class 1 Division 2 specifications.

f. The High Pressure Storage Tank shall not be filled to more than 100 psi. The tank shall be regularly drained to prevent a buildup of condensate.

9.4 Quality Control

9.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

9.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

9.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

9.5 Responsibilities

9.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

9.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that required initial and refresher training is given to those employees working with compressed gas cylinders and training records are maintained.

c. Shall ensure that fire extinguisher training is provided if Emergency Action Plan (EAP) calls for employees to fight the fire.

d. Shall ensure compliance with all federal, state and local regulations and policies associated with compressed gas cylinders used at NWS facilities.

9.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall ensure that Material Safety Date Sheets (MSDS) are available for all gases utilized at the site.

c. Shall ensure that warning signs are obtained and posted.

9.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

9.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

9.6.1 American National Standards Institute, ANSI 248.1-1954, Marking Portable Compressed Gas Containers to Identify the Material Contained.

9.6.2 American National Standards Institute, ANSI B31.1-1967, Industrial Gas and Air Piping.

9.6.3 American National Standards Institute, ANSI UL 407-1995, Standards for Safety Manifolds for Compressed Gases.

9.6.4 American Society of Mechanical Engineers, ASME Boiler and Pressure Vessel Code, Section VIII.

9.6.5 Federal Meteorological Handbook, No. 3.

9.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.101, Compressed Gases (general requirements).

9.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.102, Acetylene

9.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.103, Hydrogen

9.6.9 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.104, Oxygen.

9.6.10 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.253, Oxygen-Fuel Gas Welding and Cutting.

9.6.11 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart M, Compressed Gases and Compressed Air Equipment.

9.6.12 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart S, Electrical.

9.6.13 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.153, Liquified Petroleum Gases.

9.6.14 U.S. Department of Transportation, 49 CFR 173.34 “Qualifications, Maintenance and Use of Cylinders.

9.6.15 WSOM draft Chapter B-45, Upper Air Operations.

9.6.16 WSOH-10, Rawisonde Observations.

9.7 Attachments

None

PROCEDURE 10 - Respiratory Protection

Table of Contents Page

Synopsis 10-ii
Respiratory Protection Checklist 10-iii

10 RESPIRATORY PROTECTION 10-1
10.1 Purpose and Scope 10-1
10.2 Definitions 10-1
10.3 Procedure 10-2
10.4 Quality Control 10-4
10.5 Responsibilities 10-5
10.6 References 10-6
10.7 Attachments 10-6

ATTACHMENT A 10-A-1
Information for Employees Using Respirators When Not Required Under the Standard (29 CFR 1910.134, Appendix D). 10-A-1

ATTACHMENT B 10-B-1
Sample Respiratory Protection Program 10-B-1

Synopsis

The purpose of this procedure is to establish requirements related to respiratory protection. This procedure applies to all NWS facilities and work locations where respiratory protection is required and to the employees using respiratory protection.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Evaluate Workplaces for airborne contaminants. *(10.5.2c, 10.3.2)*
  - Evaluate the use of Engineering and Administrative Controls, if applicable *(10.5.2c, 10.3.11)*
- **Develop/Obtain Documentation/Information required for Site**
  - Establish Respiratory Protection Program *(10.3.11c, Attachment B)*, if required
    - < Develop Procedures for selecting respirators. *(10.3.11e.1)*
    - < Develop Procedures for proper use of respirators. (10.3.11e.4)
    - < Prepare Fit Test Procedures. *(10.3.11e.3)*
    - < Develop Procedures and Schedule for maintenance of respirators.*(10.3.11e.5)*
  - Establish Records for Medical Evaluations, Fit Tests and Training. *(10.3.10)*
- **Provide Medical Evaluations to all employees required to use respirators**
  - Medical Evaluation. *(10.3.3 & 10.3.11e.2)*
  - Fit Testing *(10.3.4)*
- **Designate Person to Administer Respiratory Protection Program**
- **Provide Local Training of Site Personnel**
  - Respiratory Hazards Training. *(10.3.11e.7)*
  - Training for Respirator Users. *(10.3.11e.8)*
- **Inventory Material/Equipment (Procure as required)**
  - Notification Signs/Postings.*(10.5.2b, 10.3.8)*
  - Respirators/Filters. *(10.5.2b, 10.3.7)*

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Maintain Respiratory Protection Program *(10.3.11c, Attachment B)*, if required
  - Maintain Records for Medical Evaluations, Fit Tests and Training. *(10.3.10)*
- **Provide Refresher Training of Site Personnel**
  - Annual Training for Respirator Users. *(10.3.9)*
- **Provide Medical Evaluations to all employees required to use respirators**
  - Medical Examination. *(10.3.3 & 10.3.11e.2)*, as necessary
  - Annual and as-required Fit Testing *(10.3.3, Attachment A)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Notification Signs/Postings.*(10.5.2b, 10.3.8)*
  - Respirators/Filters. *(10.5.2b, 10.3.7)*

Respiratory Protection Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	10.4.2				
Does the facility require a written Respiratory Protection Program?	10.3.11c				
Is this program updated as necessary to reflect the changes in the workplace that affect respiratory use?	10.3.11d				
Is the Safety or Environmental/Safety Focal Point, Regional Environmental/Safety Coordinator, and the Regional Safety Manager (RSM) being notified when work activities are suspected to involve breathing contaminated air?	10.3.2				
Is a “Qualified Individual” being used to determine the need for protection based on air monitoring and/or professional judgement for those work activities suspected to involve breathing contaminated air?	10.3.2				
Have all feasible administrative and engineering controls been exhausted prior to implementing the use of respiratory protection?	10.3.1				
Are respirators that are appropriate for the hazard to which the employee is exposed being selected and issued by a “Qualified Individual”?	10.3.6				

Requirements	Reference	YES	NO	N/A	Comments
Have all employees who must use a respirator, been medically evaluated by a physician or a licensed health care professional (PLHCP) prior to being fit tested?	10.3.3				
Has a health care professional provided a written recommendation concerning each employee's ability to use a respirator?	10.3.3				
Has the "Qualified Individual" performed Fit Test to all employees who have been medically cleared to use a respirator?	10.3.4				
Have all employees who have been issued a respirator received annual training in the testing, maintenance, donning and use of respirators?	10.3.5				
Where respirators are required, are the respirators, training and medical evaluations provided at no cost to the employee?	10.3.11h				
Are all respirators being cleaned and disinfected every two weeks or at the end of each project?	10.3.7				
Are notification signs stating "Respiratory Protection Required" used at each entrance of the work area where respirators are used ?	10.3.8				
Is Fit Testing completed on an annual basis, or when major facial changes or loss of weight occurs?	10.3.11e				
Are records maintained for those employees who have been medically evaluated, fit tested and received respirator training?	10.3.10				

Requirements	Reference	YES	NO	N/A	Comments
Are procedures in place to establish guidelines for voluntary respirator use?	10.3.11f				
Is the Safety or Environmental/Safety Focal Point, in conjunction with the RSM and the NWS Regional Coordinator, conducting required evaluations to measure the overall program effectiveness?	10.3.11g				

10 RESPIRATORY PROTECTION

10.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure to establish requirements related to respiratory protection. This procedure applies to all NWS facilities, work locations, and employees where respiratory protection is used.

10.2 Definitions

Air-Purifying Respirator. A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Demand Respirator. An atmosphere-supplying respirator that admits breathing air through the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Fit Testing. Evaluation of sealing characteristics and performance of the respirator under controlled conditions while worn by the user.

Harmful Atmosphere. Any atmosphere with contaminant concentrations above OSHA Permissible Exposure Levels (PEL's) or American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Values (TLV's), in addition to atmospheres with recognized hazardous levels of contaminants.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

PEL. Permissible Exposure Level. Established by OSHA, PELs are the maximum allowable concentrations of substances in the air that an employee can be exposed to without harmful effects during an 8-hour period.

Qualified Individual. A person who is qualified by appropriate education, training, and experience to provide technical support on respiratory protection issues, e.g., selecting the appropriate respirator for a specific environment.

Respirator. A device used to protect the wearer from the inhalation of harmful atmospheres.

MSDS. Material Safety Data Sheet.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC)

Supplied-Air Respirator. An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-Fitting Respirator. A respirator with a respiratory inlet covering that forms a complete seal with the face.

TLV. Threshold Limit Value. Exposure guidelines established by ACGIH for airborne concentrations of various chemicals.

10.3 Procedure

10.3.1 Respirators shall be used when engineering or administrative controls cannot be adopted to control or prevent the inhalation of harmful atmospheres. Respiratory protection may be required for NWS personnel involved in work with certain hazardous chemicals; during sand blasting operations; when spray painting; when exposed to dust, smoke and fumes associated with welding operations; or when working in an oxygen-deficient or potentially oxygen-deficient atmosphere.

10.3.2 When work activities are suspected to involve contaminated breathing air, the Safety or Environmental/Safety Focal Point shall be notified in advance of any work performed. The Focal Point should notify the Regional Environmental/Safety Coordinator and the NOAA Regional Safety Manager (RSM), as needed. The Safety or Environmental/Safety Focal Point shall then, with assistance of RSM, obtain services of a Qualified Individual to determine the need for protection based on air monitoring and/or professional judgment.

10.3.3 Before an employee can be fit tested, a physician or other licensed health care professional (PLHCP) shall evaluate and determine if the employee is physically able to use a respirator.

10.3.4 For employees who have been medically cleared to use a respirator, a fit test shall be performed by a Qualified Individual to ensure that a proper face seal is maintained. Fit testing shall be provided initially, annually and as necessary.

10.3.5 Respirators shall then be provided to those employees who have received training in the testing, maintenance, donning and use of respirators. Employees shall also receive training on the proper types and uses of respirators and filters and their limitations.

10.3.6 The Qualified Individual shall select and issue respirators which are appropriate for the hazard to which the employee is exposed.

10.3.7 In order to help provide the wearer with the proper protection, routinely used respirators shall be cleaned and disinfected every two weeks or at the end of the project (whichever

comes first) or, as needed. Respirators shall be inspected before each use and during cleaning. Worn parts shall be replaced.

10.3.8 In work areas where respirators are required to be used, a notification sign shall be posted at each entrance which states "Respiratory Protection Required."

10.3.9 Respiratory protection training shall be given to respirator users annually and shall include, at a minimum, the proper use, inspection, and cleaning of respirators.

10.3.10 Records shall be maintained on those employees who have been medically evaluated, fit tested, or received respirator training. Records of medical evaluations shall be kept for the duration of the wearer's employment and 30 years following.

10.3.11 It is the policy of the NWS to adhere to the provisions of 29 CFR 1910.134, "Respiratory Protection" including the following:

a. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, when effective engineering and/or administrative controls are not feasible, or while they are being instituted, appropriate respirators shall be used.

b. Respirators shall be provided when such equipment is necessary to protect the health of the employee. The respirators shall be applicable and suitable for the purpose intended.

c. In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, a written Respiratory Protection Program with worksite-specific procedures shall be established, implemented, and maintained.

d. The Respiratory Protection Program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use.

e. The Respiratory Protection Program shall include the following provisions, as applicable:

(1) Procedures for selecting respirators for use in the workplace.

(2) Medical evaluations (initially and as necessary) of employees required to use respirators.

(3) Fit-testing procedures for tight-fitting respirators.

(4) Procedures for proper use of respirators in routine and emergency situations

(5) Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and otherwise maintaining respirators.

(6) Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators.

(7) Training of employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations.

(8) Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance.

(9) Procedures for regularly evaluating the effectiveness of the Program.

f. Where respirator use is not required and voluntary respirator use is permissible, the employer shall establish and implement those elements of a written Respiratory Protection Program necessary to ensure that any employee using a respirator voluntarily is medically able to use that respirator, and that the respirator is cleaned, stored, and maintained so that its use does not present a health hazard to the user.

NOTE: NWS does allow voluntary use of disposable dust masks (i.e., filtering facepieces, which are provided for the employee's comfort. There are no medical limitations on the use of dust masks. Employers who allow use of dust masks are required to ensure that the masks are not dirty or contaminated, that their use does not interfere with employees' ability to work safely).

g. The Site Focal Point, in conjunction with the RSM and the NWS Regional Coordinator, shall administer or oversee the Respiratory Protection Program and conduct the required evaluations of program effectiveness.

h. Respirators, training, and medical evaluations shall be provided at no cost to the employee.

10.4 Quality Control

10.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

10.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

10.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

10.5 Responsibilities

10.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

10.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and periodic inventory of notification signs/postings, respirators, filters and other safety equipment is accomplished and adequate stock is maintained, as required.

c. Shall ensure that workplaces are evaluated for air contaminants, if required, and that engineering or/and administrative controls are used, if possible, before establishing the Respiratory Protection Program.

10.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall ensure that a “qualified individual” identifies the site operations which require the use of respiratory protection.

10.5.4 Physician or Other Licensed Health Care Professional (PLHCP)

Shall determine the physiological and psychological capabilities of the potential respirator user to certify that the employee is fit to wear a respirator.

10.5.5 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

10.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

10.6.1 American National Standards Institute, ANSI Standards Z88.2-1992, "American National Standard for Respiratory Protection," revised 1992.

10.6.2 National Institute for Occupational Safety and Health (NIOSH), 84 CFR 42, "Respiratory Protection."

10.6.3 National Safety Council, Fundamentals of Industrial Hygiene, 4th edition.

10.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, Standard 29 CFR 1910.134, "Respiratory Protection."

10.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, Standard 29 CFR 1910.139, "Respiratory Protection for M. Tuberculosis."

10.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, Standard 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances."

10.7 Attachments

Attachment A: Information for Employees Using Respirators When Not Required Under the Standard (29 CFR 1910.134).

Attachment B: Sample Respiratory Protection Program

ATTACHMENT A

Information for Employees Using Respirators When Not Required Under the Standard (29 CFR 1910.134, Appendix D).

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and comply with all instructions provided by the manufacturer on use, maintenance, cleaning and care of respirators, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. The National Institute for Occupational Safety and Health (NIOSH) of the U.S. Department of Health and Human Services certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

ATTACHMENT B

Sample Respiratory Protection Program

Contents

I. Purpose

II. Scope

III. Definitions

IV. Responsibilities

V. Program Elements

1. Identification of Airborne Contaminants
2. Selecting Proper Respiratory Protection
3. Maintenance and Care of Respirators
4. Limitations of Air Purifying Respirators
5. Medical Evaluations
6. Fit testing
7. Face Seal Protection
8. Training and Information
9. Recordkeeping
10. Program Evaluation

VI. Summary of Program Elements

Appendices

Appendix 1-a: Respirator Types
Appendix 1-b: Respirator Selection Guidelines
Appendix 2: Information for Employees Using Respirators when Not Required
Appendix 3: Cleaning Procedures
Appendix 4: Medical Questionnaire
Appendix 5: User Seal Check

I. Purpose

The purpose of this plan is to establish a program and procedures for respiratory protection at the_____ _____. This program supports compliance with the Occupational Safety and Health Administration Respiratory Protection Standard, 29 CFR 1910.134. This program describes the procedures for identifying airborne hazards, selecting and using proper respirators, medical evaluations of employees, fit testing of respirators, and training and record keeping requirements. The program outlines the policy and procedures necessary to implement a Respiratory Protection Program.

II. Scope

This program applies to all employees who are required to wear air purifying respirators to prevent exposure to airborne contaminants. It also applies to employees who voluntarily wear respirators although respirators are not required.

This program does not cover the use of atmosphere supplying respirators in oxygen deficient atmospheres, high concentration atmospheres, or unknown atmospheres.

III. Definitions

***Administrative Controls**:* administrative changes in work schedules or procedures that reduce employee exposure to respiratory hazards.

***APR**:* air purifying respirator. A respirator with an air purifying filter cartridge or canister that removes specific air contaminants by passing ambient air through the air purifying element.

***Atmosphere supplying respirator**:* a respirator that supplies the wearer with breathing air from a source independent of the ambient air, including supplied air respirators (SAR) and self contained breathing apparatus (SCBA).

***Canister or cartridge**:* means a container with a filter, sorbent or catalyst, or a combination of these items, which removes specific contaminants from the air passed through the container.

***Contaminants**:* substances in the air that can cause immediate (acute) or long term (chronic) health problems.

***Concentration**:* the amount of contaminant in the air, measured in parts per million (ppm) or milligrams per cubic meter (mg/m^3).

***Demand respirator**:* means an atmosphere supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.

Dusts: are fine particles that are created when solid material breaks down. Operations that typically create dust are grinding, crushing, drilling, sanding and milling.

***Dust Masks (Filtering Facepieces)**:* a negative pressure particulate respirator with a filter as an integral part of the facepiece, or with the entire facepiece composed of the filtering medium.

Emergency situation: means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure: means an exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End of Service Life Indicator (ESLI): a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Engineering Controls*:* specialized equipment, processes or practices that can reduce employee exposure to respiratory hazards.

Escape only respirator*:* means a respirator that is intended to be used only for emergency exit.

Exposure*:* coming into contact with a hazardous substance through inhalation, ingestion, skin contact or absorption.

Fit factor*:* means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test*:* means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Fumes*:* are created when solid materials vaporize under extreme heat. As the vapor cools it condenses into an extremely small particle, e.g., fumes created during welding and cutting of steel.

Gases*:* gases have the ability to diffuse and spread throughout an enclosure or area. Examples of gases are nitrogen, carbon monoxide and carbon dioxide.

Hood: means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulder and torso.

IDLH*:* an OSHA classification "Immediately Dangerous to Life and Health" for atmospheres that are immediately fatal.

Loose fitting facepiece*:* a respirator with an inlet covering that is designed to form a partial seal with the face.

Mists*:* are created when liquids are atomized and condensed. Typical sources of mists are spraying operations, mixing and cleaning operations.

MSDS: Material Safety Data Sheet. Written or printed material from the product manufacturer which has information about the hazards of a material.

MUL: Maximum Use Limit*.* The maximum amount of protection provided by a respirator. MUL is calculated by multiplying the respirators protection factor by the Permissible Exposure Level (PEL) for the contaminant.

Negative Pressure Respirator*:* a tight fitting respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air outside the respirator.

NIOSH*: National Institute for Occupational Safety and Health.* A federal agency which establishes minimum performance standards for respirators and approves respirators for various uses.

Oxygen Deficiency*:* too little oxygen in the air, which can result in illness or injury to employees. By OSHA definition, it is an oxygen level less than 19.5%.

PAPR*: a powered air purifying respirator.* A respirator that uses a blower to force the ambient air through air purifying elements to the inlet covering.

PEL*: Permissible Exposure Level.* Established by OSHA, PELs are the maximum allowable concentrations of substances in the air that an employee can be exposed to without harmful effects during an 8-hour period.

PLHCP*: Physician or other licensed health care professional*, whose legally permitted scope of practice allows him or her to independently provide or be delegated the responsibility to provide some or all of the health care services required by this program.

Positive pressure respirator*:* means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

PPE*: Personal Protective Equipment.* Any equipment used to protect an employee from danger, including hard hats, boots, gloves, hoods, goggles, and respirators.

QLFT*: Qualitative fit test:* means a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

QNFT*: Quantitative fit test:* means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory inlet covering*:* means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit or a mouthpiece respirator with nose-clamp.

Self Contained Breathing Apparatus (SCBA)*:* means an atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.

Supplied air respirator (SAR)*:* means an atmosphere supplying respirator for which the source of breathing air is not designed to be carried by the user. (e.g., an airline respirator).

Tight fitting facepiece: a respirator with an inlet covering that forms a complete seal with the face.

TLV: Threshold Limit Value. Exposure guidelines established by American Conference of Governmental Industrial Hygienist (ACGIH) which have been established for airborne concentrations of many chemical compounds.

TWA*: Time Weighted Average.* A weighted average exposure level over a given amount of time, usually 8 hours.

User seal check: means an action conducted by the respirator user to determine if the respirator is properly sealed to the face.

Vapors: are formed through the evaporation of liquids or solids. Examples include gasoline, paint thinners, and solvents.

IV. Responsibilities

The Program Administrator is responsible for:

- Maintaining a written Respiratory Protection Program.
- Ensuring the coordinating of hazard assessments, respirator selection, training, medical evaluations and fit tests.
- Maintaining records and a current list of approved respirator wearers, including training, medical evaluations, fit tests, and the types of respirators which have been approved for use.
- Purchasing and providing approved respirators and replacement cartridges.
- Funding medical evaluations and fit tests for employees who wear respirators.
- Auditing the program for continued effectiveness.

The Supervisor of employees who wear respirators is responsible for:

- Knowing the hazards in their areas that require respiratory protection.
- Knowing the types of respirators that need to be used.
- Ensuring that Respirator Program procedures are followed.
- Enforcing the wearing of respirators where it is required.
- Ensuring that employees receive training and medical evaluations when necessary.
- Coordinating annual re-training.
- Notifying Environmental Health and Safety of any problems with respirator use, or any changes in work processes that would impact airborne contaminant levels.

The Employee who wears a respirator is responsible for:

- Participating in all training.
- Wearing the respirator in accordance with the program policies and work site-specific procedures.
- Properly maintaining their respiratory protection equipment.
- Reporting any malfunctions or concerns to their supervisor.

V. Program Elements

1. Identification of Airborne Contaminants

Types of Contaminants

- There are two main types of respiratory hazards: oxygen deficiency and airborne contaminants. This program covers only airborne contaminants.
- The main types of airborne contaminants are:

  a. dusts: particles, released during work operations such as grinding and sawing.

b. mists: particles of liquid, released during operations such as spray painting.

c. vapors: gaseous forms of a liquid, such as paint solvents.

d. fumes: vaporized condensed metals, as present in welding operations.

e. gases: such as nitrogen, methane, carbon monoxide.

Workplace Evaluations/Hazard Assessments

- Each workplace shall be evaluated for possible airborne contaminants by Safety or Environmental Health and Safety focal point or his/her designee. A hazard assessment shall be conducted in workplaces with the possibility of over exposure.
- Once a respiratory hazard has been identified, the work area shall be monitored for any changes in concentration level or for new hazards. Changes in work processes, substitution of materials, or changes in the ventilation of an area may necessitate re-testing. Supervisors are responsible for monitoring day to day operations and reporting changes to Safety or Environmental Health and Safety focal point.

2. Selecting Proper Respiratory Protection

Controlling airborne hazards

When controlling airborne hazards, engineering and administrative controls will first be considered as a means to reduce the hazards. Engineering controls can include enclosure, substitution, process modification, and ventilation. Administrative controls include scheduling changes to reduce time spent in contaminated areas.

Required Use of Respirators

In situations where engineering and administrative controls do not sufficiently reduce exposure to levels below Permissible Exposure Levels (PEL's), respirators are required.

Selection of Respirators

- Only NIOSH approved respirators will be used.
- Single strap disposable comfort masks are not approved respirators.
- Respirators will be selected based on the respiratory hazards to which the employee is exposed, and the workplace and user factors that affect performance.
- An employee shall wear only a respirator which has been fit tested and approved for the employee and for the hazards of the exposure.
- Respirator types, sizes, and cartridges are not interchangeable.
- The following factors are to be considered when determining the proper respiratory protection:

  a. Employee exposure (e.g., concentration, route of exposure).

  b. Physical form and chemical state of the contaminant.

- If the employee exposure cannot be identified or estimated, then the atmosphere shall be considered IDLH.

- For protection against particulates, one of the following respirators shall be provided:
  - a. An atmosphere supplying respirator or,
  - b. An air purifying respirator equipped with a filter certified by NIOSH as a HEPA (High Efficiency Particulate Air) filter or,
  - c. An air purifying respirator equipped with a filter certified for particulates by NIOSH or,
  - d. For contaminants consisting primarily of particulates with a mass median aerodynamic diameter (MMAD) of at least 2 micrometers, an air purifying respirator with any filter certified for particulates by NIOSH.
- For protection against gases and vapors, one of following respirators shall be provided:
  - a. An atmosphere supplying respirator or,
  - b. An air purifying respirator that is either equipped with a chemical cartridge that has an end of service life indicator (ESLI) certified by NIOSH for the contaminant, OR if there is no appropriate ESLI, then a replacement schedule must be in place for cartridges and filters based on information that will assure the cartridges are changed before their end of service life. The replacement schedule must be included in the worksite specific instructions.
- Consult Appendix A-1 for a description of Respirator types and Appendix A-2 for selection guidelines.

Voluntary Use of Respirators

- Employees will be allowed to use respirators voluntarily if the respirator itself will not create a hazard.
- Employees who only use dust mask (filtering facepiece) are not subject to the requirements of the written program.
- Employees voluntarily wearing air purifying respirators are subject to the requirements of this program, including medical evaluations, training, and maintenance procedures.
- Fit tests are not required for voluntary users, but are encouraged.
- All employees voluntarily wearing respirators will be provided a copy of the information contained in Appendix B: "Information for Employees Using Respirators When Not Required Under the Standard."

3. Maintenance and Care of Respirators

Cleaning and Disinfecting

- Each employee shall be provided with a respirator that is clean, sanitary and in good working order.
- Respirators shall be cleaned and disinfected using the procedures in Appendix C or procedures recommended by the manufacturer if they are equally effective.
- The frequency for cleaning and disinfecting is as follows:

a. Respirators used by only one employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition.

b. Shared respirators must be cleaned and disinfected prior to use.

c. Emergency use respirators must be cleaned and disinfected after each use.

d. Respirators used in fit tests and training exercises must be cleaned and disinfected after use.

Storage

- Respirators shall be stored so as to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture and damaging chemicals.
- Respirators shall be stored in such a manner as to prevent deformation of the facepiece and valves.
- Emergency use respirators shall be kept accessible to the work area, in compartments or covers that are clearly marked as containing emergency respirators, and stored in accordance with the manufacturer's instructions.

Inspection

- Respirators used in routine situations shall be inspected before each use and during cleaning.
- Emergency use respirators shall be inspected at least monthly, and in accordance with the manufacturer's instructions.
- Emergency use respirators shall also be checked for proper function before and after each use.
- Escape-only respirators shall be inspected before being brought into the work area.
- A respirator inspection includes the following:

  a. A check of respirator function, tightness of connections, and the condition of the various parts, including the facepiece, head straps, valves, connecting tubes, cartridges, canisters and filters.

  b. A check of the elastic parts for pliability or deterioration.

Repairs

- Respirators that fail inspections or are otherwise found to be defective shall be removed from service and discarded, repaired, or adjusted by appropriately trained persons, with NIOSH approved parts, according to manufacturer's specifications.
- Valves, regulators and alarms shall be adjusted or repaired only by the manufacturer or manufacturer's technicians.

Identification of Filters, Cartridges and Canisters

- Filters, cartridges and canisters must be labeled and color coded with the NIOSH approval label. The label is not to be removed and must remain legible.

4. Limitations of Air Purifying Respirators

IDLH Atmospheres

C Air purifying respirators shall not be used in oxygen deficient atmospheres, IDLH atmospheres, or unknown atmospheres. All confined spaces shall be considered IDLH unless proven otherwise. If assistance is required to determine an unknown atmosphere, contact Safety or Environmental Health and Safety focal point.

Respirator Types

Respirator types, models, and sizes are not interchangeable. An employee shall only wear a respirator which has been fit tested and approved for the employee's use.

Cartridges and Filters

Cartridges and filters are specific to certain hazards. Use the cartridge approved for the task. Do not interchange manufacturer's cartridges or filters.

Concentration

There are limits to the concentration levels that can be used with half mask and full face respirators. Consult the cartridge's Maximum Upper Limit and Safety or Environmental Health and Safety focal point to determine if you have the proper level of protection.

Face Seal Protection

C Anything that breaks the seal of a respirator will reduce its effectiveness. Facial hair, temple bars of glasses and head coverings are not to be worn.

C Corrective lenses can be fitted inside a full face respirator with a special insert kit.

5. Medical Evaluations

Initial Evaluations

C Every employee must be medically evaluated prior to fit testing and initial use of a respirator.

C Medical evaluations shall be conducted by a physician or other licensed health care professional (PLHCP).

C Medical evaluations shall consist of either a medical questionnaire or an initial medical examination that obtains the same information as the questionnaire.

C The requirements of the questionnaire are mandatory. (Appendix D).

C Medical questionnaires and examinations shall be administered confidentially and during normal working hours.

Followup Medical Examinations

C Follow up medical examinations are necessary if an employee gives a positive response to any of the questions numbered 1 through 8 in section 2 of the questionnaire.

C The followup medical examination shall include any medical tests, consultations or diagnostic procedures that the PLHCP deems necessary to make a final determination.

Supplemental Information for the PLHCP.

C The following information must be supplied to the PLHCP before a recommendation is made:

a. type and weight of the respirator to be used.

b. duration and frequency of use.

c. expected physical effort.

d. additional protective clothing and equipment to be worn.

e. temperature and humidity that may be encountered.

f. a copy of the written program and the regulation.

Medical Determination

C The Program Administrator must obtain a written recommendation from the PLHCP on whether or not the employee is medically able to use the respirator.

C The recommendation shall include only the following information:

a. any limitations on respirator use related to the medical condition of the employee or workplace conditions including whether the employee is medically able to wear the respirator.

b. the need, if any, for a follow-up medical examination.

c. a statement that the PLHCP has provided the employee with a copy of the recommendation.

d. If the PLHCP finds an employee cannot use a negative pressure respirator, a PAPR will be provided, if suitable.

Additional Medical Evaluations

Additional medical evaluations shall be provided if:

C an employee reports medical signs or symptoms related to the ability to use a respirator.

C a PLHCP, supervisor, or the program administrator deems an employee needs re-evaluation.

C information from the program, observations during fit tests, or evaluations indicate the need for re-evaluation.

C changes in the workplace conditions result in increased physiological burden on the employee.

Employee Access

C The employee shall receive a copy of the PLHCP's recommendation.

C The employee shall have an opportunity to discuss the questionnaire and examination with the PLHCP.

6. Fit testing

Initial Fit Tests

C Before wearing a respirator, employees are required to be fit tested with the same make, model, style and size of respirator that will be used.

C A sufficient number of respirator models and sizes shall be available so that the respirator is acceptable to and correctly fits the user.

C Employees shall wear only respirators which have been fit tested and approved for use.

Fit Test Procedures

C Fit tests are either qualitative or quantitative, depending on the respirator type and use, and must follow the procedures outlined in the OSHA Standard 1910.134.

C Fit test shall be performed by qualified fit test technicians. To be qualified, a fit test technician must have been trained in both qualitative and quantitative fit test procedures in a 16 hour training course.

Frequency

C Fit testing shall be conducted initially, annually, and whenever changes in an employee's physical condition could affect respirator fit, and whenever requested by the employee because the fit is unacceptable.

Records

C Records of fit tests must be maintained by the Program Administrator and should include names, dates, types of tests, results and make, model, style and size of the respirator fitted.

7. Face Seal Protection

Prohibitions

C Tight fitting face pieces are not to be worn by employees:

C who have facial hair that comes between the sealing surface and the face, or that interferes with valve function.

C who have any condition that interferes with the seal, such as missing dentures, jewelry, or head gear.

C if corrective glasses, goggles or other PPE interfere with the seal.

User Seal Checks

C Employees must perform a user seal check each time they put on the respirator according to the procedures in Appendix E.

Continued Respirator Effectiveness

C Appropriate surveillance of the work area and employee exposure shall be maintained by the supervisor and Program Administrator. Respirator effectiveness must be re-evaluated when there is a change in work area conditions or degree of employee exposure or stress.

Leaving the Respirator Work Area

a. Employees must be allowed to leave the respirator use area:

- to wash their faces and respirators as necessary to prevent eye or skin irritation.
- if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.
- to replace the respirator or the filter cartridges or canisters.

b. A defective respirator must be replaced or repaired before returning to the work area.

8. Training and Information

For Required Users of Respirators

- All employees who are required to wear respirators will receive initial training in their use and maintenance.
- Employees must be trained sufficiently to demonstrate:
  - a. a knowledge of why the respirator is required.
  - b. how improper fit, usage or maintenance can compromise the protectiveness of the respirator.
  - c. the limitations and capabilities of the respirator.
  - d. how to deal with emergencies or malfunctions.
  - e. how to inspect, don and remove, and check the seal of the respirator.
  - f. maintenance and storage procedures.
  - g. medical symptoms and signs that may limit or prevent the effective use of respirators (in Appendix D).
  - h. general requirements of this standard.
- Training shall be provided by qualified persons who are familiar with the regulatory requirements of the Respiratory Protection Standard and trained in respirator use and fit test procedures.

For Voluntary Users of Respirators

- Employees voluntarily wearing a respirator shall be provided the information in Appendix B.

Frequency of Re-Training

- Re-training will be provided annually and whenever the following occur:
  - a. changes in the workplace or type of respirator used.
  - b. inadequacies in the employee's knowledge or use of the respirator are apparent.
  - c. any other situation in which re-training is necessary to ensure safe respirator use.

9. Recordkeeping

- Records of training and fit testing shall be kept by the Program Administrator for the duration of the wearer's employment.
- Records of medical evaluations shall be kept for the duration of the wearer's employment and 30 years following.

10. Program Evaluation

- The Program Administrator shall conduct evaluations of the workplace as necessary to ensure the provisions of this written program are being effectively implemented.
- The program evaluation shall include consulting with employees required to wear respirators to assess the employee's views on program effectiveness and to identify any problems. Any problems identified shall be corrected.
- Factors to be assessed include respirator fit, appropriate respirator selection, proper use and maintenance.

VI. Summary of Program Requirements:

Element	Frequency	Documentation	Responsibility
Hazard Assessment	initially whenever work processes change	written hazard assessment	Program Administrator
Cleaning and Disinfecting	respirators used by one employee must be cleaned as often as necessary	none	Employee
	shared respirators must be cleaned prior to use	none	Employee
	emergency respirators must be cleaned after each use	none	Employee
User seal check	each time a respirator is put on	none	Employee
Inspections	respirators must be inspected before each use and during cleaning	none	Employee
	emergency respirators must be inspected monthly	a record of inspections	Supervisor
Medical Evaluations	initially as necessary	records kept	Program Administrator
Fit testing	initially annually as necessary	records kept	Program Administrator
Training	initially annually as necessary	records kept	Program Administrator
Program Evaluation	as necessary (at least annually)	written evaluation	Program Administrator

Appendix 1-A

Respirator Types

Type	Capabilities	Fit Test	Limitations
Air Purifying, Chemical Cartridge, Half-face	Chemical Specific Cartridge APF = 10	qualitative	Not for use in atmosphere with concentrations above 10 times the PEL. Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres.
Air Purifying, Chemical Cartridge, Full-face	Chemical Specific Cartridge APF = 50	qualitative or quantitative	Qualitative fit testing is not approved for respirator use in atmospheres above 10 times the PEL. Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres.
Powered Air Purifying, Chemical Cartridge, Full-face	Chemical Specific Cartridge APF = 50	qualitative or quantitative	Not for use for any chemical not listed on the cartridge, IDLH or unknown atmospheres.

Appendix 2-A

Respirator Selection Guide

What is the Oxygen Concentration present?

| |

Greater than 19.5% Less than 19.5%

| |

What is the contaminant concentration? SUPPLIED AIR RESPIRATOR |

|

Above the PEL Below the PEL

| |

| AT EMPLOYEE OPTION

|

What are the concentration and characteristics of the contaminant?

| | |

< 10 x PEL 10-50 x PEL > 50 x PEL

| | |

HALF FACE APR FULL FACE APR SUPPLIED AIR RESPIRATOR

Appendix 3
Respirator Cleaning Procedures

Procedures for Cleaning Respirators:

1. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
2. Wash components in warm (43 deg. C [110 deg. F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
3. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F maximum), preferably running water and drain.
4. Disinfect components. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
    a. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43 deg. C (110 deg. F); or,
    b. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43 deg. C (110 deg. F); or,
    c. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
5. Rinse components thoroughly in clean, warm (43 deg. C [110 deg. F maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
6. Dry components. Components should be hand-dried with a clean lint-free cloth or air dried.
7. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
8. Test the respirator to ensure that all components work properly.

Appendix 4

OSHA Respirator Medical Evaluation Questionnaire

To the employer:

Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee:

Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A
Section 1 (Mandatory)

The following information must be provided by every employee who has been selected to use any type of respirator.

(please print)

1. Today's date:_____

2. Your name: _____

3. Your age (to nearest year):_____

4. Sex (circle one): Male/Female

5. Your height: _____ ft. _____ in.

6. Your weight: _____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):_____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No

11. Check the type of respirator you will use (you can check more than one category):

a. _____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).

b. _____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator before? (circle one): Yes/No

If ``yes," what type(s):_____

Part A
Section 2 (Mandatory)

Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle ``yes" or ``no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month? Yes/No

2. Have you ever had any of the following conditions?

a. Seizures (fits): Yes/No
b. Diabetes (sugar disease): Yes/No
c. Allergic reactions that interfere with your breathing: Yes/No
d. Claustrophobia (fear of closed-in places): Yes/No
e. Trouble smelling odors: Yes/No

3. Have you ever had any of the following pulmonary or lung problems?

a. Asbestosis: Yes/No
b. Asthma: Yes/No
c. Chronic bronchitis: Yes/No
d. Emphysema: Yes/No
e. Pneumonia: Yes/No
f. Tuberculosis: Yes/No
g. Silicosis: Yes/No
h. Pneumothorax (collapsed lung): Yes/No
i. Lung cancer: Yes/No
j. Broken ribs: Yes/No
k. Any chest injuries or surgeries: Yes/No
l. Any other lung problem that you've been told about: Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath: Yes/No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: Yes/No
c. Shortness of breath when walking with other people at an ordinary pace on level ground: Yes/No

d. Have to stop for breath when walking at your own pace on level ground: Yes/No
e. Shortness of breath when washing or dressing yourself: Yes/No
f. Shortness of breath that interferes with your job: Yes/No

g. Coughing that produces phlegm (thick sputum): Yes/No
h. Coughing that wakes you early in the morning: Yes/No
i. Coughing that occurs mostly when you are lying down: Yes/No
j. Coughing up blood in the last month: Yes/No
k. Wheezing: Yes/No
l. Wheezing that interferes with your job: Yes/No
m. Chest pain when you breathe deeply: Yes/No
n. Any other symptoms that you think may be related to lung problems: Yes/No

5. Have you ever had any of the following cardiovascular or heart problems?

a. Heart attack: Yes/No
b. Stroke: Yes/No
c. Angina: Yes/No
d. Heart failure: Yes/No
e. Swelling in your legs or feet (not caused by walking): Yes/No
f. Heart arrhythmia (heart beating irregularly): Yes/No
g. High blood pressure: Yes/No
h. Any other heart problem that you've been told about: Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?

a. Frequent pain or tightness in your chest: Yes/No
b. Pain or tightness in your chest during physical activity: Yes/No
c. Pain or tightness in your chest that interferes with your job: Yes/No
d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
e. Heartburn or indigestion that is not related to eating: Yes/No
f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No

7. Do you currently take medication for any of the following problems?

a. Breathing or lung problems: Yes/No
b. Heart trouble: Yes/No
c. Blood pressure: Yes/No
d. Seizures (fits): Yes/No

8. If you've used a respirator, have you ever had any of the following problems? (If you've never used a respirator, go to question 9:)

a. Eye irritation: Yes/No
b. Skin allergies or rashes: Yes/No
c. Anxiety: Yes/No
d. General weakness or fatigue: Yes/No
e. Any other problem that interferes with your use of a respirator: Yes/No

9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire? Yes/No

* Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently)? Yes/No

11. Do you currently have any of the following vision problems?

a. Wear contact lenses: Yes/No
b. Wear glasses: Yes/No
c. Color blind: Yes/No
e. Any other eye or vision problem: Yes/No
12. Have you ever had an injury to your ears, including a broken ear drum: Yes/No

13. Do you currently have any of the following hearing problems?

a. Difficulty hearing: Yes/No
b. Wear a hearing aid: Yes/No
c. Any other hearing or ear problem: Yes/No

14. Have you ever had a back injury? Yes/No

15. Do you currently have any of the following musculoskeletal problems?

a. Weakness in any of your arms, hands, legs, or feet: Yes/No
b. Back pain: Yes/No
c. Difficulty fully moving your arms and legs: Yes/No
d. Pain or stiffness when you lean forward or backward at the waist: Yes/No
e. Difficulty fully moving your head up or down: Yes/No
f. Difficulty fully moving your head side to side: Yes/No
g. Difficulty bending at your knees: Yes/No
h. Difficulty squatting to the ground: Yes/No
i. Difficulty climbing a flight of stairs or a ladder carrying more than 25 lbs: Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B

Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen: Yes/No
If ``yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: Yes/N
If ``yes," name the chemicals if you know them:

_____

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos: Yes/No
b. Silica (e.g., in sandblasting): Yes/No
c. Tungsten/cobalt (e.g., grinding or welding this material):Yes/No
d. Beryllium: Yes/No
e. Aluminum: Yes/No
f. Coal (for example, mining): Yes/No
g. Iron: Yes/No
h. Tin: Yes/No
i. Dusty environments: Yes/No
j. Any other hazardous exposures: Yes/No
If ``yes," describe these
exposures:_____
_____

4. List any second jobs or side businesses you
have:_____
_____

5. List your previous occupations:
_____

6. List your current and previous
hobbies:_____
_____

7. Have you been in the military services? Yes/No
If ``yes," were you exposed to biological or chemical agents (either in training or combat): Yes/No

8. Have you ever worked on a HAZMAT team? Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): Yes/No
If ``yes," name the medications if you know them:_____

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters: Yes/No
b. Canisters (for example, gas masks): Yes/No
c. Cartridges: Yes/No

11. How often are you expected to use the respirator(s) (circle ``yes" or ``no" for all answers that apply to you)?:

a. Escape only (no rescue): Yes/No
b. Emergency rescue only: Yes/No
c. Less than 5 hours per week: Yes/No
d. Less than 2 hours per day: Yes/No
e. 2 to 4 hours per day: Yes/No
f. Over 4 hours per day: Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. Light (less than 200 kcal per hour): Yes/No If ``yes," how long does this period last during the average shift:_____hrs._____mins
Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes/No
If ``yes," how long does this period last during the average shift:_____hrs._____mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): Yes/No
If ``yes," how long does this period last during the average shift:_____hrs._____mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator? Yes/No
If ``yes," describe this protective clothing and/or equipment
_____
_____

14. Will you be working under hot conditions (temperature exceeding 77 deg. F)? Yes/No

15. Will you be working under humid conditions? Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

_____

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases): _____
_____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance:_____

Estimated maximum exposure level per shift:_____

Duration of exposure per shift:_____

Name of the second toxic substance:_____

Estimated maximum exposure level per shift:_____

Duration of exposure per shift:_____

Name of the third toxic substance:_____

Estimated maximum exposure level per shift:_____

Duration of exposure per shift:_____

The name of any other toxic substances that you'll be exposed to while using your respirator:

_____

_____

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

_____

_____

Appendix 5

User Seal Check Procedures

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

Either the positive and negative pressure checks listed below, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

Positive and/or Negative Pressure Checks

a. Positive pressure check.

- **i.** Close off the exhalation valve and exhale gently into the facepiece.
- **ii.** The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal.
- **iii.** For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

b. Negative pressure check.

- **i.** Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s).
- **ii.** Inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds.
- **iii.** The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove.
- **iv.** If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

PROCEDURE 11 - Hearing Conservation

Table of Contents Page

Synopsis 11-ii
Hearing Conservation Checklist 11-iii

11 HEARING CONSERVATION 11-1
11.1 Purpose and Scope 11-1
11.2 Definitions 11-1
11.3 Procedure 11-2
11.4 Quality Control 11-5
11.5 Responsibilities 11-5
11.6 References 11-6
11.7 Attachments 11-6

ATTACHMENT A A-11-1
Sample Format for Audiometric Test Records A-11-1

ATTACHMENT B B-11-1
Noise Survey for the WFO, Springfield, MO B-11-1

Synopsis

The purpose of this procedure is to provide guidelines to reduce potential overexposure to noise. This procedure applies to all NWS facilities and work locations where hearing protection is used, and to the employees using hearing protection.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Conduct Noise Survey at the Site. *(11.5.2b)*
  - Evaluate Feasible Engineering and Administrative Controls *(11.3.2a)*
- **Develop/Obtain Documentation/Information required for Site**
  - Establish a Hearing Conservation Program. *(11.3.2d)*
    - Develop a Noise Monitoring Program. *(11.3.2e.1)*
    - Develop an Audiometric Testing Program. *(11.3.2e.4)*
  - Prepare Employee Exposure Records. *(11.3.2f.1)*
  - Develop Audiometric Test Records. *(11.3.2f.2)*
- **Designate Person to Administer Hearing Conservation Procedure Requirements**

Provide Local Training of Site Personnel

  - Training for affected Personnel. *(11.3.1b, 11.3.2e.7)*
- **Inventory Material/Equipment (Procure as required)**
  - Postings, Signs. *(11.5.2, 11.3.2e.6)*
  - Hearing Personal Protective Equipment (PPE). *(11.5.2, 11.3.1a, 11.3.2e.5)*

Recurring and Annual Task Requirements:

- **Perform Assessment/Testing/Update Documentation**
  - Maintain a Hearing Conservation Program. *(11.3.2d)*
    - Develop a Noise Monitoring Program. *(11.3.2e.1)*
    - Develop an Audiometric Testing Program. *(11.3.2e.4)*
  - Maintain Employee Exposure Records. *(11.3.2f.1)*
  - Maintain Audiometric Test Records. *(11.3.2f.2)*
- **Provide Refresher Training for Site Personnel**
  - Annual Refresher Training for affected Personnel. *(11.3.1b, 11.3.2e.6)*
- **Inspect/Replace/Recalibrate Material/Equipment**
  - Hearing PPE.*(11.5.2, 11.3.1a, 11.3.2e.5)*
  - Postings, Signs. *(11.5.2, 11.3.2e.6)*

Hearing Conservation Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	11.4.2				
Is there an annual review of this procedure?	11.4.2				
Are there any areas in the workplace where continuous noise levels exceed 85dBA?	11.3.2.d				
Is there an annual training program to educate employees in safe levels of noise, exposures; effects of noise on their health; and the use of personal protective equipment?	11.3.2e.7 11.3.1b				
Does this facility have a Hearing Conservation Program for employees who are exposed to noise levels equal or exceed an 8-hour time-weighted average sound level of 85 decibels?	11.3.2d				
Does this facility have a noise monitoring program to identify employees for inclusion into the Hearing Conservation Program and to enable the proper selection of hearing protectors?	11.3.2e.1				
Are noise levels being measured using a sound level meter or an octave band analyzer and records being maintained?	11.3.2b				

Requirements	Reference	YES	NO	N/A	Comments
Have engineering controls been used to reduce excessive noise levels? Where engineering controls are determined to not be feasible, are administrative controls (i.e. worker rotation) being used to minimize individual employee exposure to noise?	11.3.2a				
Are signs "Hearing Protection Required" posted in high noise areas?	11.3.2e.6				
Is approved hearing protective equipment available to every employee working in noisy areas?	11.3.1a & 11.3.2e.5				
Are employees properly fitted and instructed on the use and limitations of ear protectors?	11.3.1b				
Has baseline audiometric testing been conducted for all affected personnel?	11.3.2e.4				
Is there an established and maintained an audiometric testing program for all affected employees?	11.3.2e.4				
Are all audiometric test records maintained for the duration of the employees employment?	11.3.2f.2				
Are employees noise exposure measurement records maintained for two years?	11.3.2f.1				

11 HEARING CONSERVATION

11.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure to protect employees from the effects of overexposure to noise. This procedure applies to all NWS facilities, work locations, and employees where hearing protection is used.

11.2 Definitions

Action Level. An 8-hour, time-weighted average (TWA) of 85 decibels measured on the A-scale, slow response, or equivalently, a dose of 50 percent.

Audiometric Testing Program. A program in which audiometric testing is made available to all employees whose noise exposures equal or exceed an 8-hour time-weighted average of 85 decibels.

Baseline Audiogram. The audiogram against which future audiograms are compared.

Continuous Noise. Broadband noise of approximately constant level and spectrum to which an employee is exposed for a period of eight hours per day, 40 hours per week. (When the variations in noise level involve maxima at intervals of one second or less).

Criterion Sound Level. The decibel level that will yield a 100 percent dose in eight hours. For OSHA, 90 dBA is typically used.

Decibel (dB). A unit used to express sound-power level and sound-pressure level.

dBA. Sound level in decibels read on the A scale of a sound-level meter.

Field office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hearing Conservation. The prevention or minimization of noise-induced deafness through the use of hearing protection devices, the control of noise through engineering methods, annual audiometric tests, and employee training.

Hertz (Hz). Unit of measurement of frequency, numerically equal to cycles per second.

Impact/Impulse Noise. A sharp burst of sound occurring for less than one-half second in duration and not repeating more than once per second.

Intermittent Noise. Exposure to a given broadband sound-pressure level several times during a normal workday.

Noise. Any unwanted sound.

Noise Monitoring Program. A program where the noise levels to which employees are exposed are recorded using area and/or personal noise monitoring. The sampling strategy is

designed to identify employees for inclusion in a Hearing Conservation Program and to enable the proper selection of hearing protectors.

NOTE: A Noise Monitoring Program is required when information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Slow Response. A sound measurement in which all of the high-level noises of short-lived duration are averaged out.

Sound Level Meter. An instrument for the measurement of sound level.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Time Weighted Average Sound Level (TWA). That sound level, which if constant over an 8-hour exposure, would result in the same noise dose as is measured.

11.3 Procedure

11.3.1 General Requirements for Short Term High-Level Noise Exposure.

a. Suitable hearing protectors (ear plugs and/or ear muffs) are recommended for use whenever personnel are exposed to high levels of noise even if it is for short periods of time and below the 8-hour TWA of 85 dBA (e.g., inside the emergency generator facility when the generator is on-line; sandblasting cabinets at the NDBC; some facilities adjacent to airports, etc.).

b. Personnel who use hearing protection (e.g., inside the Emergency Generator building when the generator is on-line) and are not required to be in a Hearing Conservation Program shall receive annual training in the following areas: the effects of noise; the purpose, advantages, and disadvantages of various types of hearing protectors; and the selection, fit, and care of hearing protectors. Employees can either be trained in-house or off-site by qualified NWS or contractor personnel.

11.3.2 Requirements of a Hearing Conservation Program.

When employees are subjected to sound levels exceeding those listed in Table 11-1, It is the policy of the NWS to adhere to the provisions of 29 CFR 1910.95, "Occupational Noise Exposure," including the following:

a. Feasible administrative or engineering controls shall be utilized to provide protection against the effects of the noise exposure. Examples of noise control measures include making alterations in engineering design, damping and/or isolation of the noise and limiting the time of exposure.

TABLE 11-1 - PERMISSIBLE NOISE EXPOSURES

Duration Per Day (Hours)	Sound Level (dBA), Slow Response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

b. If engineering and/or administrative controls fail to reduce sound levels within the levels of Table 11-1 when measured on the A scale of a standard sound level meter at slow response, personal protective equipment (hearing protectors) shall be provided to reduce sound levels to levels equal to or less than those in the Table.

c. Hearing protectors shall be used by employees exposed to any continuous noise above 115 dBA, and any impulse or impact noise greater than 140 dB peak sound pressure level.

d. A continuing, effective Hearing Conservation Program shall be administered whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50 percent.

e. When any employee's exposure may equal or exceed an 8-hour TWA of 85 dBA, these requirements shall be followed:

(1) A Noise Monitoring Program shall be developed and implemented. The sampling strategy shall be designed to identify employees for inclusion in a Hearing Conservation Program and to enable the proper selection of hearing protectors.

(2) Noise monitoring shall be repeated whenever a change in production, process, equipment or controls increases noise exposures to the extent that additional employees may be exposed at or above the Action Level, or the attenuation provided by hearing protectors being used by employees is inadequate.

(3) Affected employees shall be notified of the results of the required noise monitoring.

NOTE: Affected employees and their representatives shall have the opportunity to observe any noise monitoring conducted.

(4) An audiometric testing program shall be established and maintained for affected employees. Within six months of an employee's first exposure at or above the Action Level, a valid baseline audiogram shall be established. At least annually after obtaining the baseline audiogram, a new audiogram shall be obtained for each employee exposed at or above an 8-hour time-weighted average of 85 decibels. The program shall be provided at no cost to the employees.

(5) Hearing protectors shall be made available to affected employees and replaced as necessary. Hearing protectors shall attenuate employee exposure, at a minimum, to an 8-hour TWA of 90 dBA.

(6) In affected areas, signs which read "Hearing Protection Required" shall be posted at each entrance.

(7) A training program dealing with hearing conservation shall be implemented for all employees who are exposed to noise at or above the Action Level.

f. An accurate record of all employee exposure measurements shall be maintained for employees subjected to sound levels exceeding those listed in Table 11-1.

(1) Noise exposure measurement records shall be retained for two years.

(2) Audiometric test records shall be retained for the duration of the affected employees employment. (See Attachment A, Sample Format for Audiometric Test Records.)

11.4 Quality Control

11.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

11.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

11.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

11.5 Responsibilities

11.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

11.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that noise levels are measured and documented throughout the facility.

c. Shall ensure that suitable hearing protectors are provided to personnel as needed and are worn.

d. Shall ensure that initial and periodic inventory of hearing PPE, postings/signs and other safety equipment is accomplished and adequate stock is maintained.

11.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

11.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE:	* - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

11.6 References

Incorporated References. The following list of references was incorporated as a whole or in part into this procedure. These references can provide addition, explanation or guidance for the implementation of this procedure.

11.6.1 American Conference of Governmental Industrial Hygienists, TLV's and BEI's, Threshold Limit Values for Chemical Substances and Physical Agents, Current Edition.

11.6.2 American National Standards Institute, ANSI S1.4-1983 (R1997), "Sound Level Meter".

11.6.3 American National Standards Institute, ANSI S1.25-1991, "Personal Noise Dosimeters".

11.6.4 Department of Commerce (DOC) Safety Manual, July 1997.

11.6.5 National Institute for Occupational safety and Health, NIOSH Criteria for a Recommended Standard: Occupational Exposure to Noise (1972).

11.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.95, "Occupational Noise Exposures" (1998).

11.7 Attachments

Attachment A: Sample Format for Audiometric Test Records.

Attachment B: Noise Survey for the WFO, Springfield, MO

ATTACHMENT A

Sample Format for Audiometric Test Records

Audiometric Testing Date_____

Name:_____

Type of Testing: ” Annual ” Baseline ” Other

Tested by:_____

Previous Job with Loud Noise_____

Wears Hearing Protection_____

H.P. prior to test_____

Loud Noise in past 14 hours_____

Wears Hearing Aid_____

Family Member hearing loss <50 yr._____

Ear Pain_____

Ear Drainage_____

Vertigo/Imbalance_____

Tinnitus_____

Sudden Hearing Loss History_____

Intermittent Hearing Loss_____

Fullness/Discomfort in Ears_____

Cerumen Impaction_____

Foreign Body in Canal_____

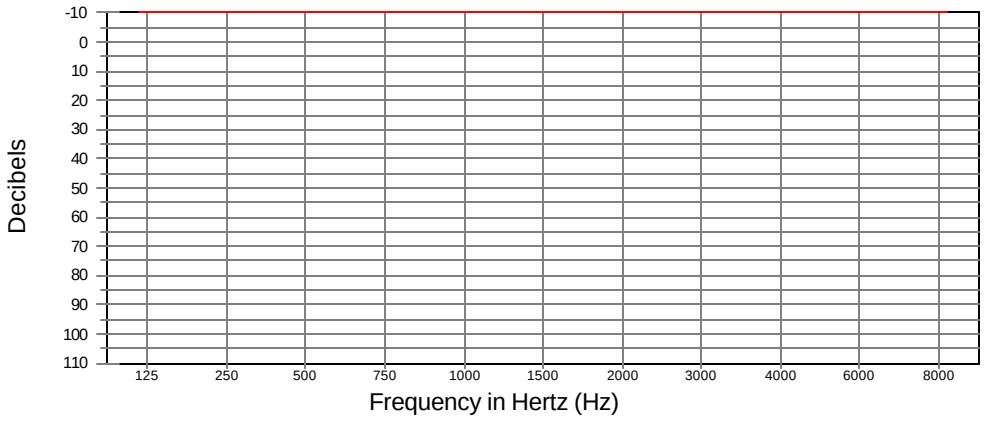
Unconscious-Head Injury_____

Allergies/Hay Fever_____

Measles_____

Mumps_____

Scarlet Fever_____



_____

Head Cold Today_____

Military Service_____

Noisy Hobbies_____

Loud Music with Headphones_____

ATTACHMENT B

Noise Survey for the WFO, Springfield, MO

January 12, 2000

1.0 Introduction

On January 12, 2000, a noise survey was conducted for the National Weather Service (NWS) at the Springfield Weather Forecast Office (WFO) in Springfield, Missouri by EG&G Technical Services.

1.1 Background on the Springfield Weather Forecast Office

At the time of the survey, the Springfield WFO had a total of 22 employees which included the Meteorologist-in Charge (MIC), an Administrative Assistant, four Managers, ten Forecasters, five Meteorological Technicians and Interns, and one Electronics Technician (ET).

1.2 Purpose and Objectives

The purpose of this noise survey was to identify the potential for occupational hearing loss among Springfield's employees.

The objectives of this survey included: 1) complying with the requirements of NWS Procedure 13, "Hearing Conservation", 2) complying with the Occupational Safety and Health Administration's (OSHA's) " Occupational Noise Exposure" Standard, 29 CFR 1910.95, and 3) identifying those areas, workers, or job classifications where an 8-hour TWA of 85 dBA could be exceeded.

1.3 Scope

The survey consisted of two separate segments or operations: 1) personal noise monitoring using dosimeters, and 2) area noise monitoring using a sound level meter (SLM).

Personal monitoring was used as the primary method of estimating noise exposure at the Springfield WFO. Field personnel working around/with noise producing equipment (e.g., emergency generator) were seen as having the highest potential for noise exposure.

Area monitoring was performed using a Sound Level Meter (SLM) in order to get a snapshot of facility noise levels at a point in time. Area noise monitoring included twenty-three SLM readings taken at various locations throughout the facility.

The requirements specified in OSHA's "Occupational Noise Exposure" Standard (29 CFR 1910.95) were used as the basis for assessing exposures at the Springfield WFO.

2.0 Review of the Literature

OSHA requires that the employer administer a continuing, effective Hearing Conservation Program whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50 percent. An 8-hour time-weighted average of 85 decibels or a dose of 50 percent is referred to by OSHA as the Action Level. Noise dosimeters are special sound level meters that integrate sound pressure levels over time and are used to measure personal noise exposures. A dosimeter measures a worker's exposure to noise -- continuous as well as sudden or "impact"

noise -- to help in the control of these exposures within standard or recommended levels. Accumulating dose is the basic job of a noise dosimeter. The dose is calculated based on the threshold value of 80 dB (per the OSHA Hearing Conservation Standard: 90 dB criterion level, 80 dB threshold, and 5 dB doubling rate). The doubling rate describes the number of additional decibels at which a worker's noise exposure is doubled for the same amount of time. A criterion level is the continuous A-weighted sound level which constitutes 100% of an allowable exposure. For example, using OSHA's 90 dB criterion level for an 8-hour day and the 5 dB doubling rate, workers are permitted to be exposed to a sound level of 95 dB for four hours. To calculate noise exposures in locations or job classifications where sound pressure levels vary, the total sound pressure exposure or dose must be determined. Dose is calculated based on the actual exposure time at a given sound pressure level divided by the allowable exposure time at that level. From Table A-1 in 29 CFR 1910.95, a 90 dBA TWA is equivalent to a dose of 100%. If an individual's total dose exceeds 100% or unity, that individual would be excessively exposed.

Measuring compliance with OSHA's noise standard requires knowledge of noise exposure over a specified range and knowledge of the exposure time at each noise level.

3.0 Methodology

The sampling strategy for the noise survey was designed to identify employees for inclusion in the hearing conservation program, to enable proper selection of hearing protection, and to provide baseline noise information for the Springfield facility.

3.1 Personal Noise Monitoring

Noise dosimeters were employed as part of this survey due to the mobility of the field personnel in conjunction with variations in the sound levels. Two Ametek Mark-3 dosimeters with Ametek AC-94 Acoustic Calibrators were used to conduct the personal noise monitoring portion of the survey. All continuous, intermittent and impulsive sound levels from 80 decibels to 130 decibels were integrated into the noise measurements. The dosimeters were calibrated before and after every use in order to ensure measurement accuracy.

On January 12, from approximately 8:30 a.m. until approximately 4:30 p.m., the dosimeters were worn by the following NWS personnel: Jon Christian and Steve Becka. WFO personnel typically work an 8-hour shift. However, the dosimeter Run Time (Exposure Time) varied based on the time each dosimeter was put on-line and subsequently taken off-line.

For the two employees wearing the dosimeters, the dosimeter microphones were mounted at the top of their shoulders and set to point upward as much as possible in order to help the dosimeter capture the same noise dose as the employees.

3.2 Area Noise Monitoring

The area noise monitoring portion of the noise survey was done with a sound level meter (SLM). A SLM is an instrument used to monitor air pressure changes resulting from environmental sound/noise.

A Quest 2700 Sound Level Meter (SLM) was used in conducting the monitoring. The Quest 2700 SLM is designed to meet or exceed ANSI Standard S1.4-1983 for type two instrumentation and IEC-651 type 2. The measurable sound level range of the 2700 SLM is 30 to 140 dB. This SLM is accurate to within 1.0 dB up to 146 dB SPL without notable distortion. The SLM was calibrated before and after use using a Quest 2700 QC-10 Calibrator with the meter set on LIN, SLOW, SPL, at a Range of 60-120 dB.

At each of twenty-three monitoring locations, a dBA reading was taken and recorded. The readings were taken at various locations throughout the facility as well as in the WFO. The sampling strategy was to attempt and identify all of the major noise sources with equipment running.

4.0 Results and Discussion

4.1 Summary of Results

Table 1.0 on the following page provides an overview of the data collected as part of the personal monitoring portion of the noise survey. The personal monitoring (dosimeter) data form is in the Appendix.

From Table 1.0, neither person received an 8-hour TWAs greater than 85 dBA. Per 29 CAR 1910.95, OSHA stipulates that workers can be exposed to 90 dBA for eight hours. Based on the results of the personal monitoring, Jon and Steve were not exposed to TWA noise levels greater than those allowed by OSHA. However, the maximum sound pressure level (Lmax) was 120.0 dBA.

TABLE 1.0, Dosimeter Monitoring Data

Date	Personnel/ Job Classification	Noise Dose (%)	Exposure Time (hours)	Lmax (dBA)	Sound Pressure Level (Leq/Lavg) for Sampling Period in dBA	Equivalent 8-hour Sound Level in dBA (TWA)
1/12/00	Jon Christian/ Sector Facility Technician (SFT)	11.2	8.05	120.0	74.1	74.1
1/12/00	Steve Becka/ Regional Environmental/ Safety Coordinator	3.0	8.08	109.0	64.7	64.7

NOTE: Lmax is the highest sound pressure level (dBA) encountered during the exposure time.

In the area monitoring portion of the sound survey, sound levels ranged from a low of 47 dBA in the WFO to a high of 109 dBA in the WFO Emergency Generator Building with the generator running. As expected, higher noise level were recorded where noise producing equipment was operating, e.g. 90 dBA by the Klystron with the doors open. The Appendix contains Figure 1.0, "Sound Pressure Levels (dBA) at Area Noise Monitoring Locations" as well as the data sheets for the area monitoring.

5.0 Recommendations

OSHA requires that the employer administer a continuing, effective hearing conservation program whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of 50 percent. The results of the personal noise monitoring indicated that Jon Christian was potentially exposed to a TWA of 74.1 dBA (a noise dose of 11.2 percent) while Steve Becka was potentially exposed to a TWA of 64.7 dBA (a noise dose of 3.0 percent). Both employees' noise exposures were less than a TWA of 85 dBA, or equivalently, a dose of 50 percent, therefore, a formal Hearing Conservation Program is not required at the Springfield WFO at this time.

From Table 1.0, Jon Christian was potentially exposed to a maximum sound pressure level of 120 dBA. Per OSHA's "Industrial Hygiene Technical Manual", Volume VI, OSHA 1980, Chapter VI, Section F, "Sound levels in excess of 115 dBA are never permitted regardless of

the brevity of exposure unless hearing protection is worn and will attenuate (as worn by the employee) the noise exposure to within the permissible range of Tables G-16 and D-2." These tables are found in 29 CFR 1910.95, OSHA's "Occupational Noise Exposure" Standard. While engineering and administrative controls are the best long-term solution to noise problems, any employee with the potential of being exposed to sound levels greater than 115 dBA should wear hearing protection.

Personnel potentially exposed to noise should be provided hazard awareness training, as well as information on the effects of excessive exposure, areas where noise levels pose a hazard, and means available for reducing exposure risk, e.g., use of hearing protection.

"Hearing Protection Required" signs are required in areas or around equipment where the sound pressure levels (SPL) are greater than or equal to 85 dBA. Signs are needed in the following areas: 1) at the WFO heat pumps, 2) on the door to the WFO Emergency Generator Building, 3) on the door to the RDA Generator Building, and 4) on the door to the RDA Shelter. Hearing protection shall be provided when personnel are working in these areas. The hearing protection must be adequate to reduce noise exposures to acceptable levels.

Appendix 1: Field Monitoring Data Form

Integrated Monitoring for Sound Levels

Date: January 12, 2000 Monitoring Conducted By: David Frye

Facility Name and Location: Springfield Weather Forecast Office, Springfield, Missouri

Audio Dosimeters: Ametek Mark-3 Audio Dosimeter

Calibrator: Ametek AC-94 Acoustical Calibrator, Serial No. 5920

Air Temperature: 40 °F Relative Humidity: 92% Threshold Level: 80 dB Criterion Level: 90 dB Doubling Rate: 5 dB

Employee Name/ Job Description	Dosimeter Serial Number	Pre-Monitoring Calibration	Post-Monitoring Calibration	Sample Start-Time/ Finish-Time	Run Time (T) (Hours: Minutes)	Maximum Sound Pressure Level (Lmax) (dBA)	Dose (%)	Sound Pressure Level (Leq/Lavg) (dBA)
Jon Christian - Sector Facility Technician	11836	94.3 dB	94.3 dB	8:30 a.m./ 4:33 p.m.	8:03	120.0	11.2	74.1
Steve Becka - Regional E/S Coordinator	017740	94.0 dB	94.2 dB	8:35 a.m./ 4:40 p.m.	8:05	109.0	3.0	64.7

Field Notes: _____ (frm-001)

Appendix 2: Field Monitoring Data Form

Real-Time Monitoring For Sound Levels

Date: 1/12/2000 Monitoring Conducted By: David Frye/EG&G Technical Services

Facility Name and Location: Springfield Weather Forecast Office, Springfield, Missouri

Sound Level Meter (Manufacturer/Model/Serial #): Quest 2700 Sound Level Meter, Serial #HU5030018

Calibrator (Manufacturer/Model//Serial #): Quest 2700 QC-10 Calibrator, Serial #QE5030152

Pre-Monitor Calibration: 114.0 dB@ LIN, SLOW, 60-120 dB Range Post-Monitor Calibration: 114.0 dB@ LIN, SLOW, 60-120 dB Range Sound Level Meter Settings: "A" Weighting, SLOW Response, dB Range of 80-140

Location Number*	Identification of Area	dBA	Location Number*	Identification of Area	dBA	Location Number*	Identification of Area	dBA
1	WFO Reception Area	47	**8**	North Parking Lot	53	****15**	WFO Em.Gen. Bld.	109
2	WFO Operations Area	53	**9**	WFO West Exterior	55	****16**	WFO Em.Gen. Bld. Exterior	95
3	WFO Equipment Room	70	**10**	South Fence Line	60	****17**	RDA Generator Bld.	104
4	WFO Communications Room	62	**11**	WFO Heat Pump	84	****18**	RDA Gen. Exhaust	93
5	WFO Electrical Room	71	**12**	WFO Heat Pump	87	****19**	RDA Shelter A/C Exhaust	82
6	WFO Electrical Room - Wet Dry Vac operating	95	**13**	WFO Heat Pump	89	**20**	Klystron off-line	72
7	Outside Upper Air Bld.	57	**14**	WFO East Exterior	53	**21**	Kly on-line doors closed	76

Field Notes: * See the attached facility drawing (Figure 1.0). ** Generator on-line. (frm-002)

Field Monitoring Data Form

Real-Time Monitoring For Sound Levels

Date: 1/12/2000 Monitoring Conducted By: David Frye/EG&G Technical Services

Facility Name and Location: Springfield Weather Forecast Office, Springfield, Missouri

Sound Level Meter (Manufacturer/Model/Serial #): Quest 2700 Sound Level Meter, Serial #HU5030018

Calibrator (Manufacturer/Model//Serial #): Quest 2700 QC-10 Calibrator, Serial #QE5030152

Pre-Monitor Calibration: 114.0 dB@ LIN, SLOW, 60-120 dB Range Post-Monitor Calibration: 114.0 dB@ LIN, SLOW, 60-120 dB Range Sound Level Meter Settings: "A" Weighting, SLOW Response, dB Range of 80-140

Location Number*	Identification of Area	dBA	Location Number*	Identification of Area	dBA	Location Number*	Identification of Area	dBA
22	Kly on-line doors open	90	**29**			**36**		
23	RDA A/C Exhaust	82	**30**			**37**		
24			**31**			**38**		
25			**32**			**39**		
26			**33**			**40**		
27			**34**			**41**		
28			**35**			**42**		

Field Notes: * See the attached facility drawing (Figure 1.0).

(frm-002)

PROCEDURE 12 - Confined Space Entry

Table of Contents Page

Synopsis 12-ii
Confined Space Entry Checklist 12-iii

12 CONFINED SPACE ENTRY 12-1
12.1 Purpose and Scope 12-1
12.2 Definitions 12-1
12.3 Procedure 12-2
12.4 Quality Control 12-6
12.5 Responsibilities 12-7
12.6 References 12-8
12.7 Attachments 12-8

ATTACHMENT A 12-A-1
Confined-Space Entry Permit 12-A-1

ATTACHMENT B 12-B-1
Permit-Required Confined Space Entry Decision Flowchart 12-B-1

Synopsis

The purpose of this procedure is to provide employees with guidelines concerning hazards associated with entry into and performance of work in confined spaces. This procedure applies to all NWS facilities and work locations which have confined spaces and to NWS employees at these facilities and locations performing confined space entry.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Evaluate Confined Spaces. *(12.3.1)*
  - Conduct Atmospheric Testing. *(12.3.5)*
- **Develop/Obtain Documentation/Information required for Site**
  - Prepare Listing of Permit-Required Confined Spaces. *(12.3.3)*
  - Develop Confined Space Entry Permits.*(12.3.2)*
  - Develop Emergency Response Agreements (ERA) for Emergency Rescue *(12.3.21)*
- **Designate Person to Administer Confined Space Entry Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Confined Space Training for Designated Site Personnel. *(12.3.22)*
  - Visitor/Contractor Safety Briefings *(12.3.15)*
- **Inventory Material/Equipment (Procure as required)**
  - Hand-held Monitors (If applicable).*(12.5.2e, 12.3.5)*
  - Safety Equipment. *(12.5.2e, 12.3.7)*
  - Personal Protective Equipment (PPE). *(12.5.2e, 12.3.16b)*
  - Communication Equipment. *(12.5.2e, 12.3.16c)*
  - Confined Spaces Postings, Barriers and Warning devices. *(12.5.2e, 12.3.8)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Re-evaluate confined spaces *(12.3.1)*, as necessary
  - Conduct Atmospheric Testing. *(12.3.5)*
- **Review/Update Documentation/Information required for Site**
  - Update Listing of permit confined spaces. *(12.3.3)*
  - Prepare Confined Space Entry Permits.*(12.3.2)*
  - Maintain ERA for Emergency Rescue *(12.2.21)*
- **Provide Refresher Training of Site Personnel (If applicable)**
  - Confined Space Training for Designated Site Personnel. *(12.3.23)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Hand-held monitors *(12.5.2e, 12.3.5)*
  - Safety Equipment. *(12.5.2e, 12.3.7)*
  - Personal Protective Equipment (PPE). *(12.5.2e, 12.3.16b)*
  - Communication Equipment. *(12.5.2e, 12.3.16c)*
  - Confined Spaces Postings, Barriers and Warning devices. *(12.5.2e, 12.3.8)*

Confined Space Entry Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	12.4.2				
Are all confined spaces evaluated using the "Permit-Required Confined Space Entry Decision Flowchart" prior to entry?	12.3.1				
Are appropriate procedures followed after evaluation of all confined spaces to address potential hazards?	12.3.1 & 2				
Are all personnel involved in entry into a confined space, trained?	12.3.22				
Are there written Permits for all Permit Required Confined Entry Space prior to entry?	12.3.2				
Do all Permits contain the required information?	12.3.2 Attachment A				
Have a listing of all permit required confined spaces on site been prepared?	12.3.3				
Is there a signed permit located in a conspicuous location near the permit confined space point of entry?	12.3.4				
Are appropriate atmospheric tests performed to check for oxygen deficiency, toxic substances and explosive concentrations in the confined space before entry?	12.3.5				

Requirements	Reference	YES	NO	N/A	Comments
Is the atmosphere inside the confined space continuously tested or continuously monitored during work?	12.3.6				
Is there an assigned safety observer (attendant) outside of the confined space, when required, whose sole responsibility is to watch the work in progress, sound an alarm if necessary, and render assistance?	12.3.9				
Does the entry supervisor designate in writing on the Permit, the appropriate safety equipment required for entry into a permit confined space?	12.3.7				
Are barriers and warning devices utilized to prohibit potential hazards and unauthorized entries into confined spaces?	12.3.8				
Is the authorized attendant appropriately trained and equipped to handle an emergency?	12.3.17 12.3.10				
Is the authorized attendant prohibited from entering the confined space and trained to summon rescue services in the event of an emergency?	12.3.17f				
Is appropriate Personal Protective Equipment (PPE) required if the atmosphere inside the confined space is not acceptable?	12.3.16b				

12 CONFINED SPACE ENTRY

12.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure related to the hazards associated with the entry into and performance of work in confined spaces. This procedure applies to all NWS facilities and work locations which have confined spaces and to NWS employees performing confined space entry.

12.2 Definitions

Attendant. A person assigned to remain on the outside of the confined space and to be in communication with those working inside. A person who is qualified, properly trained, physically and mentally capable and equipped to assist in the rescue of an entrant. This person is sometimes referred to as a standby person or a manway watch.

Authorized Entrant. An employee who is authorized by the employer to enter a permit space.

Confined Space. A tank, vessel, manhole for sewer or electrical access, roof tank, below-ground chamber, vault, pit, open-topped space more than four (4) feet (1.2 m) deep, pipeline, duct, river gauge pit, buoys at the NDBC, sewer or tunnel or other opening that is: (1) large enough and so configured that an employee can enter bodily and perform assigned work (2) having a limited means of egress, (3) not designed for continuous employee occupancy.

Confined Space Entry Permit. A confined space entry permit is an approved document that specifies the date, time, location, type of work to be performed, potential hazards, precautions taken, personal protective equipment required, atmospheric tests performed, length of time the permit is valid and a signed acknowledgment by the entry supervisor, attendant, and entrants.

Entry Supervisor. The person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Isolation. A process whereby the confined space is removed from unwanted forms of energy and completely protected against the inadvertent release of material or energy by the following: blank flange installation, removing sections of lines and piping, electrical lockouts and/or the disconnection of any other energy source or mechanical linkage that could cause personal harm if released unexpectedly.

Lockout/Tagout. The placement of lock/tag on the energy isolating device in accordance with 29 CFR 1910.147 which assures that the energy isolating device will not be inadvertently operated.

Non-Permit Confined Space. A confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazards capable of causing death or serious physical harm.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Permit-Required Confined Space. A confined space that requires specific entry procedures. A permit-required confined space is one that meets one or more of the following characteristics: contains or has a potential to contain a hazardous atmosphere; contains a material that has the potential for engulfing an entrant; has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; contains any other recognized serious safety or health hazards.

NOTE: Examples of permit-required confined spaces at NWS facilities include electrical and sewer manholes, river gauge pits, and buoys.

Point of Entry. Position of entrant whereby the entrant's face breaks the plane of an opening into the confined space. Examples of confined space entrances are hatches, manholes, inspection ports, manways, etc.

RSM. NOAA Regional Safety Manager.

Safety Briefing. Prior to entry, safety instruction will be provided by the Station Manager or his/her designee for visitors and contractors. This instruction will include confined space entry procedure highlights, specific hazards associated with entry and precautions to be taken during entry. The briefing shall also cover the provisions for authorizing a confined space entry performed by a visitor or contractor.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

12.3 Procedure

Each potentially confined space shall be initially evaluated using the Attachment B: Permit-Required Confined Space Entry Decision Flowchart.

12.3.1 Non-Permit Required Confined Space Entry. Once the space is determined to be a non-permit confined space and appropriate actions are taken to control any hazards that may be present, the entry into that space can be authorized.

When there are changes in the use or configuration of a non-permit confined space that might increase the hazards for entrants, the space shall be re-evaluated and, if necessary, reclassified as a permit-required confined space.

NOTE: It should be noted that the majority of confined spaces at NWS facilities are non-permit required confined spaces.

12.3.2 Permit Required Confined Space Entry. A permit-required confined space is one that meets one or more of the following characteristics:

a. Contains or has a potential to contain a hazardous atmosphere.

b. Contains a material that has the potential for engulfing an entrant.

c. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.

d. Contains any other recognized serious safety or health hazards.

The permit shall specify the date, time, location, type of work to be performed, potential hazards, atmospheric tests performed, personal protective equipment required, precautions taken, names of visitors or contractors, availability of rescue devices, and it shall certify that all necessary protective measures have been taken to ensure the safety of each worker. The authorized permit shall be:

(1) Completed, signed and authorized by the Station Manager and entry supervisor.

(2) Signed by persons entering the permit confined space.

(3) Signed by the attendant.

12.3.3 A listing of all permit-required confined spaces shall be maintained on site by the Safety or Environmental/Safety Focal Point.

12.3.4 The signed permit shall be located in a conspicuous location near the permit- confined space point of entry.

12.3.5 Prior to entry into a permit-confined space, the atmosphere shall be tested with remote or hand-held monitors for oxygen content, combustible and toxic atmospheres, in that order.

12.3.6 While work is being performed in the permit-confined space, continuous monitoring shall be conducted to ensure a safe atmosphere. If at any time the alarm is activated, personnel inside the permit confined space shall evacuate immediately.

12.3.7 Safety equipment required for entry into a permit-confined space shall be designated in writing on the permit by the entry supervisor.

12.3.8 Entry personnel shall post signs at the point of entry to notify employees of the hazards that may be present and ensure that all barriers, warning devices, and associated materials are utilized to prohibit inadvertent or unauthorized entries.

12.3.9 An attendant shall be assigned to remain on the outside of the permit-confined space and be in constant contact (visual, audible or radio) with the workers inside. Rescue procedures shall be pre-planned and practiced prior to permit confined space entry.

12.3.10 The attendant shall have the capability to summon help at all times.

12.3.11 When all of the above steps have been taken, the entry supervisor shall permit the work to proceed.

12.3.12 In the event of an unauthorized entry, the attendant shall order authorized entrants to evacuate the permit-confined space and notify the entry supervisor for resolution.

12.3.13 Upon completion of the work inside the permit confined space, the associated maintenance equipment shall be removed and the permit-confined space prepared for service.

12.3.14 Upon completion of all work inside the permit confined space, the entry supervisor shall cancel and sign the confined space entry permit.

12.3.15 A visitor or contractor may enter a permit confined space if supported and accompanied, if physically possible, by in-house trained personnel and he/she has received a confined space safety briefing from the entry supervisor prior to entry. Verification of this training shall be in writing to acknowledge that the visitor or contractor is named as an authorized entrant in the confined space permit.

12.3.16 <u>Authorized Entrant's Duties</u>:

a. Know space hazards, including information on the mode of exposure (e.g., inhalation or dermal absorption), signs or symptoms, and consequences of the exposure.

b. Use appropriate personal protective equipment properly (e.g., face and eye protection, and other forms of barrier protection such as gloves, aprons, and coveralls) when applicable.

c. As necessary, maintain communication (i.e., telephone, radio, visual observation) with attendants to enable the attendant to monitor the entrant's status as well as to alert the entrant to evacuate.

d. Exit from permit-confined space as soon as possible when ordered by an authorized person, when the entrant recognizes the warning signs or symptoms of exposure exist, when a prohibited condition exists, or when an automatic alarm is activated.

e. Alert the attendant when a prohibited condition exists or when warning signs or symptoms of exposure exist.

f. Read and sign the confined space entry permit prior to start of work.

12.3.17 Attendant's Duties:

a. Perform no other duties that interfere with the attendant's primary duties.

b. Remain outside permit-confined space during entry operations unless relieved by another authorized attendant.

c. Know existing and potential hazards, including information on the mode of exposure, signs or symptoms, consequences of the exposure, and their physiological effects.

d. Maintain communication with and keep an accurate account of those workers entering the permit confined space.

e. Order evacuation of the permit-confined space when a prohibited condition exists, when a worker shows signs of physiological effects of hazardous exposure, when an emergency outside the confined space exists, or when the attendant cannot effectively and safely perform required duties.

f. Summon rescue and other services during an emergency.

g. Ensure that unauthorized persons stay away from permit confined spaces or exit immediately if they have entered the permit space.

h. Inform authorized entrants and entry supervisor of entry by unauthorized persons.

i. In the event of the incapacitation of the authorized entrant, NWS attendants will not enter the permit-confined space. Rescue shall be performed in accordance with paragraph 12.3.21.

12.3.18 Entry Supervisor's Duties:

a. Know space hazards including information on the mode of exposure, signs, or symptoms and consequences of exposure.

b. Verify emergency plans and specified entry conditions such as permits, tests, procedures, and equipment before allowing entry.

c. Terminate entry and cancel permits when entry operations are completed or if a new condition exists.

d. Take appropriate measures to remove unauthorized entrants.

e. Ensure that entry operations remain consistent with the entry permit and that acceptable entry conditions are maintained.

12.3.19 A "qualified person" who has the education, training, and experience working in/with confined spaces shall make the determination as to whether a confined space is permit-required.

NOTE: *Proper application of the decision flow chart in Attachment B would facilitate compliance with this requirement.*

12.3.20 If the workplace contains permit confined spaces, the Safety or Environmental/Safety Focal Point in conjunction with Regional or Operating Unit Environmental/Safety Coordinator and NOAA Regional Safety Manager (RSM) shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces. Signs stating "DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" shall be used.

12.3.21 Emergency rescue from permit-required confined spaces shall be performed by local emergency response organizations. Emergency Response Agreements with these organizations are highly recommended. NWS personnel shall not perform emergency confined space rescue.

12.3.22 Before initial work assignment begins, the Station Manager shall ensure that proper training for all workers who are required to work in permit confined spaces. Upon completing this training, employees must have understanding, knowledge, and skills necessary for the safe performance of their duties. The Station Manager shall certify that training has been accomplished. The training shall include the duties of the Entrant, Attendant, and Entry Supervisor as specified in sections 12.3.16 -12.3.18.

12.3.23 Additional training is required when:

a. The job duties change.

b. There is a change in the permit-confined space program or the permit confined space operation presents a new hazard.

c. When an employee's confined-space entry job performance shows deficiencies.

12.3.24 Upon completion of training, employees must receive a certificate of training that includes the employee's name, signature or initials of trainer(s), and dates of training.

12.4 Quality Control

12.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

12.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

12.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

12.5 Responsibilities

12.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

12.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure and shall ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure confined-space entry supervisors, attendants and entrants receive appropriate training.

c. Shall designate the safety equipment required for entry in writing on the permit.

d. Shall provide a briefing to visitors before they enter a confined space.

e. Shall ensure that initial and periodic inventory of hand-held monitors, PPE, communication equipment, confined spaces postings, barriers and warning devices is accomplished and adequate stock is maintained.

12.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall maintain a listing of all permit-required confined spaces located within the facility.

12.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

12.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

12.6.1 American National Standards Institute, ANSI Z117.1-1989, "Safety Requirements for Confined Spaces".

12.6.2 National Institute for Occupational Safety and Health, NIOSH Alert Request for Assistance in Preventing Occupational Fatalities in Confined Spaces, (1986).

12.6.3 National Institute for Occupational Safety and Health, NIOSH Criteria for a Recommended Standard Working in Confined Spaces, November 1979.

12.6.4 National Institute for Occupational Safety and Health, NIOSH A Guide to Safety in Confined Spaces, July 1987.

12.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.146, Permit Required Confined Spaces, and 1910.252, Welding Cutting and Brazing.

12.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout).

12.7 Attachments

Attachment A. Confined Space Entry Permit

Attachment B. Permit-Required Confined Space Entry Decision Flowchart

ATTACHMENT A

Confined-Space Entry Permit

PART 1 (To be completed by the supervisor)

Location and Description of Work _____

_____

_____

Permit Date _____ (Permit is valid for one day only)

Visitors or Contractors (Print name and organization)

_____

_____

POTENTIAL HAZARDS (Check those which are applicable and comment)

Potential Hazards	☑	**Comments**
Corrosive Materials		
Hot Equipment		
Flammable Materials		
Toxic Materials		
Inert Gases		
Flame/Spark-Producing Operations		
Electrical Shock		
Stored Energy		
Moving Machinery		
Spilled Liquids		
Pressurized Systems		
Other		

Protective Measures Necessary to Control Hazards _____

_____

Special Work Permit Needed (If necessary attach it to the confined space permit)

Yes _____ No _____

PERSONAL SAFETY EQUIPMENT (Check those that are applicable and comment)

Eye Protection		
Head Protection		
Hand Protection		
Foot Protection		
Protective Clothing		
Respiratory Protection		
Recovery Device		
Retrieval Lines and Harness		
Supplemental Lighting		
Communication Equipment		(Entrants _____ Security _____)
Auxiliary Ventilation		
Atmospheric Monitoring Equipment		
Other		

	Printed Name	Signature	Date
Standby Person	_____	_____	_____
Entrants	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

Employees have received the required training in accordance with this procedure.

RESPONSIBLE SUPERVISOR _____

(Signature)

_____

PART 2 (To be completed by the Station Manager or Immediate Supervisor)

ATMOSPHERIC TESTS

	Location	Acceptable Range	Reading
Flammable Gas %	_____	< 20% LEL	_____
Oxygen Content	_____	19.5% - 23.5%	_____
Other _____ (Specify)	_____	_____ (Specify)	_____

TEST PERFORMED BY (Print Name) _____

(Signature) _____

(Date) _____

Contractor Able to Perform Work Without an Escort? Yes _____ No _____

REMARKS _____

If visitors or contractors are involved, the appropriate safety briefing has been given.

(Print Name) _____

(Signature) _____

(Date) _____

PART 3 PERMIT CANCELLATION (To be completed by supervisor)

All authorized work has been completed and the confined space permit is canceled.

RESPONSIBLE SUPERVISOR (Signature) _____

(Date) _____

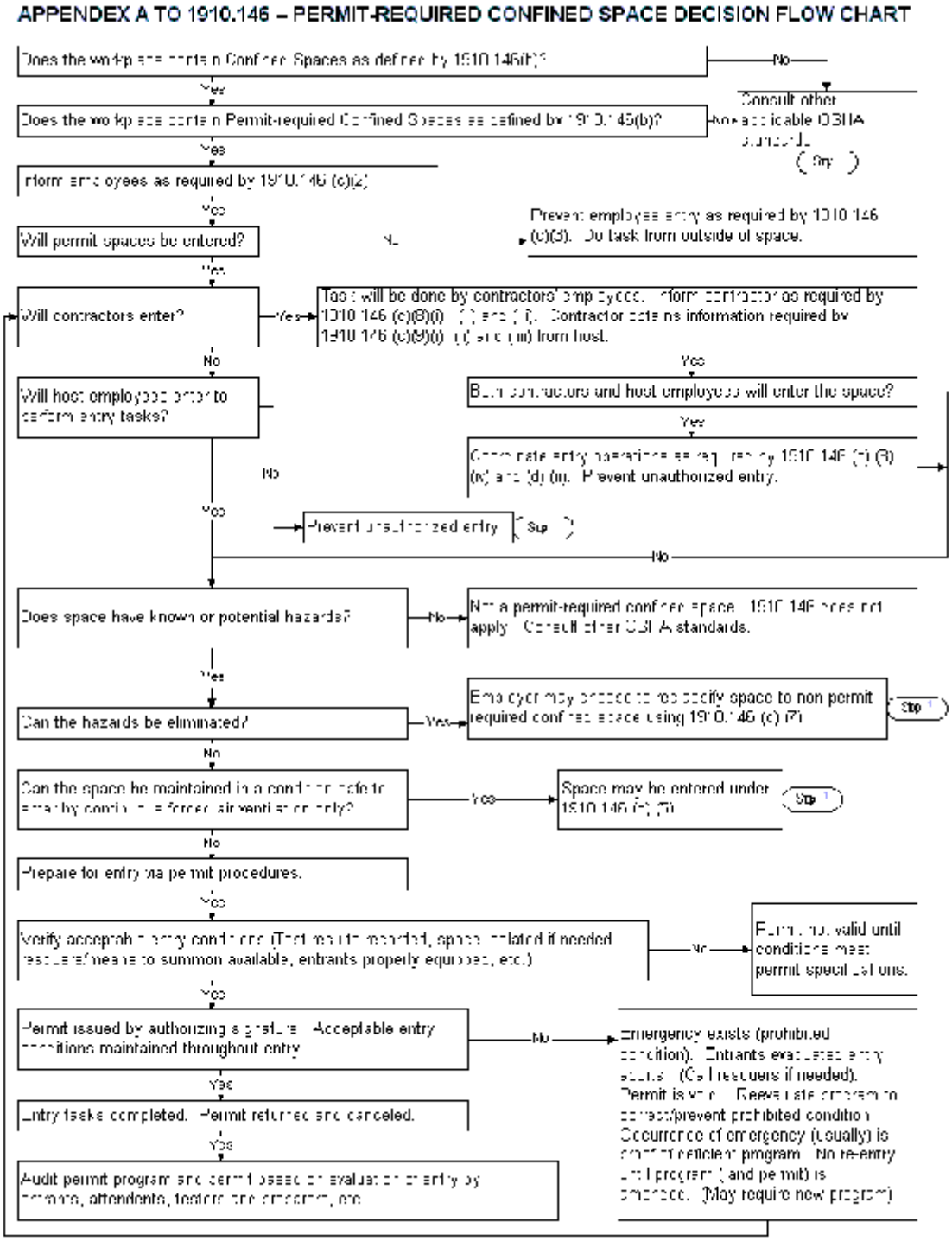
(Time)

RETURN THE PERMIT TO THE STATION MANAGER UPON COMPLETION

EMERGENCY PHONE NUMBER _____

ATTACHMENT B

Permit-Required Confined Space Entry Decision Flowchart



1 Spaces may have to be evacuated and re-evaluated if hazards arise during entry.

PROCEDURE 13 - Indoor Air Quality

Table of Contents Page

Synopsis 13-ii
Indoor Air Quality Checklist 13-iii

13 INDOOR AIR QUALITY 13-1
13.1 Purpose And Scope 13-1
13.2 Definitions 13-1
13.3 Procedure 13-1
13.4 Quality Control 13-4
13.5 Responsibilities 13-5
13.6 References 13-5
13.7 Attachments 13-6

Synopsis

This procedure identifies health hazards associated with poor indoor air quality and provide guidelines to reduce potential exposure to these hazards. This procedure applies to all NWS facilities, work locations, and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Perform Indoor Air Quality Investigation to address employees' complaints (If applicable). *(13.3.8)*
- **Develop/Obtain/Provide Documentation/Information required for Site**
  - Inform personnel about painting, renovations and other activities that may affect the Air Quality *(13.3.1f.3)*
- **Designate Person to Administer the Indoor Air Quality Procedure Requirements**
- **Provide Local Training of Site Personnel (if applicable)**
- **Designate Person for Contractor Oversight (If applicable)**
- **Inventory Material/Equipment (Procure as required)**
  - HVAC filters *(13.3.7)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Maintain HVAC systems per manufacturer's recommendations *(13.3.7)*
  - Conduct semi-annual inspections of HVAC systems for compliance with American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE). *(13.3.3)*
- **Review/Update Documentation**
  - Maintain records of indoor air quality complaints, investigations, and corrective actions *(13.3.8)*
- **Provide Refresher Training of Site Personnel (As required)**
- **Inspect/Replace/Recalibrate Maintain Material/Equipment**
  - HVAC filters *(13.3.7)*

Indoor Air Quality Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	13.4.2				
Have the facility's Heating, Ventilation and Air Conditioning (HVAC) systems been checked semi-annually for compliance with this procedure?	13.3.3				
Has the facility established a preventative maintenance schedule for the HVAC system?	13.3.3				
Is the facility, free of areas of microbial growth, particularly the HVAC drip pans, drop ceiling panels, carpeting, etc.?	13.3.4				
Is the relative humidity maintained between 30% and 60% in the facility?	13.3.4				
Is the carbon dioxide level in the facility below 1000 parts per million?	13.3.3				
Are HVAC systems designed to properly distribute air throughout the workspace?	13.3.5				
Are HVAC air intakes located to minimize the entrance of contaminants (from sources such as industrial areas or parking lots) into the workplace?	13.3.6				
Are all HVAC drip pans equipped with gravity drains?	13.3.4				

Have any employee been exposed to any regulated contaminant in excess of OSHA permissible exposure limits or ACGIH threshold limit values?	13.3.9				
Have all indoor air quality concerns been investigated and documented?	13.3.8				

13 INDOOR AIR QUALITY

13.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is implementing this procedure related to hazards associated with poor indoor air quality. This procedure applies to all NWS facilities, work locations, and employees.

13.2 Definitions

ACGIH. American Conference of Governmental Industrial Hygienists.

ASHRAE. American Society of Heating, Refrigeration, and Air Conditioning Engineers.

CFR. Code of Federal Regulations.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

EPA. United States Environmental Protection Agency.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

13.3 Procedure

13.3.1 New facility Heating, Ventilation and Air Conditioning (HVAC) systems for NWS facilities shall be designed to comply with ASHRAE 62, "Ventilation for Acceptable Indoor Quality" and ASHRAE Standard 55, "Thermal Environmental Conditions for Human Occupancy." In particular, the volume of outside fresh air supplied to the workplace shall comply with the most recent version of ASHRAE 62.

13.3.2 Existing facility HVAC systems at NWS facilities shall comply with ASHRAE 62 to the maximum extent feasible.

13.3.3 Facilities personnel shall perform periodic checks on HVAC system performance. These checks should coincide with the facility's established preventative maintenance schedule. A semi-annual schedule is recommended. The system shall be checked for

compliance with ASHRAE standards including the following parameters: temperature and relative humidity within the work areas, carbon dioxide levels within the work areas, amount of fresh outside makeup air being introduced into the work areas and buildup of moisture within the HVAC duct system. Carbon dioxide levels are an indicator of whether adequate fresh outside makeup air is being introduced into the workplace. Concentrations above 1,000 parts per million are generally indicators of inadequate fresh air. It should be noted that carbon dioxide itself is not harmful at this concentration.

13.3.4 Any areas where microbial growth is noted shall be properly sanitized, particularly in areas where spores and mold may be introduced into the workplace air. A relative humidity between 30 and 60 percent is generally recommended to minimize microbial growth. All drip pans located in ductwork should have gravity drains. Care shall be taken to ensure that condensate does not accumulate in ductwork and that drains are kept clean.

13.3.5 HVAC systems shall be designed so that air is properly distributed throughout the workplace. During design or remodeling of office spaces, care shall be given to the correct placement of supply and return air ducts and diffusers. Office partitions shall be located in positions which will not disrupt correct airflow.

13.3.6 HVAC air intakes shall be located within a facility to minimize intake of contaminants from parking lots, exhaust stacks, adjacent highways or other sources of contaminants.

13.3.7 HVAC systems shall be maintained per manufacturer's recommendations, including periodic inspection and changing of filters. Adequate stock of filters shall be maintained, as required.

13.3.8 The Station Manager shall contact the NOAA Regional Safety Manager to obtain assistance in evaluating and addressing employees complaints or concerns related to indoor air quality. The EPA document "Building Air Quality: A Guide for Building Owners and Facility Managers" provides guidelines for performing Indoor Air Quality investigations. Facility personnel may be incorporated into the investigation if warranted. The results of all investigations shall be documented and maintained along with corrective actions which were implemented.

13.3.9 No employee shall be exposed to any regulated contaminant in excess of OSHA permissible exposure limits or ACGIH threshold limit values. The table 13-1, "Common Indoor Air Contaminants", lists a few of the common contaminants found in the indoor environment. The exposure limits are listed in terms of milligrams per cubic meter (mg/m^3) or parts per million (ppm).

Table 13-1. COMMON INDOOR AIR CONTAMINANTS

CONTAMINANT	OSHA PEL, 8 HOUR TWA	ACGIH TLV, 8 HOUR TWA	OTHER GUIDELINES
Carbon Monoxide	50 ppm	25 ppm	11 ppm - World Health Organization
Formaldehyde	0.72 ppm	0.3 ppm	N/A
Total Particulate	15 mg/m^3	10 mg/m^3	75 ug/m^3 - EPA Ambient Air Standard
Total Respirable Particulate	5 mg/m^3	3 mg/m^3	N/A
Carbon Dioxide	5000 ppm	5000 ppm	1000 ppm - ASHRAE 62

13.3.10 ASHRAE recommends a temperature range of 73°-79° F in summer conditions and a range of 68°-73° F in winter to maximize thermal comfort in office environments.

13.3.11 Miscellaneous. The complexity of studying and measuring the quality of office environment arises from various factors including:

a. Office building floor plans are frequently changing to accommodate increasingly more employees and organization.

b. Office buildings frequently undergo building renovations such as installation of new carpet, modular office partitions and freestanding offices, and painting.

c. Many of the health symptoms appearing are vague and common both to the office and home environment.

d. In general, very little data on pollutant levels within office environments is available.

e. Guidelines or standards for permissible personal exposure limits to pollutants within office building are very limited.

f. Frequently odors associated with chemical contaminants are noticeable following a building's renovation or installation of new carpeting. Vapors from paints, adhesives, sealants, office furniture, carpeting, and vinyl wall coverings are the source of a variety of irritant compounds. Although there is often no immediate danger to employees' safety and health (unless an employee has a known allergic reaction), measures shall be taken to minimize the discomforts associated with the irritating vapors. Among the measures to be employed are:

(1) Schedule carpeting, painting and other renovation activities for the weekends or after regular hours, whenever possible.

(2) Ventilate the affected area as much as possible to diminish concentration of the chemicals in the air as well as odors associated with the vaporized chemicals.

(3) Inform personnel regarding upcoming renovation activities that may cause irritating vapors to occur. This measure will allow time to arrange a temporary move of individual(s) with known allergy problems to another work area.

13.4 Quality Control

13.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

13.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

13.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

13.5 Responsibilities

13.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

13.5.2 Station Manager*

Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

13.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall ensure that facilities personnel conduct periodic checks on the facility HVAC system to ensure its adequate performance.

c. Shall investigate employee(s) concerns related to indoor air quality and shall ensure that deficiencies are remediated.

13.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

13.6 References

Incorporated references. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure

13.6.1 American Conference of Governmental Industrial Hygienists, TLVs and BEIs, Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices.

13.6.2 American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 55, latest edition, "Thermal Environmental Conditions for Human Occupancy."

13.6.3 American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 62, latest edition, "Ventilation for Adequate Indoor Air Quality."

13.6.4 U.S. Environmental Protection Agency, Building Air Quality: A Guide for Building Owners and Facility Managers

13.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart Z, "Toxic and Hazardous Substances."

13.7 Attachments

None

PROCEDURE 14 - Walking - Working Surfaces

Table of Contents Page

Synopsis 14-ii
Walking - Working Surfaces Checklist 14-iii

14 WALKING - WORKING SURFACES 14-1
14.1 Purpose and Scope 14-1
14.2 Definitions 14-1
14.3 Procedure 14-2
14.4 Quality Control 14-8
14.5 Responsibilities 14-9
14.6 References 14-10
14.7 Attachments 14-10

ATTACHMENT A 14-A-1
Portable Ladder Inspection Checklist 14-A-1

Synopsis

This procedure provides guidelines to reduce potential slips, trips, and falls associated with walking-working surfaces. This procedure applies to all NWS facilities, work locations, and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Perform Inspection/Tagging of portable ladders. *(14.3.5c, f, Attachment A)*
  - Perform Inspection of fixed ladders. *(14.3.6m)*
- **Develop/Obtain Documentation/Information required for Site**
  - Complete portable ladder Inspection checklist. *(14.3.5c, Attachment A)*
- **Designate Person to Administer Walking-Working Surfaces Procedure Requirements**
- **Inventory Material/Equipment (Procure as required)**
  - Ladder Safety Devices for fixed ladders, cages (if required).*(14.3.6b,c)*

Annual Review and Recurring Task Requirements:

- **Perform Inspections/Assessments/Testing**
  - Conduct Annual Inspection/Tagging of Portable Ladders. *(14.3.5b,c; Attachment A)*
  - Perform Inspection of fixed ladders. *(14.3.6m)*
  - Conduct inspection of floors, passageways, store rooms and workplaces *(14.5.3c, 14.3.2)*
- **Review/Update Documentation/Information required for Site**
  - Maintain Portable Ladders Inspection Checklists. *(14.3.5c, Attachment A)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Damaged Ladders. *(14.3.5e)*

Walking - Working Surfaces Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	14.4.2				
Are general requirements related to walking-working surfaces followed?	14.3.2				
Are floors and wall openings guarded or covered as required by the procedure?	14.3.3				
Are annual inspections of portable ladders being conducted?	14.3.5b,c Attachment A				
Are ladders with defects withdrawn from service and tagged as “Dangerous, Do Not Use.”	14.3.5d				
Does each portable ladder have a unique identification number posted on a tag?	14.3.5e				
Are safety requirements for the portable ladders followed?	14.3.5				
Are ladders with length of more than 20 feet to a maximum unbroken length of 30 feet equipped with cages or ladder safety devices?	14.3.6b				
Are safety requirements for fixed ladders met?	14.3.6 d-k				
Are fixed ladders maintained and inspected regularly?	14.3.6m				

Requirements	Reference	YES	NO	N/A	Comments
Are safety requirements for scaffolding followed?	14.3.7				
Are signs, barricades and safety tape materials available if needed to warn of dangers associated with walking-working surfaces?	14.3.2				
Are damaged or weakened scaffold repaired immediately?	14.3.7e				
Are portable ladder inspection checklists maintained and filed?	Attachment A				

14 WALKING - WORKING SURFACES

14.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to the slips, trips, and falls associated with walking-working surfaces. This procedure applies to all NWS facilities, work locations, and employees.

14.2 Definitions

ANSI. American National Standards Institute.

ASTM. American Society for Testing and Materials.

Dockboards.(Bridge plates) Mean devices for spanning short distances between railcars or highway vehicles and loading platforms which do not expose employees to falls greater than four (4) feet (1.2 m).

Extension Ladder. A ladder that is adjustable in length, is not self-supporting, and consists of two or more sections.

Field office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Floor Hole. An opening measuring less than 12 inches but more than 1 inch in its least dimension, in any floor, platform, pavement, or yard, through which materials but not persons may fall.

Floor Opening. An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard, through which persons may fall.

Handrail. A single bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold for use in case of tripping.

NFPA. National Fire Protection Association.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Platform. A working surface for persons, elevated above the surrounding floor or ground, such as a balcony or platform for the operation of machinery or equipment.

Rolling Ladder and Stairway. Any manually propelled mobile ladder or stairway having wheels or casters that complies with the requirements specified in 29 CFR 1910.29, “Manually Propelled Mobile Ladder Stands and Scaffolds (Towers).”

Runway. A passageway for persons, elevated above the surrounding floor or ground level, such as a foot walk along shafting or a walkway between buildings.

Single Ladder. A ladder that is non-adjustable in length, non-self supporting, and consists of one section.

Stair Railing. A vertical barrier erected along exposed sides of a stairway to prevent a person from falling.

Standard Handrail. A standard handrail consists of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail in order to keep a smooth, unobstructed surface along the top and both sides of the handrail. The brackets shall hold the rail 3 inches from the wall and be no more than 8 feet apart.

Standard Railing. A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons. A standard railing consists of top rail, mid rail, and posts, and shall have a vertical height of 42 inches nominal from the upper surface of top rail to floor, platform, runway, or ramp level. Nominal height of mid rail is 21 inches.

Standard Stair Railing. A standard stair railing (stair rail) shall be of construction similar to a standard railing, but the vertical height shall be not more than 34 inches nor less than 30 inches from the upper surface of the top rail to the surface of the tread in line with the face of the riser at the forward edge of the tread.

Standard Toeboard. Four inches nominal in vertical height, with not more than one-fourth inch clearance above floor level.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Step Ladder. A self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back.

Toeboard. A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent materials from falling.

Wall Hole. An opening less than 30 inches, but more than one inch high, of unrestricted width, in any wall or platform.

Wall Opening. An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which a person may fall.

14.3 Procedure

14.3.1 It is the policy of the NWS to adhere to the provisions of 29 CFR 1910, Subpart D, "Walking-Working Surfaces."

14.3.2 General Requirements

a. All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.

b. Every workroom floor shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained and gratings, mats, and/or raised platforms shall be provided.

c. Every floor, working place and passageway shall be kept free from protruding nails, splinters, holes or loose boards.

d. Aisles and passageways shall be kept clear and in good repair with no obstruction across passageways or in aisles that could create a hazard.

e. Permanent aisles and passageways shall be appropriately marked.

f. Aisles shall be sufficiently wide where mechanical handling equipment is used.

g. Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, and the like.

h. Floor load rating limits shall be marked on plates and conspicuously posted.

NOTE: *Posting of floor load ratings for floors that are slab on grade is not required by the NWS.*

i. No load shall be placed on any floor or roof of a building or other structure that is greater than its load rating limit.

j. In addition, all buildings equipped for artificial illumination shall be provided with adequate and reliable lighting, including emergency lighting where necessary, for all exit routes.

NOTE: Signs, barricades and safety tape materials should be available if needed to warn of dangers associated with walking-working surfaces.

14.3.3 Guarding Floor and Wall Openings and Holes

a. Standard railing shall be provided on all exposed sides of a stairway opening, except at the stairway entrance.

b. Floor openings may be covered rather than guarded with rails. When the floor opening cover is removed, a temporary guardrail shall be in place, or an attendant shall be stationed at the opening to warn personnel.

NOTE:	*Concerning access panels on raised computer room floors, as long as an access panel is only removed temporarily and does not remain off on a permanent basis, signs, barrier tape and/or safety cones are acceptable.*

c. Every floor hole into which a person can accidentally walk shall be guarded by either a standard railing with toeboard, or a floor hole cover of standard strength and construction.

d. While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.

e. Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toeboard wherever, beneath the open sides, persons can pass or there is moving machinery or there is equipment which could create a hazard if material were to fall.

f. Every runway shall be guarded by a standard railing, or the equivalent, on all sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

g. Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toeboard.

h. Every flight of stairs with four or more risers shall have standard stair railings or standard handrails as specified in 1910.23(d).

14.3.4 <u>Fixed Industrial Stairs</u>

a. OSHA 29 CFR 1910.24, “Fixed Industrial Stairs” contains specifications for the safe design and construction of fixed general industrial stairs including interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms or pits.

b. Fixed industrial stairs shall be provided for access to and from places of work where operations necessitate regular travel between levels.

14.3.5 Portable Ladders

a. All ladders purchased by the NWS shall comply with the requirements specified in OSHA 29 CFR 1910.25, “Portable Wooden Ladders”, OSHA 1910.26, “Portable Metal Ladders”, ANSI A14.1-1994, “Ladders, Portable Wood - Safety Requirements”, ANSI A14.2-1992, “Ladders, Metal - Safety Requirements” or ANSI A14.3-1990, “Ladders, Reinforced Plastic - Safety Requirements.”

b. Each ladder shall be inspected initially upon being received at the station and annually, thereafter, by the Safety or Environmental/Safety Focal Point.

c. All ladders shall be inspected in accordance with the guidelines specified in Attachment A, “Portable Ladder Inspection Checklist.” Inspection checklists should be completed and maintained.

d. Ladders which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous - Do Not Use."

e. Each ladder shall be tagged with its own unique identification number.

NOTE: In facilities which have more than one ladder of the same type/manufacturer, tagging allows each ladder to be easily identified.

f. Portable stepladders longer than 20 feet shall not be used.

g. Single ladders longer than 30 feet shall not be used.

h. Extension ladders longer than 60 feet shall not be used.

i. Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.

j. Short ladders shall not be spliced together to make long ladders.

k. Ladders shall never be used in the horizontal position as scaffolds or work platforms.

l. Stepladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open position.

m. Ladder racks shall be established for the storage of all portable ladders in their general use areas.

n. Ladders shall be maintained in good condition at all times and shall be free of grease and oil.

o. Ladders shall be placed with a secure footing, or they shall be lashed, or held in position.

p. When using a single or extension ladder, the base of the ladder shall rest securely on a flat surface and the top of the ladder shall be tied off to a secure point.

q. The foot of a single or extension ladder shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the support).

r. The worker shall always face the ladder when climbing up or down.

s. No person shall walk beneath a ladder when another person is on the ladder.

t. Any person helping to stabilize a ladder shall wear an approved hard hat.

u. A person working on a ladder shall not lean over to either side or backward away from the ladder to perform work.

v. No more than one person shall work on or climb the same ladder at a time.

w. Any person climbing or working on a ladder shall maintain three points of contact with the ladder at all times (e.g., two feet and one hand or two hands and one foot) and shall use both hands when climbing or descending the ladder. This prohibits the person from carrying any material, equipment, tools, etc. in their hands when climbing or descending the ladder.

x. The weight rating of a ladder shall never be exceeded.

y. The top of a stepladder shall not be used as a step.

z. No employee shall stand on or be supported by the top two steps of a portable ladder.

aa. Only fiberglass ladders shall be used in locations around electrical equipment. Metal ladders shall never be used near electrical equipment.

bb. Employees shall contact the Safety or Environmental/Safety Focal Point if any ladder or ladder component is believed to be unsafe or defective. The Safety or Environmental/Safety Focal Point shall immediately remove any unsafe ladder from service.

14.3.6 <u>Fixed Ladders</u>

a. A fixed ladder is a ladder permanently attached to a structure, building or equipment.

b. Fixed ladders, with a length of more than 20 feet to a maximum unbroken length of 30 feet shall be equipped with cages or a ladder safety device.

c. A "cage" is a guard that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

d. Cages shall extend a minimum of 42 inches above the top of a landing, unless other acceptable protection is provided.

e. Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder.

f. A ladder safety device is any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and may incorporate such features as life belts, friction brakes, and sliding attachments.

g. Another feature of fixed ladders is the landing platform, which provides a means of interrupting a free fall and serves as a resting place during long climbs.

h. When fixed ladders are used to ascend to heights exceeding 20 feet (except on chimneys), landing platforms shall be provided for each 30 feet of height or fraction thereof, when cages are used, except that, where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each 20 feet of height or fraction thereof.

i. Ladder safety devices may be used on tower, water tank, and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in these cases.

j. The preferred pitch of fixed ladders shall be considered to come in the range of 75 degrees and 90 degrees with the horizontal. Fixed ladders shall be considered to be substandard if they are installed within the pitch range of 60 and 75 degrees with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range is a critical range to be avoided.

k. Ladders having a pitch in excess of 90 degrees with the horizontal are prohibited.

l. Any person climbing or working on a ladder shall maintain three points of contact with the ladder at all times and shall use both hands when climbing or descending the ladder. This prohibits the person from carrying any material, equipment, tools, etc. in their hands when climbing or descending the ladder.

m. Fixed ladders shall be maintained in a safe condition and inspected regularly.

14.3.7 <u>Safety Requirements for Scaffolding</u>

a. OSHA's "Safety Requirements for Scaffolding" standard establishes safety requirements for the construction, operation, maintenance, and use of scaffolds used in the maintenance of buildings and structures.

b. The footing or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. Unstable objects, such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

c. Scaffolds and their components shall be capable of supporting at least four times the maximum intended load.

d. Scaffolds shall be maintained in a safe condition and shall not be altered or moved horizontally while they are in use or occupied.

e. Damaged or weakened scaffolds shall be immediately repaired and shall not be used until repairs have been completed.

f. A safe means must be provided to gain access to the working platform level through the use of a ladder, ramp, etc.

g. Overhead protection must be provided for personnel on a scaffold exposed to overhead hazards.

h. Guardrails, midrails, and toeboards must be installed on all open sides and ends of platforms more than 10 feet above the ground or floor. Wire mesh must be installed between the toeboard and the guardrail along the entire opening, where persons are required to work or pass under the scaffolds.

i. Employees shall not work on scaffolds during storms or when scaffolds are covered with ice or snow.

14.3.8 Manually Propelled Mobile Ladder Stands and Scaffolds (Towers)

a. OSHA's "Manually Propelled Mobile Ladder Stands and Scaffolds" standard contains requirements for the design, construction, and use of mobile work platforms (including ladder stands but not including aerial ladders) and rolling (mobile) scaffolds (towers).

b. All exposed surfaces of mobile ladder stands and scaffolds shall be free from sharp edges, burrs, or other safety hazards.

c. The maximum work height shall not exceed four times the minimum base dimension unless outriggers, guys or braces are added to provide stability.

d. Guardrails and toeboards are required for work levels 10 feet or more above the ground or floor.

14.3.9 Other Working Surfaces

a. Portable dockboards (bridge plates) shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping.

b. Handholds shall be provided on portable dockboards to permit safe handling when the dockboard must be repositioned or relocated.

14.4 Quality Control

14.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

14.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

14.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

14.5 Responsibilities

14.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

14.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and periodic inventory of ladders, ladder safety devices and other safety equipment is accomplished and adequate stock is maintained.

14.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall inspect ladders as specified in this procedure.

c. Shall provide initial and periodic inspections of floors, passageways, store rooms and workplaces as specified in 14.3.2.

14.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWSM 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

14.6 References

Incorporated References. The following list of references was incorporated as a whole or in part into this procedure. These references can provide additional explanations or guidance for the implementation of this procedure.

14.6.1 American National Standards Institute, ANSI 1264.1-1989, "Safety Requirements for Workplace Floor and Wall Openings, Stair, and Railing Systems."

14.6.2 American National Standards Institute, ANSI A14.3-1990, "Ladders, Reinforced Plastic - Safety Requirements."

14.6.3 American National Standards Institute, ANSI A14.2-1992, "Ladders, Metal - Safety Requirements."

14.6.4 American National Standards Institute, ANSI 14.3-1992, "American National Standard for Ladders - Fixed - Safety Requirements."

14.6.5 American National Standards Institute, ANSI A14.1-1994, "Ladders, Portable Wood - Safety Requirements."

14.6.6 American Society For Testing and Materials, ASTM A36/A36M, "Standard Specification for Carbon Structural Steel."

14.6.7 National Fire Protection Association, NFPA 101, "Life Safety Code."

14.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart D, "Walking-Working Surfaces."

14.6.9 NWS Occupational Safety and Health Procedure #1, "Fall Protection."

14.7 Attachments

Attachment A. Portable Ladder Inspection Checklist

ATTACHMENT A

Portable Ladder Inspection Checklist

Ladder Location:_____ Ladder Weight Rating:_____

____ All movable parts are operating correctly.

____ The ladder is free of any structural damage.

____ Bolts and rivets are in place, secured and free from excessive wear.

____ Steps and rungs are secure and without any looseness or wobble.

____ Ropes and pulleys on extension ladders are operational and free from defects.

____ Ladders are not twisted, distorted or warped.

____ Ladders are free from corrosion, rust, rot or other degenerative process.

____ Ladders exposed to excessive heat are removed from service, pending an inspection by the Safety or Environmental/Safety Focal Point.

____ Ladders are not painted except with clear paint, varnish, or for limited identification labeling.

____ Ladders are stored in such a way that the ladder supports no more than its own weight and is in an area free from excessive heat and moisture.

____ Wooden ladders used around toxins, carcinogens or potential carcinogens are sealed with varnish, polyurethane or comparable clear paint.

____ The ladder's weight rating is clearly visible on the ladder.

NOTE: Ladder repairs must restore the ladder to a condition meeting its original design criteria before the ladder can be returned to use. If the ladder cannot be restored to its original design criteria it shall be taken from use permanently. The ladder shall then be destroyed and disposed of to prevent accidental use.

_____ ____/____/____

Inspector Date

PROCEDURE 15 - Battery Charging and Storage Operations

Table of Contents Page

Synopsis 15-ii
Battery Charging and Storage Operations Checklist 15-iii

15 BATTERY CHARGING AND STORAGE OPERATIONS 15-1
15.1 Purpose And Scope 15-1
15.2 Definitions 15-1
15.3 Procedure 15-2
15.4 Quality Control 15-3
15.5 Responsibilities 15-4
15.6 References 15-4
15.7 Attachments 15-5

Synopsis

The purpose of this procedure is to provide guidelines to reduce potential hazards associated with battery charging and battery storage operations. Battery charging operations include the charging of batteries for powered industrial trucks, uninterrupted power supplies or battery backups for computer systems, battery systems for emergency generators or lighting systems and other similar operations. These systems may include lead acid batteries, lithium chloride batteries, and other similar devices. Charging of low current battery systems such as rechargeable NiCad batteries, small consumer batteries, self-contained uninterruptable power supplies (typically used for individual computers), etc., is not included. This procedure applies to all NWS facilities and work locations where battery charging and storage operations are conducted, and to all employees who work in these facilities.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Manufacturer's Recommendations. *(15.3.5)*
- **Designate Person to Administer "Battery Charging & Storage Operations"Procedure Requirements**
- **Provide Local Training of Site Personnel (If Applicable)**
- **Inventory Material/Equipment (Procure as required)**
  - PPE (e.g., chemical resistant apron, goggles, gloves). *(15.5.2c, 15.3.2)*
  - Spill Control Trays *(15.5.2c, 15.3.6)*
  - Specific Gravity Testers. *(15.5.2c, 15.3.5)*
  - Eyes, face and body flushing/rinsing facilities *(15.5.2c, 5.3.3)*
  - Protective Barriers. *(15.5.2c, 15.3.4)*, if applicable

Recurring and Annual Task Requirements:

- **Perform Inspections/Assessment/Testing**
  - Monthly Inspections batteries per manufacturer's recommendations (e.g., check electrolyte levels and specific gravity). *(15.3.5)*
  - Visual Inspections of UPS batteries *(15.3.5)*
- **Review/Update Documentation/Information required for Site**
- **Provide Refresher Training of Site Personnel (If Applicable)**
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - PPE (e.g., chemical resistant apron, goggles, gloves). *(15.5.2c, 15.3.2)*
  - Spill Control Trays *(15.5.2c, 15.3.6)*
  - Specific Gravity Testers. *(15.5.2c, 15.3.5)*
  - Eyes, face and body flushing/rinsing facilities *(15.5.2c, 15.3.3)*
  - Protective Barriers. *(15.5.2c, 15.3.4)*, if applicable

Battery Charging and Storage Operations Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	15.5.2				
Are there areas designated for Battery Charging Operations?	15.3.1				
Are eye, face and body flushing/rinsing facilities available whenever sealed and unsealed (e.g., UPS) batteries are handled?	15.3.3				
Are eye, face and body flushing/rinsing facilities located within 10 seconds of unobstructed travel time distance from the charging station?	15.3.3				
Is adequate PPE available for personnel working on battery charging systems?	15.3.2				
Are battery charging operations adequately guarded against mechanical damage?	15.3.4				
Are stored and charging batteries being inspected monthly to ensure compliance with manufacturer's recommendations?	15.3.5				
Are all batteries stored on spill control trays or other similar devices where practicable?	15.3.6				

Requirements	Reference	YES	NO	N/A	Comments
Is the ventilation in the vicinity of charging batteries adequate to prevent the buildup of combustible gas?	15.3.7				
Are all battery top surfaces kept clean and free of electrolyte material?	15.3.8				
Are all battery terminal connectors kept tight and free of corrosion?	15.3.9				

15 BATTERY CHARGING AND STORAGE OPERATIONS

15.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with battery charging and storage operations. Battery charging operations include the charging of batteries for powered industrial trucks, uninterrupted power supplies or battery backups for computer systems, battery systems for emergency generators or lighting systems and other similar operations. These systems may include lead acid batteries, lithium chloride batteries, and other similar devices. Charging of low-current battery systems such as rechargeable NiCad batteries, small consumer batteries, self-contained uninterruptible power supplies (typically used for individual computers), etc., is not included. This procedure applies to all NWS facilities and work locations where battery charging and storage operations are conducted, and to all employees who work in these facilities.

15.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

NFPA. National Fire Protection Association.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

PPE. Personal Protective Equipment.

Flushing/Rinsing Facility. A device used to remove corrosive or injurious materials from the eyes, face or body (e.g., a drenching hose, emergency shower or eyewash unit)

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

15.3 Procedure

15.3.1 Battery charging operations shall take place only in areas designed for this purpose.

15.3.2 Adequate PPE shall be kept in proximity to battery charging operations. PPE shall include a chemical-resistant apron, splash-resistant face shield, safety goggles and chemical-resistant gloves. Generally, gloves made from natural rubber, nitrile, and other similar materials provide good protection against battery acid. The gloves provided for use with battery charging operations shall be used for this purpose only.

15.3.3 Facilities for flushing/rinsing the eyes, face, body and the work area with water shall be provided wherever electrolyte is handled (e.g., office and RDA Emergency Power Generator batteries). Eyewash/body drenching facilities shall also be provided for personnel handling sealed lead-acid batteries (e.g., office and RDA UPS batteries). Portable eyewash/body drenching units are acceptable. The requirement for eyewash/body drenching units does not apply to ASOS sites since lead-acid batteries used in DCP are enclosed in a vented plastic box. Note: 15 minutes of continuing flushing at 0.4gpm is required per ANSI Z358.1-1998 standard. These facilities shall be available within 10 seconds of unobstructed travel-time distance from the charging station. These facilities shall be well marked and in locations free from obstructions. Care shall be taken when locating the units so as not to create a potential electrocution or shock hazard to personnel.

NOTE: When water supply is not available, e.g., at RDA sites, portable eyewash unit shall be provided.

15.3.4 Facilities or barriers must exist to protect the battery charging operation from damage by trucks or other materials handling equipment.

15.3.5 Stored and charging batteries shall be inspected monthly and shall be maintained in full compliance with manufacturer's recommendations. These inspections shall be conducted by the Safety or Environmental/Safety Focal Point or his/her designee. Electrolyte levels and specific gravity shall be checked for conformance with manufacturer's recommendations on unsealed vented batteries. The manufacturer's method for conducting these tests shall be followed. The inspection shall verify that no leakage of electrolyte material has occurred. Gel cell batteries shall be inspected per manufacturer's recommendations.

NOTE: *Inspection for the UPS batteries shall only include a visual inspection* for enlarged or leaking batteries. This shall be done monthly. The NWS policy for Maintenance, Testing and Replacement of VRLA Batteries for UPS is being developed and will also include requirements for quarterly inspections.

15.3.6 Batteries, including gel cells in Electronics Technicians shop, shall be stored on spill control trays or other similar devices designed to contain any spills which may occur.

15.3.7 Adequate ventilation shall be provided to prevent the buildup of combustible gas. This ventilation may be passive or active in nature.

15.3.8 Battery top surfaces shall be kept clean and free of electrolyte material using appropriate personal protective equipment and neutralizing/cleansing solution. The neutralizing/cleansing solution should be to the manufacturer's specifications for the particular electrolyte being utilized.

15.3.9 Battery terminal connectors shall be kept tight and free of corrosion. If the terminal connectors are corroded, they shall be removed and cleaned with bicarbonate of soda. Additionally, battery studs and cable ends shall be kept clean.

15.3.10 Personnel involved in UPS battery changing operations should follow lock out/ tag out procedures outlined in Attachment D of Section 4, Control of Hazardous Energy Sources.

15.4 Quality Control

15.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

15.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

. 15.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

15.5 Responsibilities

15.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

15.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that stored and charging batteries are inspected monthly and that batteries are maintained in full compliance with manufacturer's recommendations.

c. Shall ensure that initial and periodic inventory of PPE and safety equipment/instrumentation is accomplished and adequate stock is maintained.

15.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

15.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

15.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

15.6.1 American National Standards Institute, ANSI Z358.1-1998, "Emergency Eyewash and Shower Equipment."

15.6.2 National Fire Protection Association, NFPA 70B-27, "Substations and Switchgear Assemblies."

15.6.3 National Fire Protection Association, NFPA 110-16, "Emergency and Standby Power Systems."

15.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.178, "Powered Industrial Trucks."

15.7 Attachments

None

PROCEDURE 16 - Flammable and Combustible Liquid Storage

Table of Contents Page

Synopsis 16-ii
Flammable and Combustible Liquid Storage Checklist 16-iii

16 FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE 16-1
16.1 Purpose And Scope 16-1
16.2 Definitions 16-1
16.3 Procedure 16-2
16.4 Quality Control 16-5
16.5 Responsibilities 16-6
16.6 References 16-6
16.7 Attachments 16-7

ATTACHMENT A 16-A-1
Common Flammable and Combustible Liquids in Use at a Weather Forecast Office 16-A-1

ATTACHMENT B 16-B-1
Flammable/Combustible Liquids Storage 16-B-1
(WFO Springfield, MO) 16-B-1

Synopsis

The purpose of this procedure is to provide guidelines to reduce potential exposure from hazards associated with the use and storage of flammable and combustible liquids in the workplace. This procedure applies to all NWS facilities and work locations where flammable and combustible liquids are used and/or stored and to all NWS employees involved with the usage and/storage of flammable and combustible liquids.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Evaluate storage areas for compliance with the procedure. *(16.3.1, 16.5.2b)*
  - Assess the adequacy of ventilation in the area of stored Flammable/Combustible Materials. *(16.3.2c)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop an inventory of Flammable and Combustible Materials. *(16.3.1d.2)*
  - Obtain compatibility chart to be used when storing Flammable/Combustible Materials. *(16.3.1g)*
  - Obtain Material Safety Data Sheets (MSDS) for Flammable/Combustible Materials. *(16.3.2g)*
- **Designate Person to Administer Flammable and Liquid Storage Procedure Requirements**
- **Inventory Material/Equipment (Procure as required)**
  - Spill Kits. *(16.5.2c, 16.3.2e)*
  - Flammable Storage Cabinets. *(16.5.2c, 16.3.1b)*
  - Metal Containers for Combustible Waste Materials. *(16.5.2c, 16.3.5c)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessments/Testing**
  - Conduct periodic assessment for adequacy of flammable/combustible materials use and storage. *(16.5.2b)*
- **Review/Update Documentation/Information required for Site**
  - Maintain an inventory of Flammable and Combustible Materials.*(16.3.1d.2)*
  - Obtain MSDS for new materials used. *(16.3.2g)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Spill Kits Replenishment. *(16.5.2c, 16.3.2e)*
  - Flammable Storage Cabinets. *(16.5.2c, 16.3.1b)*
  - Metal Containers for Combustible Waste Materials. *(16.5.2c, 16.3.5c)*

Flammable and Combustible Liquid Storage Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	16.4.2				
Are flammable/combustible materials storage areas in compliance with requirements of this procedure?	16.3.1 16.5.2b				
Are storage cabinets available for storage of flammable/combustible liquids and are labeled "Flammable-Keep Fire Away"	16.3.1b(1)				
Are combustible waste materials (e.g., oily rags) stored in covered metal containers and removed from the work place promptly?	16.3.5c				
Are flammable/combustible liquid materials storage rooms provided with adequate ventilation to prevent accumulation of vapors?	16.3.2c				
Are adequate aisles provided and maintained to ensure unobstructed movement of personnel and access to the fire protection equipment?	16.3.5d				
Are all flammable liquids kept in closed containers when not in use?	16.3.1d(1)				
Are "NO SMOKING" signs posted in areas where flammable/combustible materials are used or stored?	16.3.1h				

Requirements	Reference	YES	NO	N/A	Comments
Are spill kits available for cleanup of flammable/combustible materials spills?	16.3.2e				
Are fire extinguishers available at the locations where flammable/combustible materials stored or used?	16.3.1i				
Are grounds around building and work areas in which flammable materials are stored or used kept free of trash, weeds or other combustible materials?	16.3.5e				

16 FLAMMABLE AND COMBUSTIBLE LIQUID STORAGE

16.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with the use and storage of flammable and combustible liquids in the workplace. This procedure applies to all NWS facilities and work locations where flammable and combustible liquids are used and/or stored and to all NWS employees involved with the usage and/storage of flammable and combustible liquids.

16.2 Definitions

Closed Container. A container sealed by means of a lid or other device that neither liquid nor vapor will escape from at ordinary temperatures.

Combustible Liquid. Any liquid having a flashpoint at or above 100°F (37.8°C). Any mixture that is composed of any components with flashpoints of 200°F (93.3°C) or higher which make up 99 percent or more of the total volume of the mixture shall not be covered by this procedure. Combustible liquids are divided into the following two primary classes:

Class II liquids include those with flashpoints at or above 100°F (37.8°C) and below 140°F (60°C). An example would be diesel fuel.

Class III liquids include those with flashpoints at or above 140°F (60°C). Class III liquids are further subdivided into two subclasses, Class IIIA and Class IIIB.

Class IIIA liquids include those with flashpoints at or above 140°F (60°C) and below 200° F (93.3°C). An example would be kerosene.

Class IIIB liquids include those with flashpoints at or above 200°F (93.3°C). An example would be cooking oil, transformer oil and lubricating oil.

Flammable Liquid. Any liquid having a flashpoint below 100°F (37.8°C). Any mixture that is made up of any components with flashpoints of 100°F (37.8°C) or higher which make up 99 percent or more of the total volume of the mixture shall be considered a combustible liquid. Flammable liquids are known as Class I liquids. Class I liquids are divided into three classes:

Class IA includes liquids having flashpoints below 73°F (22.8 °C) and having a boiling point below 100°F (37.8°C). An example would be gasoline.

Class IB includes liquids having flashpoints below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C). An example would be acetone.

Class IC includes liquids having flashpoints at or above 73°F (22.8°C) and below 100°F (37.8°C). An example would be amyl acetate (banana oil).

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Flashpoint. The minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.

Office Occupancy. The occupancy or use of a building or structure or any portion thereof for the transaction of business or the rendering or receiving of professional services.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Safety Can. An approved container of not more than 5 gallons capacity having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Ventilation. For the purpose of this procedure, ventilation is the movement of air into and out of an area by natural or mechanical means and is used to help prevent fires and/or explosions. Ventilation is considered adequate if it is sufficient to prevent an accumulation of significant quantities of vapor-air mixtures in a concentration over one-fourth of the lower flammable limit.

16.3 Procedure

16.3.1 Storage of Flammable and Combustible Liquids. Flammable and combustible liquids used at NWS facilities must be stored in accordance with the following requirements:

a. Flammable liquids shall only be stored in containers approved under the guidelines of National Fire Protection Association, NFPA 30, “Flammable and Combustible Liquids Code.”

b. Storage cabinets must meet the requirements of 29 CFR 1910.106 “Flammable and Combustible Liquids” as listed below:

(1) Must be clearly and legibly labeled “Flammable - Keep Fire Away.”

(2) No more than 60 gallons of a Class I liquid, nor more than 120 gallons of a Class II liquid shall be stored in a single storage cabinet.

(3) Shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a 10-minute fire test as set

forth in NFPA 251, "Standard Methods of Fire Tests of Building Construction and Materials."

c. Flammable or combustible liquids, or cabinets for same, shall not be stored/placed so as to limit use of exits, stairways or areas normally used for the safe egress of people.

d. Storage of flammable or combustible liquids outside of flammable storage cabinets or storage rooms in office areas shall be prohibited except for the minimum amount of products necessary for the work being done (e.g., maintenance and operation of the building, operation of equipment, etc.) provided that the storage and handling of flammable liquids is accomplished in the smallest container size possible and the container used is appropriate for material stored.

e. Storage of flammable or combustible liquids shall be prohibited in sumps. The volume of the sump would be changed to allow the possibility of a leak to the environment.

f. Leaking containers shall be removed to a storage room or taken to a safe location outside the building and the contents transferred to an undamaged container.

g. A compatibility chart shall be obtained and consulted when storing flammable and combustible liquids.

NOTE: Attachment A: "Common Flammable and Combustible Liquids in Use at a Weather Forecast Office" lists some flammable and combustible liquids normally found in NWS facilities.

h. "No Smoking" signs shall be posted near all flammable and combustible liquids storage areas.

i. Fire extinguishers shall be available at the locations where flammable and combustible materials stored or used.

16.3.2 Usage of Flammable and Combustible Liquids. The following guidelines shall be followed when using flammable and combustible liquids at NWS facilities or workplaces:

a. Areas in which flammable or combustible liquids are transferred from one tank or container to another container shall be separated from other operations in the building by adequate distance or by construction having adequate fire resistance.

b. Drainage into a collection tank or sump or other means such as curbing or dikes shall be provided to control spills.

c. Adequate natural or mechanical ventilation shall be also provided to prevent the accumulation of vapors in the area.

d. Flammable liquids shall be kept in covered containers when not actually in use.

e. Where flammable or combustible liquids are used or handled, except in closed containers, a means shall be provided to promptly and safely contain leakage or spills. An example of this would be absorbent material such as kitty litter or absorbent pads and pillows. A means must also be provided for disposal of material used to absorb spilled liquids.

f. Class I "Flammable" liquids shall be used only where there are no open flames or other sources of ignition within the possible path of vapor travel.

g. The Material Safety Data Sheets (MSDS) shall be obtained and reviewed by chemical users prior to use.

16.3.3 Sources of Ignition. Adequate precautions shall be taken to prevent the ignition of flammable vapors.

a. Sources of ignition include but are not limited to: open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, static, electrical and mechanical sparks, spontaneous ignition including heat-producing chemical reactions and radiant heat.

b. Hot work such as welding or cutting operations, use of spark-producing power tools and chipping operations shall be permitted only under supervision of an individual in charge. The individual in charge shall make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

16.3.4 Grounding. Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. This can be accomplished by bonding, by means of a wire, the fill stem to the container into which the liquid is being dispensed.

16.3.5 Housekeeping. The following requirements shall be followed to prevent the accumulation of flammable and combustible liquids in the workplace.

a. Maintenance and operating practices shall be followed in order to control leakage and prevent the accidental escape of flammable or combustible liquids.

b. Spills shall be cleaned up promptly.

c. Combustible waste material and residues in a building or work area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily unless the amount of material does not exceed half the quantity of the receptacle.

d. Adequate aisles shall be maintained to allow for unobstructed movement of personnel and so that fire protection equipment can be readily brought to bear on any part of a flammable or combustible liquid storage or usage area.

e. The ground around buildings and work areas in which flammable or combustible liquids are stored or used shall be kept free of weeds, trash or other unnecessary combustible liquids.

f. Combustible liquids shall not be stored on top of storage cabinets.

g. Any hazardous waste that is considered regulated under U.S. EPA 40 CFR Part 261.21 "Characteristic of Ignitability", shall be disposed of properly depending on the characteristic of the material.

16.4 Quality Control

16.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

16.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

16.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

16.5 Responsibilities

16.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall ensure flammable and combustible liquids are used and stored according to the requirements of this procedure.

16.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure flammable and combustible liquids are used and stored according to the requirements of this procedure.

c. Shall ensure that initial and periodic inventory of spill kits, flammable storage cabinets and other safety equipment is accomplished and adequate stock is maintained.

16.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

16.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

16.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure

16.6.1 National Fire Protection Association, NFPA 30, "Flammable and Combustible Liquids Code."

16.6.2 National Fire Protection Association, NFPA 251, "Standard Methods of Fire Tests of Building Construction and Materials."

16.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, CFR 1910.106, "Flammable and Combustible Liquids."

16.6.4 U.S. Environmental Protection Agency 40 CFR Part 261.21, "Characteristic of Ignitability."

16.7 Attachments

Attachment A: Common Flammable and Combustible Liquids in Use at a Weather Forecast Office

Attachment B: Flammable/Combustible Liquids Storage (WFO Springfield, MO)

ATTACHMENT A

Common Flammable and Combustible Liquids in Use at a Weather Forecast Office

Product Name	Chemical Ingredients
WD-40	Mineral oil, Petroleum oil
Spray Paint Enamel Aerosol	Acetone, Toluene, Xylene
Windex Blue	Isopropyl alcohol, Ethanol
Contact Cement	Toluene, Methyl ethyl ketone
Invisible Shield	Ethyl alcohol, Sulfuric acid
Round Up Grass and Weed Killer	Glycine, Ethomeen
Oatey All-Purpose Cement	Tetrahydrofuran, Methyl ethyl acetone, Cyclohexanone
Kit Paste Wax	Ammonia, Formaldehyde
Plastic Welder Activator	Methyl ester, Methacrylic acid
Lacquer Thinner	Isobutyl isobutyrate, Acetone, Methanol, Toluene
Magnetic Tape Head Cleaner	Xylene, Ethane, Benzene
Liquid Solder Flux	Isopropyl alcohol, Volatile organic compound
Defthane Satin	Petroleum, Solvent naphtha
Isopropyl Alcohol	Pure mixture
Diesel Fuel	Organic petroleum liquid

ATTACHMENT B

Flammable/Combustible Liquids Storage

(WFO Springfield, MO)

January 20, 2000

The following flammable/combustible materials are stored or/and used on site (List diesel fuel tanks, heating oils, gasoline, hydrogen, solvents, etc.):

Name	Quantity	Type of Container	Location
Isopropyl Alcohol	16 oz.	16 oz. bottle	County Warning Area
Laquer Thinner	32 oz.	32 oz. can	County Warning Area
#2 Diesel Fuel	1000 gallons	1000 gallons	Generator Building
Isopropyl Alcohol	2 gallon	1 gallon containers	Generator Building
Lacquer thinner	32 oz.	32 oz. container	Generator Building
Spray Laquer	16 oz.	16 oz. can	Generator Building
Spray Paint	10 oz.	10 oz. can	Generator Building
Spray Paint	12 oz.	12 oz. can	Generator Building
Spray Paint	12 oz.	12 oz. can	Generator Building
Spray Paint	24 oz.	12 oz. cans	Generator Building
Torn-Lable	8 oz.	8 oz. can	Generator Building
Truck and Van Paint	11 oz.	11 oz. spray can	Generator Building
Daal Magnetic eye	4oz.	4oz. bottle	On site office
Head Cleaner	2oz.	2oz. bottle	On site office
Klear Clean	6 oz.	6 oz. bottle	On site office
Park Horse	8oz.	8oz. spray can	On site office
Spray paint	33 oz.	11oz. cans	On site office
StatFree Spray	96 oz.	32oz. bottles	On site office
Staticide	1qt.	1qt. bottle	On site office
WD-40	12.9 oz.	12.9 oz. can	On site office
#2 Diesel Fuel	500 gallons	250 gallon tank	RDA Shelter
Isopropyl Alcohol	1pt.	1pt. bottle	RDA Shelter
Krylon	12 oz.	12 oz. spray can	RDA Shelter
Paint	1pt.	1pt. can	RDA Shelter
Parks	32 oz.	32 oz. spray bottle	RDA Shelter
WD-40	11oz.	11oz. Spray can	RDA Shelter

Name	Quantity	Type of Container	Location
WD-40	9 oz.	9 oz. spray can	UAIB
Propane	250 Gallon	250 gallon tank	WXJ-61Avilla, MO

PROCEDURE 17 - Ionizing and Non-Ionizing Radiation

Table of Contents Page

Synopsis 17-ii
Ionizing and Non-ionizing Radiation Checklist 17-iii

17 IONIZING AND NON-IONIZING RADIATION 17-1
17.1 Purpose And Scope 17-1
17.2 Definitions 17-1
17.3 Procedure 17-2
17.4 Quality Control 17-5
17.5 Responsibilities 17-5
17.6 References 17-6
17.7 Attachments 17-7

ATTACHMENT A 17-A-1
Inventory of Radiation Sources at WFO Springfield, MO 17-A-1

ATTACHMENT B 17-B-1
Radiation Survey for WFO Springfield, MO 17-B-1

Synopsis

The purpose of this procedure is to provide guidelines to reduce potential exposure to hazards associated with ionizing and non-ionizing radiation. This procedure applies to all NWS facilities, work locations, and employees

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Develop a list of all Ionizing Radiation Sources on site. *(17.3.1b)*
  - Develop a list of all Non-ionizing Radiation Sources on site.*(17.3.2b)*
  - Develop Training Records. *(17.3.1f, 17.3.2g)*
- **Designate Person to Administer Ionizing & Non-Ionizing Radiation Program Requirements**
- **Provide Local Training of Site Personnel**
  - Awareness Training on Ionizing Radiation. *(17.3.1f)*
  - Awareness Training on Non-Ionizing Radiation. *(17.3.2g)*
- **Inventory Material/Equipment (Procure as required)**
  - Safety Postings (RDA, WSR, etc.)*(17.5.2e, 17.3.1e)*
  - Barriers. *(17.5.2e, 17.3.2f)*
  - Interlocks. *(17.5.2e, 17.3.2f)*

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Maintain a list of all Ionizing Radiation Sources on site. *(17.3.1b)*
  - Maintain a list of all Non-ionizing Radiation Sources on site. *(17.3.2b)*
  - Maintain Training Records. *(17.3.1f, 17.3.2g)*
- **Provide Refresher Training of Site Personnel (as needed)**
  - Awareness Training on Ionizing Radiation. *(17.3.1f)*
  - Awareness Training on Non-Ionizing Radiation. *(17.3.2g)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Safety Postings (RDA, WSR, etc.)*(17.5.2e, 17.3.1e)*
  - Barriers. *(17.5.2e,17.3.2f)*
  - Interlocks. *(17.5.2e,17.3.2f)*

Ionizing and Non-ionizing Radiation Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	17.4.2				
Has this facility developed and maintained a list of ionizing and non-ionizing radiation sources on site?	17.3.1b 17.3.2b				
Are all employees subjected to a total cumulative dose of less than 100 mRems per calendar year?	17.3.1d				
Are all sources of ionizing radiation properly labeled and shielded?	17.3.1e				
Are all employees who work with or in the vicinity of ionizing radiation properly trained in the hazards and protective measures associated with the radiation?	17.3.1f				
Is work, requiring licensing by NRC, being performed in accordance with this procedure?	17.3.1g				
Are shields installed prior to transmitter operations?	17.3.1h				
Have field strength measurements been conducted on sources of non-ionizing radiation at the facility?	17.3.2c				
Is annual and periodic inspection of waveguards performed?	17.3.2d				

Requirements	Reference	YES	NO	N/A	Comments
Are transmitters being operated only when all waveguide components are in place and all coaxial cables are properly terminated?	17.3.2j				
Are all employees who work with or near non-ionizing radiation sources properly trained?	17.3.2g				
During servicing, are all sources of significant non-ionizing radiation adequately locked out/tagged out in accordance with the facility Lockout/Tagout program?	17.3.2h				

17 IONIZING AND NON-IONIZING RADIATION

17.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with ionizing and non-ionizing radiation. This procedure applies to all NWS facilities, work locations, and employees.

17.2 Definitions

ACGIH. American Conference of Governmental Industrial Hygienists.

BEI. Biological Exposure Index.

Electromagnetic Radiation. OSHA 29 CFR 1910.97 defines electromagnetic radiation as restricted to that portion of the spectrum commonly defined as the radio frequency region, which for the purpose of the standard shall include the microwave frequency region.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

High Radiation Area. Any area, accessible to personnel in which there exists radiation at such levels that a major portion of the body could receive a dose in excess of 100 millirem in any one (1) hour.

Ionizing Radiation. Waves at frequencies greater than 10^{15} Hz (Hertz) and energy levels greater than 10 electron volts interact with bio-systems at the atomic level by generation of free charge. Includes alpha rays, beta radiation, gamma rays, neutrons and other atomic particles.

NLSC. National Logistics Supply Center.

Non-Ionizing Radiation. Waves at frequencies less than 10^{15} Hz (Hertz) and energy levels less than 10 electron volts interact with the molecular or cellular level without ionization. Includes electromagnetic radiation in the sub-radio frequency, radio frequency, microwave, infrared, visible light and ultraviolet ranges. The wavelength ranges from approximately 1,000 km to 100 nanometers (nm).

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Qualified Person. A person who has the education, training and experience to assess radiation hazards and determine if hazardous levels of radiation are present.

Radioactive Material. Defined by OSHA as any material which emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations.

Restricted Area. Defined by OSHA as any area to which access is controlled by the employer for the purpose of protection of individuals from exposure to radiation or radioactive materials.

Rad (Radiation Absorbed Dose). OSHA defines as a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue. One (1) Rad is the dose corresponding to the absorption of 100 ergs per gram of tissue.

Rem (Roentgen Equivalent in Man). OSHA defines as a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of one (1) roentgen of X-rays. The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions of irradiation. For example:

a. A dose of one (1) roentgen due to X- or gamma radiation.

b. A dose of one (1) rad due to X-, gamma or beta radiation.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

TLV. American Conference of Governmental Industrial Hygienists Threshold Limit Value.

Unrestricted Area. Defined by OSHA as any area access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

17.3 Procedure

17.3.1 Ionizing Radiation

a. The Safety or Environmental/Safety Focal Point shall be informed of any ionizing radiation source which is present or which is brought on to the site.

b. The Safety or Environmental/Safety Focal Point shall develop and maintain an inventory of all ionizing radiation sources present at the facility. Currently, the only source of ionizing radiation in the NWS is extremely low-level x-rays emitted from the WSR-88D Klystron.

c. It is the policy of the NWS to adhere to all provisions of 29 CFR 1910.1096, "Ionizing Radiation".

d. Adequate control measures shall be implemented to ensure that no NWS employee receives ionizing radiation exposure in excess of the Department of Energy (DOE) maximum levels for ionizing radiation for the general public. The maximum level is 100 milliRems per year.

NOTE: The Klystron generates extremely low-intensity x-rays (ionizing radiation). The transmitter contains lead shielding to further reduce the x-ray levels. The WSR-88D was originally designed to limit x-ray emissions to below 2 mR/hour at one foot from the Klystron surface which is below permissible exposure levels. Based upon this design, development testing, and periodic testing at field sites, routine testing of the ionizing radiation levels from the WSR-88D is not required. Measurements taken six inches from the Klystron surface measured a maximum x-ray level of 0.03 mR/hour. The level dropped to zero outside of the transmitter cabinet. Normally, routine testing for ionizing radiation for NWS Klystron equipment is not required.

e. All radiation and high radiation areas as well as radiation source storage areas shall be labeled in accordance with 29 CFR 1910.1096.

f. All employees who work in the immediate area of radiation sources or in regulated areas shall be trained in safe work practices, protective measures and on the nature of the sources. Training records shall be maintained by the Safety or Environmental/Safety Focal Point.

g. Any work requiring licensing by the Nuclear Regulatory Commission (NRC) shall be performed in accordance with 10 CFR 20, "Ionizing Radiation".

h. Transmitters shall not be operated unless all shielding is in place. NWS personnel shall not modify any NEXRAD transmitters in a manner that might decrease radiation shielding.

17.3.2 <u>Non-Ionizing Radiation</u>

a. The Safety or Environmental/Safety Focal Point shall be informed of any non-ionizing radiation source which is present or which is brought on to the site.

b. The Safety or Environmental/Safety Focal Point shall develop and maintain an inventory of all non-ionizing sources present at the facility.

c. The Safety or Environmental/Safety Focal Point or his/her designee (Qualified Person) in cooperation with respective Regional Program Manager shall verify field strengths of radio and microwave frequency sources at the facility.

d. No NWS employee shall be exposed to radio or microwave frequency radiation in excess of the OSHA maximum level or the ACGIH TLV, whichever is more restrictive for the frequency involved. For 10 MHz to 100 GHz, OSHA mandates a maximum exposure to personnel of 10 milliwatts (mW) per square centimeter, as averaged over any possible 0.1 hour period. ACGIH TLV's for a particular frequency are calculated in Table 1, "Radiofrequency and Microwave TLV's" of the Non-Ionizing Radiation and Fields section of Threshold Limit Values for Chemical Substances and Physical Agents.

NOTE: The RF generated by the NEXRAD transmitter represents non-ionizing radiation and the maximum permitted levels within the RDA shelter are 10 mW per cm^2 for the OSHA standard and 5 mW per cm^2 for the FCC standard. However, measurements taken within the RDA shelter in the vicinity of the Klystron and the waveguide joints have measured essentially no RF leakage within the RDA shelter. It should be noted that the interlocks prevent the transmitter from operating in a degraded mode in most cases. Testing for non-ionizing radiation is required as follows: (1) Annually within the RDA equipment; (2) When local maintenance procedures require it to be accomplished; (3) Whenever any waveguide component is disassembled and reassembled such as replacing the klystron or waveguide switch; and (4) Whenever an RF leak is suspected and the following symptoms that are not corrected by normal corrective maintenance procedures are present: wavy interference patterns on the RDA maintenance display, LIN/LOG CHANNEL CLUTTER REJECTION DEGRADED alarms (leaks around the waveguide switch), low antenna power with high transmitter power, low transmitter power, high VSWR, hard drive crash, illumination of the neon fuse indicators in the transmitter fuse box in the center bay of the transmitter, even though the fuses are still good, loud noise in the phone system when in operate, unsolicited wideband disconnect when the transmitter is placed in operate, and receiver interference. The transmitter flexible waveguide can develop small pinhole RF leaks that do not produce equipment alarms.

17.3.3 All employees who work in the immediate area of non-ionizing radiation sources (e.g., NEXRAD, NWR) shall be trained in safe work practices, protective measures and on the nature of the sources. Training records shall be developed and maintained by the Safety or Environmental/Safety Focal Point.

a. When potential sources of radio or microwave frequency (non-ionizing) radiation are being serviced, the equipment shall be de-energized and locked out in accordance with the facility Lockout/Tagout Program.

b. For non-radio or microwave frequency radiation, all non-ionizing radiation exposures shall be below the appropriate ACGIH TLV.

c. Transmitters shall not be operated unless all waveguide components are in place and all coaxial cables are properly terminated.

17.4 Quality Control

17.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

17.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

17.4.3 NWS Headquarters (NWSH)

c. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

d. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

e. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

17.5 Responsibilities

17.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

17.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that the Safety or Environmental/Safety Focal Point maintains an inventory of all radioactive sources present at the site.

c. Shall ensure that all personnel working with radioactive sources or in regulated areas are properly trained.

d. Shall delegate the duty of conducting field strength measurements of radio and microwave frequency radiation generated at the facility.

e. Shall ensure that initial and periodic inventory of safety postings, barriers, interlocks and other safety equipment is accomplished and adequate stock is maintained.

17.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

17.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf .

17.6 References

Incorporated references. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

17.6.1 American Conference of Governmental Industrial Hygienists, TLV's and BEI's, Threshold Limit Values for Chemical Substances and Physical Agents, Current Edition.

17.6.2 U.S. Department of Energy, 10 CFR 20, "Standards for Protection Against Radiation."

17.6.3 U.S. Department of Energy, 10 CFR 835.208, "Occupational Radiation Protection."

17.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.97, "Non-Ionizing Radiation."

17.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1096, "Ionizing Radiation."

17.6.6 Federal Communications Commission (FCC) Office of Engineering and Technology (OET) Bulletin No. 65, "Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields."

17.7 Attachments

Attachment A. Inventory of Radiation Sources at WFO Springfield, MO

Attachment B. Radiation Survey for WFO Springfield, MO

ATTACHMENT A

Inventory of Radiation Sources at WFO Springfield, MO

January 20, 2000

Sources of Ionizing Radiation:

1) WSR-88D Klystron (X-rays)

Sources of Non-Ionizing Radiaiton:

1) NEXRAD transmitter (RF)

2) Water Tech Water Purifier (UV)

3) ASOS (RF)

4) NWR (RF)

5) Wind profiler (RF)

6) Some river gauges (MW)

7) UHF Radio Link (RF)

8) Cell phones (MW)

ATTACHMENT B

Radiation Survey for WFO Springfield, MO

On January 13, 2000, radiation testing was conducted in the RDA Shelter at the Springfield WFO. The purpose of the testing was to identify the potential for radiation exposure for NWS personnel.

X-rays levels (mR/h) for the WSR-88D Klystron were measured using a Victoreen Meter, Model 440RF/D, S/N 733. The x-rays levels were less than the level of detection or essentially zero.

The non-ionizing RF (mW/cm²) generated by the NEXRAD transmitter was measured using a Raham Radiation Hazard Meter, Model 481B, Serial #231365. Table 1 shows the results of the testing for RF.

Table 1, Measured Levels of RF Generated by the Springfield NEXRAD Transmitter

Location Within RDA Facility	(Radiation, mW/cm²) X (Frequency Correction Factor of 0.635)	Corrected Radiation Levels (mW/cm²)
Outside of WRS-88D with the door closed.	0.0 X 0.635	0.0
At the waveguide switch.	0.1 X 0.635	0.064
At the WSR-88D with the door open.	0.5 X 0.635	0.032

Per OET Bulletin 65, the limit to non-ionizing radiation is 5 mW/cm² for the frequency range associated with the NEXRAD transmitter. Note that the RDA Shelter is an un-manned facility. Additionally, the waveguide switch is well above working height, and the transmitter is off-line when the unit is serviced.

The low levels of radiation measured in the Springfield RDA Shelter in conjunction with similar results at other NWS facilities supports the position that routine radiation testing of Doppler Radar equipment is unnecessary.

PROCEDURE 18 - Accident/Illness Reporting and Recording

Table of Contents Page

Synopsis 18-ii
Accident/illness Reporting and Recording Checklist 18-iii

18 ACCIDENT/ILLNESS REPORTING AND RECORDING 18-1
18.1 Purpose and Scope 18-1
18.2 Definitions 18-1
18.3 Procedure 18-2
18.4 Quality Control 18-5
18.5 Responsibilities 18-6
18.6 References 18-8
18.7 Attachments 18-8

ATTACHMENT A 18-A-1
Form CD-137 “Report of Accident/Illness” 18-A-1
ATTACHMENT B 18-B-1
Form CD-351 “Report of Possible Safety/Health Hazard” 18-B-1
ATTACHMENT C 18-C-1
Form CA-1 “Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation” 18-C-1
ATTACHMENT D 18-D-1
Form CA-2 “Notice of Occupational Disease and Claim for Compensation” 18-D-1
ATTACHMENT E 18-E-1
Form SF-91 “Operator’s Report of Motor Vehicle Accident” 18-E-1
ATTACHMENT F 18-F-1
Form SF-94 “Statement of Witness” 18-F-1
ATTACHMENT G 18-G-1
Form CA-16 “Authorization for Examination And/Or Treatment” 18-G-1
ATTACHMENT H 18-H-1
Summary of Accident/illness 18-H-1
Reporting and Recordkeeping Requirements 18-H-1

Synopsis

This procedure establishes requirements and responsibilities for investigating and recording all occupational injuries, illnesses, equipment/property damage, motor vehicle and near-miss accidents and incidents. The procedure complies with the requirements of 29 CFR 1904, "Recording and Reporting Occupational Injuries and Illnesses" and 29 CFR 1960 Subpart I, "Record Keeping and Reporting Requirements for Federal Employees." This procedure applies to all NWS facilities, work locations and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Ensure availability of required accident/illness reporting forms (CD-137, CA-1, CA-2, CA-16, SF-91, SF-94, etc) (Attachment A-G)
- **Provide Local Training of Site Personnel**
- **Personnel Awareness Training**

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Maintain records related to incidents and unsafe conditions for 5 years *(18.3.3f)*
  - Post annual summary of occupational incidents and illnesses *(18.3.5d)*
- **Perform Occupational Injuries Investigation/Corrective Action Determination**
- **Provide Refresher Training of Site Personnel (If Applicable)**

Accident/illness Reporting and Recording Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	18.5.2				
Are all employees aware of reporting procedures of accident/illnesses?	18.5.4				
Are required incident reporting forms available for site personnel use?	Attachments A-G				
Is Accident/Illness reporting form CD-137 used to report employee injury, illness, and property damage?	18.3.1				
Is form CD-137 initiated within 6 working days?	18.3.1d				
Are all occupational injuries investigated to determine corrective action necessary to preclude recurrence of similar incidents?	18.3.1c				
Are employees encouraged to orally report unsafe acts, unhealthful working conditions or use Form CD-351, if necessary?	18.3.3				
Do employees report to their supervisors upon return to work from an occupational accident or illness?	18.3.1i				
Are Forms SF-91, SF-94, CD-137 used to report motor vehicle related incidents?	18.3.2				
Are procedures related to immediately reportable incidents or incidents resultant in death or hospitalization of three or more employees followed?	18.3.1f, h				

Requirements	Reference	YES	NO	N/A	Comments
Is a copy of annual site specific summary of occupational injuries and illnesses posted no later than 45 days after close of fiscal year for at least 30 days?	18.3.5d				
Are all incidents reported to the Regional Safety Manager at pertinent ASC?	18.5.2b				

18 ACCIDENT/ILLNESS REPORTING AND RECORDING

18.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) has established requirements and responsibilities for the investigation and recording of all occupational injuries, illnesses, equipment/property damage, motor vehicle and near-miss accidents and incidents to comply with the requirements of 29 CFR 1904, "Recording and Reporting Occupational Injuries and Illnesses" and 29 CFR 1960 Subpart I, "Record Keeping and Reporting Requirements for Federal Employees." This procedure applies to all NWS facilities, work locations and employees.

18.2 Definitions

Accident/Incident. An unexpected, unplanned, unwanted event or occurrence which either results in personal injury/illness and/or property damage.

ASC. Administrative Support Center.

Employee. Any person employed or otherwise permitted, or required to work by the NWS.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Near Miss. An accident/incident which does not result in personal injury/illness and/or property damage but had the potential to do so and/or a situation in which an inappropriate action occurs or necessary action is omitted, but is detected and corrected before an adverse effect on personnel or equipment results.

Occupational Illness. Any abnormal physical conditions or disorders other than one resulting from an occupational injury caused by exposure to environmental factors which are associated with employment.

Occupational Injury. Any injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from a single instantaneous exposure in the work environment.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Recordable Injury or Illness. All work-related fatalities, illnesses and those related injuries which result in loss of consciousness, restriction of work or motion, transfer to another job or required medical treatment beyond first aid.

RSM. NOAA Regional Safety Manager (RSM) located at the respective Administrative Support Center (ASC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

18.3 Procedure

18.3.1 Accident/Incident Resulting in an Occupational Injury/Illness. When accident/incident results in injury, the first priority is to ensure that the work area is safe in order to prevent injuries to additional personnel and to provide a prompt medical assistance to the injured.

a. The Department of Commerce (DOC) Accident/Incident Form CD-137 (See Attachment A) shall be used in the following cases: federal employee injury, illness or death; incidents involving motor vehicles and Federal property; and incidents involving non-federal persons and Federal property and combination of Federal and non-Federal employees and Federal and non-federal property.

b. The Form CD-137 shall be initiated within six (6) working days. When completed, the four part form shall be distributed to the following personnel:

(1) Employee

(2) Employee's supervisor

(3) NOAA Regional Safety Manager

(4) NWS Regional or Operating Unit Environmental/Safety Coordinator

c. The Department of Labor (DOL) Forms "Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay" Form CA-1 (Attachment C) and "Notice of Occupational Disease and Claim for Compensation" Form CA-2 (Attachment D) shall be completed and forwarded to the Department of Workers' Compensation Operations Center.

NOTE: Worker's Compensation Specialist will provide a guidance if additional forms are required.

d. Any medical treatment (if required) shall be administered immediately. DOL Form CA-16, Authorization for Examination And/Or Treatment, (Attachment G) shall be completed and signed by the Station Manager authorizing treatment..

18.3.2 Accident/Incident Resulting from Equipment/Property/Motor Vehicle Damage

a. All equipment/property/motor vehicle damage accidents/incidents shall be investigated to determine the appropriate corrective actions necessary to preclude the recurrence of similar accidents/incidents.

b. Report all incidents involving equipment/property/motor vehicle damage to the supervisor responsible for the equipment, property, and/or motor vehicle.

c. Any vehicle accident on public roads shall be investigated by appropriate police. Form SF-91 (Attachment E), Operator's Report of Motor Vehicle Accident and, if appropriate, Form SF-94 (Attachment F), Statement of Witness, must be completed. Form SF-94 may be used to record witness identity and accident/illness information but shall not be used in place of Form CD-137. A copy of these reports shall be submitted to the RSM.

d. Any accident/incident involving damages shall be recorded on Form CD-137 and distributed per paragraph 18.3.1.b.

18.3.3 Safety Hazard Reporting

a. Employees are encouraged to orally report unsafe or unhealthful work conditions to their immediate supervisor who shall promptly investigate the situation and take appropriate corrective actions.

b. Supervisors may contact NWS Regional Environmental/Safety Coordinator or NOAA Regional Safety Manager (RSM) for assistance.

c. The employee may submit a written report of unsafe or unhealthful working conditions to Regional/Operating Unit Environmental/Safety Coordinator or RSM using Form CD-351, if employee does not wish to notify supervisor for personal reasons or supervisor fails to take a corrective action within a reasonable time frame. (See Attachment B).

d. Regional/Operating Unit Environmental/Safety Coordinator or RSM shall contact originator of report to acknowledge its receipt and discuss the seriousness of the reported hazard. Supervisor shall be informed the hazard has been reported.

e. Imminent danger situations reported shall be investigated within 24 hours. Potentially serious situations shall be investigated within 3 days.

f. If the reported incident involves a health hazard, the assistance of a competent industrial hygienist shall be requested.

g. The RSM or Environmental/Safety Coordinator must provide a written interim or complete response to the originator of the report within 15 working days of receipt. Interim reports should include the expected date for a complete response.

h. The complete response shall indicate the appropriate channels available for formal appeal (see Chapter 10, paragraph 03 of DOC Safety Manual for additional information related to appeals).

i. Employees involved in a near miss shall report the incident to their supervisor(s) who shall investigate it immediately.

j. The records related to unsafe or unhealthful working conditions or near-miss incidents shall be maintained for five years.

18.3.4 Incident/Accident Reporting and Investigation

a. All accidents/incidents resultant in injury must be reported and investigated. When an accident/incident occurs the affected employee shall report the incident to his/her supervisor. The supervisor must ensure that proper forms are completed.

b. The following accidents/incidents shall be reported immediately by the Station Manager to the RSM at the ASC and to NWS Regional Safety or Environmental/Safety Coordinator:

(1) An accident which is fatal to one or more employees.

(2) Any occupational accident which results in hospitalization of three of more Federal or non-Federal employees.

(3) An incident which involves property or vehicle damage of $100,000 or more.

(4) Any occupational accident/incident involving both Federal and non-Federal employees which results in a fatality or hospitalization of three or more employees within 30 days of the accident/incident.

c. Within eight hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, the Station Manager or his designee shall orally report the fatality/multiple hospitalization by telephone or in person to the Area Office of the Occupational Safety and Health Administration (OSHA) that is nearest to the site. OSHA's toll-free phone number, 1-800-321-6742, can also be used.

d. Accidents not immediately reportable but resulting in death or hospitalization of three or more employees within 30 days of the date of the accident shall be reported to the appropriate RSM and Regional or Operating Unit Environmental/Safety Coordinator within eight hours from the time the supervisor becomes aware of the death or multiple hospitalizations. All accidents or incidents that are not subject to immediate reporting requirements should be reported on Form CD-137 within six working days.

e. All occupational injuries shall be investigated to determine the appropriate corrective action necessary to preclude recurrence of similar incidents. Once an injury/illness has occurred, the Station manager shall ensure that corrective actions are taken to prevent future recurrences.

f. All near-miss accidents/incidents shall be investigated to determine root causes and appropriate corrective actions necessary to preclude recurrences of similar near misses which could eventually result in an occupational injury/illness or property/equipment/vehicle damage accident/incident.

g. The RSM in conjunction with Regional Environmental/Safety Coordinator must assure that investigation is performed by the supervisor of the injured person. RSM and NOAA Safety division in conjunction with NWS headquarters, NWSEO representative and other designated personnel will conduct investigation of all serious accidents that require OSHA notification.

h. An employee, prior to returning to work from an occupational accident or illness, shall report to the supervisor and advise him/her of their return to work status and any restrictions or conditions for work

18.3.5 Recording

a. Recordable injuries/illnesses will be recorded in the NOAA Safety Information Reporting System (SIRS), substitute to Federal Occupational Injuries and Illnesses Log 300, by the NOAA Environmental and Safety Office and RSMs,.

b. The site-specific log shall be maintained by each NWS office and updated based on information provided by the NOAA Environmental Safety and Health office.

c. Completed report forms and logs shall be maintained by site management and Regional or Operating Unit Environmental/Safety Coordinators for at least five years. Copies of CD-137 forms and logs shall be provided by Environmental/Safety Coordinators to the NWS Safety Officer at NWSH.

d. The completed log summary maintained by each site shall be posted no later than 45 calender days after the close of the fiscal year for at least 30 days in a conspicuous place or places in the establishment where notices to employees are customarily posted.

18.4 Quality Control

18.4.1 Regional and Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

c. Shall maintain a file of site accident/illnesses reports for at least five years and provide copies of the reports to NWS Safety Officer at NWSH.

18.4.2 Station Manger

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

18.4.3 NWS Headquarters (WSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

18.5 Responsibilities

18.5.1 Regional and Operating Unit Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters and field offices or operating units.

18.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Ensure that annual log of accidents and illnesses is maintained and posted in accordance with 18.3.5.

c. Shall assure that all accidents/incidents resulted in injury/illness are investigated and reported.

18.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. May be assigned the duties of investigation, recording and reporting as designated by the Station Manager.

c. Shall assist in the investigation and information-gathering of all illnesses/accidents and incidents..

18.5.4 Supervisor

a. The affected employee's supervisor shall be responsible for completion of items 13 through 20 of Form CD-137 for injuries or illness.

b. The affected employee's supervisor shall also distribute copies of this completed form to the employee, supervisor, Safety or Environmental/Safety Focal Point, Regional Safety Manager, and the Regional or Operating Unit Environmental/Safety Coordinator.

c. Complete Form CA-1, "Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation" items 17 through 38, and obtain witness information (if appropriate, item 16) for completion of Items 17 through 20. (See Attachment C).

d. Complete Form CA-2, "Notice of Occupational Disease and Claim for Compensation" items 19 through 35. (See Attachment D).

e. Completed Forms CA-1 and CA-2, shall be forwarded to the DOC, Worker's Compensation Operations Center, c/o Contract Claims Services, Inc. (CCSI, L.P.)

6301 Campus Circle Drive East

Irving, TX 75063

f. Complete Form CA-16 "Authorization for Examination and/or Treatment", items 6 through 118. (See Attachment G).

18.5.5 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Employees shall report unsafe or unhealthful conditions and practices to their supervisor or safety or environmental/safety focal point.

c. Employees shall complete items 1 through 12 of Form CD-137. Completed form shall be submitted to the supervisor with two working days.

d. Employees shall complete items 1 through 15 of Form CA-1 and items 1 through 18 of Form CA-2. Completed forms shall be submitted to the supervisor within six days.

e. Employees shall complete items 1-5 of Form CA-16 before medical treatment can be obtained (if employee is cognizant and not in a life threatening situation).

f. Employees who decided to submit Form CD-351, shall complete items 1 through 8 of the form. Completed form shall be submitted to the Regional or Operating Unit Environmental/Safety Coordinator or NOAA Regional Safety Manager.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

18.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

18.6.1 U.S. Department of Commerce, Department Administrative Orders Series, Chapter 9, Title: Safety.

18.6.2 US. Department of Commerce Occupational Safety and Health Manual, July 1997, Chapter 11.

18.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.

18.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1960, Subpart I: Record Keeping and Reporting Requirements for Federal Employees.

18.6.5 U.S. Department of Labor Reporting Forms: http://www.dol.gov/esa/regs/compliance/owcp/forms.htm

18.6.6 U.S. Department of Labor, Division of Federal Employees' Compensation Home Page: http://www.dol.gov/esa/regs/compliance/owcp/fecacont.htm

18.6.7 U.S. Department of Commerce, Office of Human Resource Management: http://204.193.246.61/employees/workers_comp.htm

18.7 Attachments

Attachment A: U.S. Department of Commerce Form CD-137 “Report of Accident/Illness”

Attachment B: U.S. Department of Commerce Form CD-351 “Report of Possible Safety/Health Hazard”

Attachment C: U.S. Department of Labor Form CA-1 “Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation”

Attachment D: U.S. Department of Labor Form CA-2 “Notice of Occupational Disease and Claim for Compensation”

Attachment E: U.S. Department of Labor Form SF-91 “Operator’s Report of Motor Vehicle Accident”

Attachment F: U.S. Department of Labor Form SF-94 “Statement of Witness”

Attachment G: U.S. Department of Labor Form CA-16 "Authorization for Examination And/Or Treatment"

Attachment H: Summary of Accident/Illness Reporting and Recordkeeping Requirements

ATTACHMENT A

Form CD-137 “Report of Accident/Illness”

ATTACHMENT B

Form CD-351 "Report of Possible Safety/Health Hazard"

ATTACHMENT C

Form CA-1 "Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation"

ATTACHMENT D

Form CA-2 "Notice of Occupational Disease and Claim for Compensation"

ATTACHMENT E

Form SF-91 "Operator's Report of Motor Vehicle Accident"

ATTACHMENT F

Form SF-94 “Statement of Witness”

ATTACHMENT G

Form CA-16 “Authorization for Examination And/Or Treatment”

ATTACHMENT H

Summary of Accident/illness

Reporting and Recordkeeping Requirements

Form Type	Applicability	When Completed	Completed By	Where Submitted	Reporting/Recordkeeping
CD-137, Report of Accident/Illness (DOC)	The form shall be used in case of federal employee injury, illness or death; incident involving motor vehicles and federal property; incidents involving non-federal persons and federal property and combination of federal and non-federal employees and federal and non-federal property.	Shall be initiated within 6 working days	Employees shall complete items 1-12 Supervisor shall complete items 13-20 The NOAA Environmental and Safety Office in conjunction with RSM maintains the NOAA Safety Information Reporting System, substitute to Federal Occupational Injuries and Illnesses Log 300.	Submit to immediate supervisor Provide a completed copy to employee, safety focal point, Station Manager, Regional Safety Manager (RSM) at ASC, NWS Regional Environmental/Safety Coordinator, and NWSH	RSM and NWS Regional Coordinator shall be informed immediately of an accident which is fatal to one or more employees, results in hospitalization of three or more employees, results in fatality or hospitalization of three or more employees within 30 days of the incident; results in excessive damage to equipment or facilities in excess of $100,000 or when a situation curtails operations for more than four hours. Completed CD-137 forms shall be maintained for a period of five years.
CD-351, Report of Possible Safety/Health Hazard (DOC)	The form should be used to report possible safety and health hazards if employee does not wish to notify supervisor for personal reasons or supervisor fails to take corrective action within a reasonable time frame.	The form may be completed any time.	Blocks 1-8 shall be completed by employee. Blocks 8-13 shall be completed by investigating safety official (the RSM or Regional Coordinator)	Submit to Regional Coordinator or NOAA RSM.	A written interim or complete response shall be provided by Regional Coordinator or RSM within 15 days of the receipt of the report. The CD-351 reports shall be maintained for 5 years on site.

Form Type	Applicability	When Completed	Completed By	Where Submitted	Reporting/Recordkeeping
CA-1, Federal Employees Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation (DOL)	The form shall be completed to obtain continuation of pay benefit for disability resulting from traumatic job-related injury.	Form must be filed within 30 days following the injury. To avoid possible interruption of pay, form should be filed within two working days	Employee or someone acting on his/her behalf shall complete items 1-15. Item 16 is completed by a witness Supervisor or Compensation Specialist completes items 17-38	CA-1 should be forwarded by Supervisor or Compensation Specialist to the DOC Worker's Compensation Operations Center.	The form must be submitted by Federal Express to DOC Worker's Compensation Operations Center within ten calendar days after its completion. U.S. Department of Commerce c/o CCSI, L.P. 6301 Campus Circle Drive East Irving, TX 75063 All other claims related documents should be sent to this address: *CCSI, L.P.* *P.O. Box 542528* *Dallas, Texas 75354-2528* *The contact numbers at CCSI, L.P. are (800) 743-2231, FAX (800) 743-3293.*

Form Type	Applicability	When Completed	Completed By	Where Submitted	Reporting/Recordkeeping
CA-2, Notice of Occupational Disease and Claim for Compensation (DOL)	The form shall be completed by employee who intends to claim compensation related to occupational disease.	When disease is diagnosed by a medical professional	Employee must complete items 1-18. Supervisor completes items 19-35.	CA-2 should be submitted to DOC Worker's Compensation Operations Center. U.S. Department of Commerce c/o CCSI, L.P. 6301 Campus Circle Drive East Irving, TX 75063 All other claims related documents should be sent to this address: *CCSI, L.P.* *P.O. Box 542528* *Dallas, Texas 75354-2528* *The contact numbers at CCSI, L.P. are (800) 743-2231, FAX (800) 743-3293*.	When disability does not result in time loss, medical expenses or anticipated disability, the CA-2 should be retained as a part of the Employee's Medical File. Narratives prepared by employee and supervisor should be also submitted within 30 days.

Form Type	Applicability	When Completed	Completed By	Where Submitted	Reporting/Recordkeeping
CA-16, Authorization for Examination and/or Treatment (DOL)	The form is used to authorize initial medical treatment in traumatic injury cases.	The form must be available within four hours after a request is made for medical treatment of traumatic injury. Where emergency treatment was received, the form must be issued within 48 hours after treatment.	Station Manager or other Authorizing official fills out Part A - Authorization Part B is filled out by Attending Physician.	CA-16 is submitted to DOC Worker's Compensation Operations Center. U.S. Department of Commerce c/o CCSI, L.P. 6301 Campus Circle Drive East Irving, TX 75063 All other claims related documents should be sent to this address: *CCSI, L.P.* *P.O. Box 542528* *Dallas, Texas 75354-2528* *The contact numbers at CCSI, L.P. are (800) 743-2231, FAX (800) 743-3293*.	Hospital and related medical bills should be submitted to DOC Worker's Compensation Operations Center. All disease cases must be approved by DOC Worker's Compensation Operations Center before CA-16 is issued. The name of the person who approved issuing of authorization must be recorded in item 7 of the form.
SF-91, Operator's Report of Motor Vehicle Accident (DOL)	The form shall be filled out in case of a motor vehicle accident resulting in equipment, property and motor vehicle damage.	As soon as accident occurred.	Section I-IX shall be completed by employee involved in the accident Section X is completed by employee's supervisor Sections XI-XIII are completed by an accident investigator for bodily injury, fatality and/or damage exceeding $500.	Copy of the Form should be submitted to RSM along with CD-137. If GSA vehicle is involved in the accident, a copy of the form should be submitted to GSA in accordance with instructions shown in the vehicle packet.	The reports must be retained in the office and at ASC.

Form Type	Applicability	When Completed	Completed By	Where Submitted	Reporting/Recordkeeping
SF-94, Statement of Witness (DOL)	The form should be filled out if there is a witness of motor vehicle accident resulted in equipment, property and motor vehicle damage.	After accident occurred.	Witness of the accident	Copy submitted to RSM , along with SF-91 and CD-137	The reports must be retained in the office and at ASC.

PROCEDURE 19 - Hand and Power Tool Safety

Table of Contents Page

Synopsis 19-ii
Hand and Power Tool Safety Checklist 19-iii

19 HAND AND POWER TOOL SAFETY 19-1
19.1 Purpose and Scope 19-1
19.2 Definitions 19-1
19.3 Procedure 19-1
19.4 Quality Control 19-3
19.5 Responsibilities 19-4
19.6 References 19-4
19.7 Attachments 19-5

Synopsis

This procedure provides requirements and recommended practices for using hand and power tools. The procedure applies to all NWS facilities and work locations where hand or power tools are used and to employees who use hand or power tools at NWS facilities.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Perform inspection of Power Tools. *(19.3.4 & 19.3.7a.6)*
  - Determine appropriate Personal Protective Equipment (PPE). *(19.5.2b, 19.3.7b.1)*
  - Designate personnel permitted to use Power Tools. *(19.3.7a.5)*
  - Designate Hand and Power Tool Storage Areas. *(19.3.5)*
- **Develop/Obtain Documentation/Information required for Site**
  - Request Power Tool Operational Manuals. *(19.5.2c, 19.3.7b.2), as necessary*
- **Designate Person to Administer Hand and Power Tool Safety Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training on Power Tools Safety.*(19.3.7a.4,5)*
- **Inventory Material/Equipment (Procure as required)**
  - PPE. *(19.5.2b, 19.3.7b.1)*
  - Power Tools. *(19.5.2b, 19.3.2)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Conduct periodic inspection of Power Tools. *(19.3.4 & 19.3.7a.6)*
- **Review/Update Documentation/Information required for Site**
  - Review Power Tool Operational Manuals. *(19.3.7b.2)*
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Training on Power Tools Safety.*(19.3.7a.4,5)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Power Tools. *(19.5.2b, 19.3.4 & 19.3.7a.6)*
  - PPE. *(19.5.2b, 19.3.7b.1)*

Hand and Power Tool Safety Checklist

REQUIREMENTS	Reference	YES	NO	N/A	Comments
Hand Tools and Equipment					
Is initial and annual review of this procedure conducted and documented?	19.4.2				
Are appropriate Personal Protective Equipment (e.g., safety glasses, face-shields, etc.) used while using hand tools or equipment which might produce flying materials or be subject to breakage?	19.3.1& 19.3.6				
Are all Hand Tools and Equipment inspected prior to use?	19.3.2				
Are all defective Hand Tools and Equipment replaced, serviced, or repaired prior to use?	19.3.2				
Are all tools and equipment, used by employees at their workplace, in good condition?	19.3.3 & 4				
Are hand tools such as chisels and punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?	19.3.2				
Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?	19.3.2				
Are employees made aware of the hazards caused by faulty or improperly used hand tools?	19.3.2				
Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?	19.3.2				
Are tools stored in dry, secure locations?	19.3.5				

REQUIREMENTS	Reference	YES	NO	N/A	Comments
Is eye and face protection used when driving hardened or tempered spuds or nails?	19.3.6				
Portable (Power Operated) Tools and Equipment					
Are all Power Tools of approved doubled-insulated type or grounded according to this procedure?	19.3.7a.1				
Are all qualified employees authorized and trained to operate all Power Tools?	19.3.7a.5				
Are all employee provided with appropriate Personal Protective Equipment when using Portable Tools and Equipment?	19.3.1				
Are all Portable Tools and Equipment inspected prior to use?	19.3.2				
Are all defective Portable Tools and Equipment replaced, serviced, or repaired prior to use?	19.3.2				
Are all tools and equipment, used by employees at their workplace, in good condition?	19.3.3 & 4				
Are Power Tools used with the correct shield, guard, or attachment recommended by the manufacturer?	19.3.7a.3				
Are rotating or moving parts of equipment guarded to prevent physical contact?	19.3.7a.3				
Are portable fans provided with full guards or screens having opening of 1/2" or less?	19.3.7a.3				

REQUIREMENTS	Reference	YES	NO	N/A	Comments
Are pneumatic and hydraulic hoses on power operated tools checked regularly for deterioration or damage?	19.3.4				

19 HAND AND POWER TOOL SAFETY

19.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating requirements for using hand and power tools. This procedure applies to all NWS facilities and work locations where hand or power tools are used and to employees who use hand or power tools at NWS facilities.

19.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Qualified Person. Means a person with the specific training, knowledge and experience in the area for which the person has the responsibility and the authorization to control.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

19.3 Procedure

19.3.1 The employer shall provide and demonstrate, as needed, the appropriate personal protective equipment (PPE) to be used with hand and power tools at the NWS.

19.3.2 The employee shall inspect all tools prior to use. Any defective tool or equipment shall be replaced, corrected or repaired prior to use.

a. Any cracked blades, wheels or pulleys of tools or equipment shall be removed from service. (Power saws, floor and hand grinders).

b. Any impact tool shall be kept free of mushroomed heads. (Chisels, punches, hammers).

c. Wooden handles of tools shall be kept free of splinters and cracks and shall be securely attached to the tool.

19.3.3 Each employee is responsible for the safe operation and condition of the tools and equipment that he/she uses.

19.3.4 During the work shift, employees shall periodically inspect the condition of the tools and equipment in use.

19.3.5 After using tools and equipment, employees shall clean and return the tools and equipment to their designated areas.

19.3.6 Hand Tools. Eye protection shall be worn when using hand tools in operations where fragments are generated. Additional PPE may be required to protect from exposures to harmful noise, dust, fumes, mists, vapors, and gases.

19.3.7 Power Tools.

a. General Provisions.

(1) Electric power tools shall either be of the approved doubled-insulated type or grounded according to National Electric Code (NEC) 250-114 and local regulations.

(2) Powering of electric power tools shall conform to NEC and local regulations.

(3) All guards that are part of each power operated tool shall remain installed while in use unless the guard proves to provide a greater hazard in use. Guarding shall meet the requirements set forth by the American National Standards Institute (ANSI) B11.1-88.

(4) Employees shall be trained about the hazards and the proper use and care of powered tools and equipment.

(5) Only qualified personnel who are authorized and trained to use power tools shall be permitted to operate such tools.

(6) Plug and cord-connected power tools shall be inspected by users before and after usage. This inspection may include the following:

i Missing, corroded, or damaged plug prongs

ii Frayed, worn, burned, or missing insulation

iii Exposed conductors

iv Loose or poor connections

v Missing or improper sized fuses

vi Damaged or cracked cases

vii Burns or scorch marks

(7) All power tools shall be in control of the operator.

(8) All power tools shall be equipped with a constant pressure switch or control and may have a lock on control provided that turnoffs can be accomplished with a single motion of the same finger or fingers that turn it on.

(9) All hand-held, gasoline-powered tools shall be equipped with a constant pressure throttle that will deactivate the power to the tool motion when the pressure is released.

(10) All gasoline-powered tools shall be used in well-ventilated areas.

(11) Hydraulic power tools shall be used only with approved fire-resistant fluids.

b. Employee Requirements.

(1) Employees shall wear the PPE specified by the equipment manufacturer, by federal, state, or local regulations, or by NWS procedures when operating power tools.

(2) Employees shall review the operator's manual prior to initial use of a tool and review periodically as needed.

(3) Employees shall not hoist or lower electric tools by their cords.

19.3.8 Lawnmower Safety

a. All power-driven chains, belts, and gears shall be so positioned or otherwise guarded to prevent the operator's accidental contact therewith, during normal starting, mounting, and operation of the machine.

b. The words, "Caution. Be sure the operating control(s) is in neutral before starting the engine," or similar wording shall be clearly visible at an engine starting control point on self-propelled mowers.

c. Warning instructions shall be affixed to the mower near the opening stating that the mower shall not be used without either the catcher assembly or the guard in place.

d. A shutoff device shall be provided to stop operation of the motor or engine. This device shall require manual and intentional reactivation to restart the motor or engine.

e. The catcher assembly or the guard shall be shipped and sold as part of the mower. The instruction manual shall state that the mower shall not be used without either the catcher assembly or the guard in place.

f. The catcher assembly, when properly and completely installed, shall not create a condition which violates the limits given for the guarded opening.

g. The word "Caution." or stronger wording, shall be placed on the mower at or near each discharge opening.

h. The mower handle shall be fastened to the mower so as to prevent loss of control by unintentional uncoupling while in operation.

i. A positive upstop or latch shall be provided for the mower handle in the normal operating position(s). The upstop shall not be subject to unintentional disengagement during normal operation of the mower. The upstop or latch shall not allow the center or the handle grips to come closer than 17 inches horizontally behind the closest path of the mower blade(s) unless manually disengaged.

19.4 Quality Control

19.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarter facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

19.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

19.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

19.5 Responsibilities

19.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall ensure that the regional headquarters facilities, field offices, or operating unit facilities are in compliance with requirements of this procedure, as required.

19.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that appropriate power tools and PPE are selected and provided for employees and adequate stock is maintained.

c. Shall ensure that power tools manuals are available.

19.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall perform periodic inspections of tools and equipment and report or remove from service any tools that are defective.

c. Shall inspect all new tools and equipment received before they are put into service.

19.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

19.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

19.6.1 American National Standards Institute (ANSI) B11.1-88, "Machine Tools-Power Presses Safety Requirements for the Design, Construction, and Operation of Safeguards."

19.6.2 National Electric Code (latest edition) 250-114 "Equipment Connected by Cord and Plug."

19.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.242, "Hand and Portable Powered Tools and Equipment."

19.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.243, "Guarding of Portable Powered Tools."

19.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.244, "Other Portable Tools and Equipment."

19.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.21, "Safety Training and Education."

19.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926, Subpart I - "Tools-Hand and Power."

19.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart I - "Personal Protective Equipment."

Additional information can be found at the following Internet web site:

http://www.osha-slc.gov/SLTC/handpowertools/index.html

19.7 Attachments

None.

PROCEDURE 20 - Machine Guarding

Table of Contents Page

Synopsis 20-ii
Machine Guarding Checklist 20-iii

20 MACHINE GUARDING 20-1
20.1 Purpose and Scope 20-1
20.2 Definitions 20-1
20.3 Procedure 20-1
20.4 Quality Control 20-3
20.5 Responsibilities 20-3
20.6 References 20-4
20.7 Attachments 20-4

Synopsis

The purpose of this procedure is to provide the requirements and guidelines relative to hazards associated with improper or insufficient machine guarding. The procedure applies to all NWS facilities and work locations where machine guarding is required, and to the employees using the machines.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Inspect machine guards. *(20.3.1)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop Machine Guard List. *(20.5.3b)*
- **Designate Person to Administer Machine Guarding Procedure Requirements**
- **Provide Local Training of Site Personnel**
- **Inventory Material/Equipment (Procure as required)**
  - Guards. *(20.5.2b, 20.3.1)*
  - Special Tools (e.g., push sticks, blocks, hand-feeding tools). *(20.5.2b, 20.3.2)*

Annual Review and Recurring Task Requirements:

- **Perform Inspection/Assessments/Testing**
  - Inspect Guards prior to each equipment use and periodically. *(20.3.1, 20.5.3b))*
- **Review/Update Documentation/Information required for Site**
  - Update Equipment Guard List. *(20.5.3b)*
- **Provide Refresher Training of Site Personnel (if Applicable)**
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Guards. *(20.5.2b, 20.3.1)*
  - Special Tools (e.g., push sticks, blocks, hand-feeding tools). *(20.5.2b, 20.3.2)*

Machine Guarding Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	20.4.2				
Are power saws and similar equipment provided with safety guards?	20.3.1				
Are all machines or operations that expose operators or other personnel to rotating parts, pinch points, flying chips, particulates, or sparks adequately guarded?	20.3.1				
Do drill presses and lathes have guards?	20.3.1				
Are fan blades, pulleys, belts protected with a guard when operating within 7' of the floor or working level?	20.3.1				
Are special tools being used for placing and removing materials from points of operation?	20.3.2				
Are equipment and machinery securely placed and anchored to prevent tipping and other movement?	20.3.3				
Is sufficient clearance provided around and between machine to allow safe operations, set up, servicing, material handling, and waste removal?	20.3.5				
Are abrasive grinding wheel tool rests adjusted to within 1/8" of the periphery of the wheel and tongue guards adjusted to 1/4" of the periphery of the wheel?	20.3.5				
Are machines equipped with anti starting devices?	20.3.8				

Requirements	Reference	YES	NO	N/A	Comments
Is the power shut off switch within reach of the operator?	20.3.9				
Is wood working machinery kept clean and properly maintained?	20.3.10				
Has an equipment guard listing been developed for use to perform periodic inspections of guarding?	20.5.3				

20 MACHINE GUARDING

20.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with improper or insufficient machine guarding. This procedure applies to all NWS facilities, work locations and employees where machine guarding is required.

20.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Guard. A barrier that prevents entry of the operator's hand, fingers or other body parts into the point of operation.

Nip Point. A point between two inrunning rolls where it is possible for a part of the body to be pinched and/or injured.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Pinch Point. Any point other than the point of operation at which it is possible for a part of the body to be caught between moving or stationary parts of a press or auxiliary equipment.

Point of Operation. The area on a machine where work is actually performed upon the material being processed.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

20.3 Procedure

20.3.1 The employer shall follow the guidelines listed below to protect the operator and other employees in the machine area from hazards that could cause injury or damage:

a. Points of operation, pinch points, nip points, rotating shafts, couplers, etc., shall have appropriate guarding. The following are some of the machines that usually require point of operation guarding: paper cutters, guillotine cutters, woodworking machinery, grinders, shears, alligator shears, power presses, milling machines, power saws, joiners, portable power tools, forming roller and calenders.

b. The guard shall be such that it does not facilitate or cause an accident in itself.

c. Guards shall be inspected prior to each use.

d. Openings between the guard and machine surface shall not be greater than ½ inch.

e. Mechanical power-transmission apparatus shall be guarded when parts are located within seven (7) feet of floor or working platform.

f. Blades shall be guarded when the periphery of the blades is less than seven (7) feet above the floor or working level.

20.3.2 Special tools shall be available for placing and removing material from the point of operation. These tools shall permit easy handling of material without requiring the operator to place a hand in the danger zone. Examples of these tools include push sticks, blocks, hand-feeding tools, etc. Such tools shall not be used in lieu of other guarding required by regulations and/or procedures.

20.3.3 All machines designed for a fixed post shall be securely anchored to prevent walking or moving.

20.3.4 Cage-type guarding shall not have any opening larger than ½ inch.

20.3.5 Abrasive wheel guarding shall cover the spindle end, nut and flange projections.

a. The safety guard shall be mounted so as to maintain proper alignment with the wheel.

b. The strength of the fasteners shall exceed the strength of the guard.

c. Work rests shall be adjusted with the gap, between the rest and the wheel, not to exceed **c** inch in order to help prevent the work from jamming.

d. The exposure adjustment at the top guard shall not exceed ¼-inch distance from the wheel.

20.3.6 All hand and power tools and similar equipment shall be maintained in a safe condition.

NOTE: Employees shall not bring their own tools to government facilities.

20.3.7 All safety attachments and guards furnished by the manufacturer shall be used and maintained at all times.

20.3.8 Anti-starting devices shall be installed where injury to the operator might result if motors were to restart after power failures.

20.3.9 Power controls and operating controls shall be located within easy reach of the operator when in a regular work position.

20.3.10 Cleanliness shall be maintained around woodworking machinery, particularly in regard to the effective functioning of guards.

20.3.11 Dull, badly set, improperly filed, or improperly tensioned saws shall be immediately removed from service, as they may interfere with the proper functioning of the guard.

20.3.12 HVAC Equipment Guards shall be maintained and kept in place according to the manufacturer's specifications.

20.4 Quality Control

20.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an assessment of the regional headquarter facilities or operating unit every two years to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

20.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

20.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

20.5 Responsibilities

20.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

20.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and periodic inventory of guards and special tools is accomplished and adequate stock is maintained.

20.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall develop and maintain an equipment guard listing for use to perform periodic inspections of guarding and report or remove from service any equipment that is deficient or poses a danger with use.

20.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

20.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

20.6.1 National Electric Code, Latest Edition. (As applicable)

20.6.2 U.S. Department of Commerce, Department Administrative Order 209-4, Occupational Safety and Health Order.

20.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.212, General Requirements for all Machines.

20.6.4 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.213, Woodworking Machinery Requirements.

20.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910. 215, Abrasive Wheel Machinery.

20.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.300, Tools - Hand and Power.

20.7 Attachments

None

PROCEDURE 21 - Laser Operations

Table of Contents Page

Synopsis 21-ii
Laser Operations Checklist 21-iii

21 LASER OPERATIONS 21-1
21.1 Purpose and Scope 21-1
21.2 Definitions 21-1
21.3 Procedure 21-2
21.4 Quality Control 21-3
21.5 Responsibilities 21-3
21.6 References 21-4
21.7 Attachments 21-4

ATTACHMENT A 21-A-1
Laser Pointer Safety Information 21-A-1

Synopsis

The purpose of this procedure is to establish requirements relative to the hazards associated with laser operations. The procedure applies to all NWS facilities, work locations, and employees. Although this procedure covers safety practices applicable to Class 1, 2, 3a, 3b and 4 lasers, it should be noted that the NWS operations do not currently employ Class 3b and 4 lasers or laser systems.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Review all lasers prior to operation *(21.3.5)*
  - Baseline Eye Examination (If required) *(21.3.10)*
- **Develop/Request Documentation/Information required for Site**
  - Develop Laser Inventory *(21.3.9)*
  - Request Manufacturer's Instructions for all Laser systems.*(21.3.1)*
- **Designate Person to administer Laser Operations Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training of site personnel on Laser Safety. *(21.3.7, 21.3.8)*
- **Inventory Material/Equipment**
  - Laser Systems and Devices *(21.3.9)*

Annual Review and Recurring Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Maintain Laser Inventory *(21.3.9)*
- **Provide Refresher Training of Site Personnel**
  - Refresher Training of site personnel on Laser Safety. *(21.3.7, 21.3.8)*
- **Conduct Employee Examinations**
  - Annual Eye Examination (If required) *(21.3.10)*

Laser Operations Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	21.4.2				
Is there a current inventory of all lasers or laser systems at this facility?	21.3.9				
Have all laser systems (except Class 1) been approved by the Safety or Environmental/Safety Focal Point or his/her designee prior to operation?	21.3.5				
Have personnel who work routinely with or around laser systems been provided with safety training?	21.3.7 21.3.8				
Are copies of Manufacturer's Instructions for laser systems maintained and kept on file?	21.3.1				
Have any laser operators of Class 3b and 4 laser systems received annual eye examinations?	21.3.10				

21 LASER OPERATIONS

21.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with laser operations. Although this procedure covers safety practices applicable to Class 1, 2, 3a, 3b and 4 lasers, it should be noted that the NWS operations do not currently employ Class 3b and 4 lasers or laser systems.

21.2 Definitions

ACGIH. American Conference of Governmental Industrial Hygienists.

ANSI. American National Standards Institute.

Class. The unit of laser hazard classification. Lasers are rated (in order of lowest to highest class) Class 1, 2a, 3a, 3b, and 4 as defined by ANSI Z136.1-2000. Class 1 lasers are considered to be incapable of producing damaging radiation levels during operation and are, therefore, exempt from any control measures or other forms of surveillance. An example of a Class 1 laser is the ASOS Ceilometer. Class 2 lasers are visible light lasers that could produce excessive exposures if viewed for more that the 0.25 second response time of the aversion reflexes. Class 3 lasers may be hazardous under direct and specular reflection viewing conditions, but the diffuse reflection is usually not a hazard. Class 4 lasers pose hazards to the eyes and skin, and can be also a fire hazard.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Laser System. An assembly of electrical, mechanical and optical components which included a laser.

MPE. Maximum Permissible Exposure is a level of laser radiation to which a person may be exposed without hazardous effect or adverse biological changes in the eye or skin. Commercial laser products are manufactured to meet MPE levels.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Protective Housing. An enclosure surrounding the laser or laser system that prevents the access to laser radiation above the applicable MPE level.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

21.3 Procedure

21.3.1 The manufacturer's instructions for safe operation of lasers and laser systems should be used by personnel.

21.3.2 Engineering controls such as protective housing (all classes of lasers) , interlock system (Class 3b and 4 lasers), and warning labels (all classes except Class 1) shall be supplied by manufacturer of laser products. Engineering controls shall be in accordance with ANSI Z136.1-2000 standard.

21.3.3 Administrative and procedural controls such as instructions that specify rules and/or work practices implementing or supplementing engineering controls shall be established only for Class 3b and 4 lasers or laser systems.

21.3.4 Written standard operating procedures are required for Class 3b and 4 lasers or laser systems.

21.3.5 All lasers used at NWS facilities (with exception of Class 1 lasers) shall be approved by the Safety or Environmental/ Safety Focal Point or his/her designee prior to operation of the laser.

21.3.6 Requirements listed in NWS Handbook 11, "Technical Information Package, Automated Surface Observing System" for Class 1 lasers shall be followed including the following practice:

Never look directly into operating lasers, particularly with magnifying glasses or binoculars.

21.3.7 Training shall be provided to each employee working routinely with or around Class 3b and 4 lasers. Commercially available safety guide literature, audio/video or computer based instruction or short-term classroom course on laser safety are recommended.

21.3.8 Training should be provided to employees working with Class 2 and 3a lasers or laser systems (e.g., laser pointers and hand-held barcode scanners) to educate employees against the misuse of the laser products. Attachment A contains information that may be provided for education of laser pointer users.

21.3.9 The Safety or Environmental/Safety Focal Point shall maintain a current inventory of lasers (with exception of Class 1 lasers) at the facility.

21.3.10 Laser operators (Class 3b and 4 lasers) who have potential for hazardous eye exposure to laser beams shall have a baseline eye examination prior to contact with laser equipment. In addition, annual eye examinations shall be conducted by qualified medical personnel for those employees. Records of these examinations shall be maintained by the medical staff or human resources for the duration of an employee's employment plus an additional 30 years.

21.4 Quality Control

21.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

21.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

21.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

21.5 Responsibilities

21.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

21.5.2 Station Manager*

Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

21.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

21.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

21.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

21.6.1 American National Standards Institute, ANSI Z136.1-2000, "Safe Operation of Lasers."

21.6.2 National Safety Council, Fundamentals of Industrial Hygiene, Fourth Edition.

21.6.3 National Weather Service Engineering Handbook 11, "Technical Information Package, Automated Surface Observing System."

21.6.4 U.S. Department of Labor, Occupational Safety and Health Administration,

21 CFR Parts 1000 and 1040, "Laser Products."

21.7 Attachments

Attachment A. Laser Pointer Safety Information

ATTACHMENT A

Laser Pointer Safety Information

Commercial laser pointers are most commonly designed to assist speakers when giving lectures or business presentations. A high-tech alternative to the retractable, metal pointer, the laser pointer beam will produce a small dot of light on whatever object at which it is aimed. It can draw an audience's attention to a particular key point in a slide show. The majority of laser pointers are Class 3a products and are required to have "DANGER" warning logotype.

There have been increasing numbers of laser pointer incidents reported concerning misuse of these devices. It is important for the users to understand that the nuisance effects of glare or flashblindness can produce potentially dangerous secondary hazards as a result. The following are recommendations published by the Laser Institute of America:

a. Never shine a laser pointer at anyone. Laser pointers are designed to illustrate inanimate objects.

b. Do not allow minors to use a pointer unsupervised.

c. Laser pointers are not toys.

d. Do not point a laser pointer at mirror-like surfaces. A reflected beam can act like a direct beam on the eye.

e. Do not purchase a laser pointer if it does not have a caution or danger sticker on it identifying its class. Report suspicious devices to the U.S. Food and Drug Administration.

PROCEDURE 22 - Cranes, Hoists and Slings

Table of Contents Page

Synopsis 22-ii
Cranes, Hoists And Slings Checklist 22-iii

22 CRANES, HOISTS AND SLINGS 22-1
22.1 Purpose and Scope 22-1
22.2 Definitions 22-1
22.3 Procedure 22-2
22.4 Quality Control 22-8
22.5 Responsibilities 22-9
22.6 References 22-9
22.7 Attachments 22-10

ATTACHMENT A 22-A-1
Inspection Criteria 22-A-11

ATTACHMENT B 22-B-1
Inspection Record 22-B-1

Synopsis

The purpose of this procedure is to establish requirements relative to the hazards associated with the use of cranes, hoists and slings in the workplace. It applies to all NWS facilities that operate portable and fixed cranes and hoists. The WFOs that utilize portable hoists such as the hoists in the radar domes and those used to lift instruments to the top of towers shall at a minimum follow the requirements of sections 22.3.1; 22.3.2; 22.3.4; 22.3.9; 22.3.10 b; 22.4; and 22.5.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Obtain and file Cranes and Hoists Rated Capacity Certification. *(22.3.9b,e)*
  - File Load Testing Reports. *(22.3.9e)*
  - File Inspection Reports. *(22.3.9d, Attachment B)*
  - Obtain Manufacturer's Instructions/Manuals to establish Preventive Maintenance Program. *(22.3.9f)*
- **Designate Person to Administer Cranes, Hoists and Slings Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Hoists and Rigging Equipment Operators Training/Qualification. *(22.3.10)*
- **Inventory Material/Equipment (Procure as required)**
  - Hoists, Slings & Rigging Equipment Accessories. *(22.5.2d, 22.3.9)*

Recurring and Annual Task Requirements:

- **Perform Inspections/Assessment/Testing/Certification**
  - Conduct Inspection of Hoisting and Rigging Equipment. *(22.3.9a, Attachments A & B)*
  - Conduct visual Inspections of equipment prior to each use. *(22.3.9c)*
  - Conduct Annual Sling and Rigging Accessories Inspections. *(22.3.9d)*
  - Conduct Load Testing (125% capacity) of cranes and hoists. *(22.3.9b & 22.3.9e)*
  - Obtain Certification of new, re-installed and extensively repaired cranes, hoists and slings by a qualified inspector. *(22.3.9b)*
- **Review/Update Documentation/Information required for Site**
  - Maintain Annual Sling and Rigging Accessories Inspection Reports. *(22.3.9d)*
  - Maintain Annual Load Testing Reports/Certification *(22.3.9e)*.
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Hoists and Rigging Equipment Operators Training/Qualification. *(22.3.10)*
- **Inspect/Replace/Maintain Material/Equipment**
  - Hoists, Slings & Rigging Equipment Accessories *(22.5.2d, 22.3.9)*

Cranes, Hoists And Slings Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	22.4.2				
Are safety practices/guidelines outlined in the procedure observed while performing hoisting and rigging operations?	22.3.1 - 4				
Do crane operators adhere to the safety requirements outlined in the procedure?	22.3.5 - 7				
Is hoisting/rigging equipment installed, maintained, operated, inspected and certified in accordance with this procedure?	24.3.9				
Does the damaged equipment get tagged with “DO NOT USE” tag?	22.3.9				
Are initial and annual inspections of all hoisting and rigging equipment performed and reports kept on file?	22.3.9a, Attachment A				
Are new, re-installed and extensively repaired cranes, hoists and slings load tested to 125% of capacity and certified by a qualified inspector prior to use and annually?	22.3.9b				
Are visual inspections of equipment conducted before and after each use?	22.3.9c				

Requirements	Reference	YES	NO	N/A	Comments
Does the maximum acceptable load and the last test get posted on the crane or fixed hoist?	22.3.9e				
Are load testing reports/certifications maintained?	22.3.9e				
Are manufacturer's manuals kept on file to establish preventive maintenance program of hoisting and rigging equipment?	22.3.9f				
Are only proper trained and qualified operators permitted to work with hoisting and rigging equipment?	22.3.10				

22 CRANES, HOISTS AND SLINGS

22.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with the use of cranes, hoists and slings in the workplace. This procedure applies to all NWS facilities that operate portable cranes and fixed cranes and hoists, specifically the NDBC. The WFOs that utilize portable hoists such as the hoists in the radar domes and those used to lift instruments to the top of towers shall at a minimum follow the requirements of sections 22.3.1, 22.3.2, 22.3.4, 22.3.9, 22.3.10 b, 22.4, and 22.5.

22.2 Definitions

Cable Reeving. A cable passing through a pulley or similar device.

Crane. A machine for lifting and lowering a load and moving it horizontally with the hoisting mechanism as an integral part of the machine. Cranes, whether fixed or mobile, are driven manually or by power.

Drum. A cylindrical flanged barrel of uniform (cylindrical) or tapering (conical) diameter on which the cable is wound for operation or storage. It may be smooth or grooved.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hoist. A device which applies a force for vertical lifting or lowering.

Lift. The hoisting of a load.

Lifting Attachments. Hardware typically used in conjunction with a sling. Includes but is not limited to shackles, eye bolts, rings, etc.

Load Angle. The angle of a sling under load in degrees to the horizontal.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Portable Hoist. A manually or electrically operated lifting device such as, but not limited to, chain falls, come-a-longs, chain hoists, lever operated chain hoists, cable hoists, etc.

Qualified Inspector. A competent person recognized by the U.S. Department of Labor as being authorized to provide testing to certify hoisting and rigging equipment.

Qualified Operator/Qualified Rigger. A person having training and knowledge to be capable of identifying existing and potential hazards associated with hoisting and rigging activities and having the authority to stop work.

Sheave. A grooved pulley.

Shock Loading. An unsafe hoisting and rigging activity caused by an unexpected slackening and re-tensioning of a load.

Sling. An assembly which connects the load to the material handling equipment. These can be made of rope, nylon, polyester, chain, wire rope, etc.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Vehicle Winch. A device which is mounted on a vehicle which applies a force for vertical lifting or horizontal pulling.

22.3 Procedure

22.3.1 Qualified Riggers. The Qualified Rigger shall observe the following practices when performing hoisting and rigging operations:

a. Before each use, the sling and all attachments shall be inspected for damage or defects.

b. Slings and attachments that are damaged or defective shall not be used.

c. Slings shall not be shortened with knots or bolts or other makeshift devices.

d. Sling legs shall not be kinked.

e. Slings shall not be loaded in excess of their rated capacities.

f. Slings used in a basket hitch shall have their loads balanced to prevent slippage.

g. Slings shall be securely attached to their loads.

h. Slings shall be padded to protect them from the sharp edges of the load.

i. Suspended loads shall be kept clear of all obstructions.

j. All employees shall be kept clear of loads about to be lifted and of suspended loads.

k. Hands and fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

l. Shock loading of slings and other hoisting and rigging equipment is prohibited.

m. A sling shall not be pulled from under a load when the load is resting on the sling.

n. The Qualified Rigger shall determine when additional personnel will be required solely to provide emergency medical assistance or to contact emergency services if necessary.

o. The Qualified Rigger shall determine when a spotter(s) is required to provide an additional measure of safety to the lift.

22.3.2 Making the Lift. When making the lift, the following guidelines shall be followed:

a. Identify the path of travel and the place where the load will be set down. Make certain the load will safely clear any obstructions.

b. As the lift starts, check to see that the slings, chains or lifting devices being used are well secured and free of twists and kinks. Make sure the load is properly balanced before it is raised more than a few inches. If it is not, set it down and readjust the hook-up.

c. Do not overload a hook or carry the load on the point of the hook. Always carry the load in the saddle of the hook.

d. Do not guide, position or alter a suspended load by hand if it has been raised above waist height. Use a tether rope having sufficient length to reach the floor or ground from the highest point the load can reach.

e. When guiding a load, keep hands clear of pinch points. Anticipate a quick take-up of the slack of the tether rope.

f. Do not walk or stand under a suspended load. Warn others to keep out from underneath the load being lifted by the crane. A hard hat area shall be established for all employees working close to or under a load, including employees managing a tag line.

g. Never walk between a stationary object and an object which is being moved.

h. Ensure that a clear line of communication exists at all times between the person directing the lift and the operator.

22.3.3 Moving the Load. As the load travels, the following guidelines shall be observed:

a. Do not carry loads over personnel.

b. Walk ahead of the load and give a clear warning to personnel on the ground.

c. Do not ride on a load or allow anyone else to do so.

22.3.4 Placing the Load. When setting the load down the following requirements shall be followed:

a. Carefully set up blocking if needed, so that slings, grab hooks or lifting devices can be easily removed from the load and prepared for the next move.

b. Hold onto slings firmly when removing them from the load. They may snap out or snag some object when removed.

22.3.5 Crane Operators. Qualified Crane Operators shall adhere to the following requirements:

a. Completely plan the lift prior to actually performing the lift.

b. Do not allow anyone to ride on the load.

c. Allow sufficient space to place the load down and ensure that it is properly supported.

d. Do not position a load over personnel and avoid placing it over another piece of equipment whenever possible.

e. Never leave a load unattended while suspended.

f. Do not raise a load any higher than necessary.

g. When turning a load, keep the load between 4 and 10 inches above the floor if possible.

h. Know the approximate weight of the load, its center of gravity, and specifications of the rigging hardware to ensure a safe lift.

i. When rigging outside, always take into account wind conditions, tag lines, ground conditions and crane limitations.

j. Make sure a clear line of communication exists between the person directing the lift and the crane operator.

k. The operator shall not engage in any practice which will divert his/her attention while actually engaged in operating the crane.

l. The operator shall respond to signals only from the person who is directing the lift or his/her appointed signaler. However, the operator shall obey a stop signal at all times from anyone.

m. During hoisting, care shall be taken to ensure that there is no sudden acceleration or deceleration of the moving load and that the load does not contact any obstructions.

n. When starting the bridge and when the load or hook approaches nearby personnel, a warning signal shall be sounded.

o. The operator shall not traverse loads over people.

p. The operator shall test the brakes each time a load approaching the rated capacity is handled by raising the load a few inches and applying the brakes.

22.3.6 Crane Safety. The following general crane safety guidelines shall be adhered to during all hoisting and rigging operations:

a. Before operating the crane:

(1) Thoroughly inspect the crane and the equipment used with it before each use. Do not operate a defective crane or use defective equipment.

(2) Check controls, the alarms or sounding devices, and the brakes. Check the rails for the presence of foreign objects. Whenever the main or emergency switch is open, do not close it until you are certain that no one is on or about the crane.

b. The crane shall not be loaded beyond its rated capacity.

c. The hoist chain or cable shall be free from kinks or twists and shall not be wrapped around the load.

d. The load shall be attached to the load-block hook by means of slings or other approved devices.

e. Care shall be taken to make certain that: the sling clears all obstacles; the multiple-part lines are not twisted around each other; the hook is brought over the load in such a manner as to prevent swinging; and the rope or cable is properly seated on the drum and in the sheaves.

f. The crane shall not be used for side pulls.

22.3.7 Stop Safety. The following requirements shall be followed when stopping a load:

a. Ensure that the load has come to a full stop prior to reversing the hoisting motors.

b. Do not use limit switches for stop switches.

c. Do not stop the load at high speeds within a short distance. This could increase the stresses on the slings and crane.

d. Do not leave the crane controls unattended while the load is suspended.

22.3.8 Emergency Power Failure Procedures. If the power goes off, promptly move all controllers to the OFF position. Be sure that all controllers are in the OFF position before re-establishing power.

22.3.9 Equipment Maintenance and Inspections. Hoisting and rigging equipment shall be installed, maintained, operated, inspected and certified in accordance with ANSI Standards B30-2, B30-9, B30-10, B30-16; 29 CFR 1910.179, 1910.180, and 1910.184. Any equipment found to be in unacceptable condition shall either be tagged "Do Not Use" and repaired or shall be destroyed.

a. Initial and periodic inspections shall be conducted on all hoisting and rigging equipment. Attachment A, "Inspection Criteria" provides guidance for inspecting hoisting and rigging equipment. The equipment operator or rigger shall also perform a visual inspection prior to each use.

b. Prior to initial use, all new, reinstalled or extensively repaired cranes, hoists, slings, etc., shall be inspected and load tested to 125 percent of capacity and certified by a qualified inspector.

c. Visual inspections shall be conducted before each use. The following items shall be inspected for defects which might appear between annual inspections:

(1) All functional operating mechanisms and controls for proper operation and wear.

(2) Deterioration or leakage in lines, tanks, valves, drain pumps and other parts of air or hydraulic systems.

(3) Hooks and retainers for deformations or cracks.

(4) Hoist chains, including end connections, for excessive wear, twisted or distorted links interfering with proper function or stretched beyond manufacturer's recommendations.

(5) Wire rope reeving for noncompliance with manufacturer's recommendations.

d. Annual sling and rigging accessory inspections shall be performed using criteria set forth in Attachment A of this Procedure. Written, dated and signed reports as provided in Attachment B shall be kept on file.

e. Inspection and Rated Load Test for Cranes and Hoists shall be performed annually by a qualified inspector and shall include a visual inspection and a load test that shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The maximum acceptable load and the date of the last test shall be posted on the crane or fixed hoist. The test reports shall be placed on file at the field office.

NOTE: Portable hoists (chain falls, come-a-longs, etc.) are excluded from load tests. The hoists in the radar domes do not need to be load tested if a certification of its rated capacity is on file. If no certification is on file, an initial load test of these hoists must be performed.

f. A formal preventive maintenance program based on the operating equipment manufacturer's recommendations shall be established at all

NWS locations with hoisting and or rigging equipment. The following guidelines shall be followed when caring for equipment:

g. Cranes and hoists shall be lubricated and serviced as recommended by the equipment manufacturer.

h. Store all lifting equipment in an orderly, safe manner that will protect it from damage when not in use. Straighten out slings before storing them.

i. Do not paint hooks, slings and other lifting devices, as paint will cover up cracks and flaws.

j. Immediately remove all defective equipment from service and report it to the Station Manager. Do not use the defective equipment or repair it yourself.

22.3.10 Training Requirements. Only qualified operators, those who received proper training and qualification, shall be permitted to operate hoisting and rigging equipment. The established qualified-operator training program shall include, but not be limited to: written tests, field training and trials, personnel physical requirements and examinations, trainee status and training procedures. Refresher training shall be provided, as required. Operating procedures for specialized equipment (e.g., portable hoists, radar hoists, and vehicle winches) will vary by manufacturer. The operator's manual for the equipment being used shall be referenced for these specific procedures.

Crane Operators shall be experienced and knowledgeable in:

a. Access and egress during normal and emergency conditions.

b. Normal and emergency power for the hoisting equipment.

c. Inspection and proper use of wire ropes, lifting attachments, slings and chains.

d. The hoisting drum and proper windings.

e. The use and operation of control devices.

f. Limit switches.

g. Brakes, both mechanical and solenoid types.

h. Safety devices such as fire extinguishers, signal horns, bells, etc.

i. Handling of the hoisting mechanism.

j. The purpose of and how to perform a test lift.

k. Hand and verbal signals

l. Operating procedures and safe practices.

m. Proper shutdown of equipment.

n. Release and lockout of crane for maintenance or overhaul.

o. Riggers shall be experienced and knowledgeable in:

(1) The safe use of synthetic slings, wire rope, portable manual hoists, uses of rope, shackles, hooks, hoisting principles, relative weight estimation, center of gravity, factors of safety and the effect of sling angles and angular loading.

(2) The safe attachment of slings for straight lifts, basket hitches, chokers and multiple-bridle lifting.

(3) The safe and unsafe placement of sling hooks.

(4) Hook safety latches and hook mousing for safety

p. Risks associated with rigging near power transmission lines, the mandatory safe distances, and the necessary precautions.

22.4 Quality Control

22.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarter facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

22.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

22.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

22.5 Responsibilities

22.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall ensure personnel operating cranes or rigging loads have been properly trained.

c. Shall ensure that a maintenance, inspection, and load testing program is in place for hoisting and rigging equipment.

22.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure personnel using portable hoists have received training in accordance with the requirements of this procedure.

c. Shall ensure that portable hoists and any related slings, hooks, shackles, etc. are properly maintained and inspected and a record of the inspection maintained.

d. Shall ensure that initial and periodic inventory of hoists, slings and rigging equipment accessories is accomplished and adequate stock is maintained.

22.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

22.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

22.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

22.6.1 American National Standards Institute, ANSI B30-2, "Overhead and Gantry Cranes."

22.6.2 American National Standards Institute, ANSI B30-9, "Slings."

22.6.3 American National Standards Institute, ANSI B30-10, "Hooks."

22.6.4 American National Standards Institute, ANSI B30-16, "Overhead Hoists."

22.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.179, "Overhead and Gantry Cranes."

22.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.180, "Crawler Locomotive and Truck Cranes."

22.6.7 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.184, "Slings."

22.6.8 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.550, "Cranes and Derricks."

22.7 Attachments

Attachment A. Inspection Criteria

Attachment B. Inspection Record

ATTACHMENT A

Inspection Criteria

Synthetic Slings. Synthetic slings shall be removed from service when any of the following deficiencies are visible:

- Acid or caustic burns.
- Melting or charring.
- More than 5 percent of visible stitches or strands broken.
- Permanent elongation.
- Distorted fittings.
- Any other apparent defects which cause doubt as to the strength of the equipment.

Wire Rope Slings: Wire rope slings shall be removed from service when any of the following defects are visible:

- More than six randomly broken wires in one lay.
- Wear or scraping of one-third the original diameter of outside individual wires.
- Kinking, crushing, bird caging or any other damage resulting in distortion of the rope structure.
- Evidence of heat damage.
- End attachments that are cracked, deformed or worn.
- Any signs of corrosion.
- Any other apparent defects which cause doubt as to the strength of the equipment.

Shackles, Rings, etc.: Shackles, rings, etc., shall be removed from service when any of the following defects are visible:

- Wear, corrosion, spreading or deformation (greater than 10 percent of new condition).
- Visible cracking.
- Nonstandard shackle pins.
- Any other apparent defects which cause doubt as to the strength of the equipment.

Hoists: Hoists shall be removed from service when any of the following defects are visible:

- Upper and lower hooks do not swivel.
- Hooks are open more than 10 percent of the original dimension or twisted more than 10 degrees from centerline and/or show signs of cracking.
- Hook latches not intact and/or operable.
- Hoists dirty and/or show evidence of foreign material damage or undue wear.

- Load chain nicked and/or gouged which can cause stress concentrations. Imperfections shall be ground out and the new diameter checked with gauges or tables.
- Load chain in need of lubrication. However, internal hoist mechanisms shall be oil free.
- Any other apparent defects which cause doubt as to the strength or effective operation of the equipment.

ATTACHMENT B

Inspection Record

EQUIPMENT INSPECTION RECORD						
Inspector: _____					Date: _____	
Type	Size	Serial #	Rating	Location	Pass/Fail	Comments

PROCEDURE 23 - Emergency Response Agreements

Table of Contents Page

Synopsis 23-ii
Emergency Response Agreements Checklist 23-iii

23 EMERGENCY RESPONSE AGREEMENTS 23-1
23.1 Purpose And Scope 23-1
23.2 Definitions 23-1
23.3 Procedure 23-2
23.4 Quality Control 23-4
23.5 Responsibilities 23-4
23.6 References 23-5
23.7 Attachments 23-5

ATTACHMENT A 23-A-1
Sample Emergency Response Agreement Between the 23-A-1
Local County Emergency Medical Service and the National Weather Service 23-A-1

ATTACHMENT B 23-B-1
Emergency Response Agreements for WFO Springfield, MO 23-B-1

Synopsis

This procedure provides guidance for the preparation and updating of Emergency Response Agreements (ERA) between the National Weather Service (NWS) and local off-site emergency response organizations. The procedure applies to all NWS facilities, work locations and employees and supports the preparation of a site-specific Emergency Action Plan (EAP) (See Procedure 5, Emergency Action Plan; Procedure 12, Confined Space Entry; and Procedure 1, Fall Protection).

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
- **Develop/Obtain Documentation/Information required for Site**
  - Prepare list of Local Response Organizations.*(23.3.1)*
  - Develop ERAs (if required) *(23.3.2)*
    - Develop ERA Resources List. *(23.3.4c.2)*
    - Prepare Site Layout Plan for Local Emergency Response Organizations *(23.3.4c.3)*, as required.
- **Designate Person to Administer ERA Procedure Requirements**

Recurring and Annaul Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Update list of Local Response Organizations.*(23.3.1)*
  - Update ERAs (if required) *(23.3.3)*
  - Update ERA Resource List. *(23.3.4c.2)*
  - Amend Site Layout for Local Emergency Response Organizations, as required. *(23.3.4c.3)*

Emergency Response Agreements Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	23.4.2				
Has a list of Local Off-Site Emergency Response Organizations been developed?	23.3.1				
Has a need for Emergency Response Agreements (ERA) with local emergency response organizations been determined?	23.3.2				
Have existing ERAs been evaluated and updated to ensure that they contain the information contained in this procedure?	23.3.3 23.3.4a-e				
Does all ERAs for this facility, contain the purpose of the ERA, the definition of all responsibilities, areas of cooperation, and terms of agreement and approvals?	23.3.4a-e Attachment A				
Are all new and existing ERAs forwarded and reviewed by the appropriate NWS personnel?	23.3.5				
Are the ERAs being maintained at the facility which entered into the agreement?	23.3.8				
Are copies of the ERAs forwarded to the Regional or Operating Unit Safety or Environmental /Safety Coordinator?	23.3.8				

23 EMERGENCY RESPONSE AGREEMENTS

23.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) has provided guidance for the preparation and updating of Emergency Response Agreements (ERAs) between the NWS and local off-site emergency response organizations. This procedure should be considered for all NWS facilities and work locations. ERAs are highly recommended for facilities and work locations that are remote, or where unusual or hazardous conditions exist. This procedure will support the preparation of a site-specific EAP. (See Occupational Safety and Health Procedure #5, "Emergency Action Plan").

23.2 Definitions

Emergency. Any situation that poses an actual threat to the environment or to the health or safety of workers or the public.

Emergency Medical Services (EMS). The locally operated and dispatched emergency organization that responds with ambulance and rescue equipment to provide first aid and medical supplies at the scene. EMS handles patient stabilization and transportation to a fixed medical facility.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hazardous Incident Response Team (HIRT). The off-site organization responsible for responding to hazardous materials incidents such as chemical spills/releases and fire involving hazardous materials.

Emergency Response Agreement (ERA). A formal or informal agreement between the NWS and a response organization which outlines the basic agreement for cooperation during an emergency situation. This agreement should be in writing if possible.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

23.3 Procedure

23.3.1 A listing of local off-site emergency response organizations shall be obtained and maintained. This list should include all local organizations that may be contacted to provide emergency assistance to the NWS facility.

23.3.2 As part of the preparation of a site EAP, it is highly recommended that the NWS facility contact local off-site emergency response organization(s) to determine a need for ERA. ERAs may be established with the following community response organizations for coverage of properties, personnel and equipment:

a. Local fire department(s).

b. HIRT (where available).

c. Local police department.

d. Local county EMS.

e. Local hospitals or clinics.

f. Civil Air Patrol.

23.3.3 Existing ERAs should be evaluated and updated to ensure that they contain the information listed in section 23.3.4 of this procedure.

23.3.4 If a new ERA is being prepared, the new document should contain, but is not limited to, the following sections:

a. PURPOSE: This section describes the purpose of the ERA, organization with whom the agreement is made, the NWS facility entering into the agreement, and the address of the facility. This is a standard format and may be taken directly from an existing document, substituting the appropriate organization name. (Attachment A is an example of an ERA.)

b. RESPONSIBILITIES: This section has the following two goals:

(1) To define the responsibilities of NWS as related to the agreement with the emergency response organization.

(2) To define the responsibilities of the outside organizations responding to the NWS facility in an emergency.

c. AREAS OF COOPERATION: This section has several divisions in a relatively standard format. They are:

(1) <u>Notification</u>: This section of the ERA defines how the NWS will notify off-site organizations that their services are needed at the facility. This is usually done through the 911 service in the area. However, some organizations are not dispatched through this service and the notification

method should be verified with the organization entering into the agreement.

(2) Resources: This section of the ERA lists resources the NWS will make available to the responding organization. This usually includes equipment, materials and personnel.

(3) Exercises/Visitation: This section of the ERA sets the groundwork to allow off-site organizations the opportunity to visit the NWS site and become familiar with the operations, layout of the facility, and the personnel with whom they will interact during an emergency. A visit may be especially important when the facility is remote, difficult to find or where unusual or hazardous conditions exist.

(4) Other: Additional information (radio communication frequencies, emergency planning information, media relations, etc.) may be appropriate depending on the outside organization.

d. TERMS OF AGREEMENT: This section has a standard format. It states the conditions for continuation and cancellation.

e. APPROVAL: The completed ERA should be signed by a designated NWS official and the lead official of the off-site organization.

23.3.5 Upon completion of a new draft ERA or upon updating an existing ERA, the ERA should be reviewed by the appropriate NWS personnel for comments or suggestions.

a. The list of reviewers may include, if appropriate, the following:

(1) Safety or Environmental/Safety Focal Point.

(2) Station Manager.

(3) Regional Maintenance Specialist.

(4) Regional or Operating Unit Safety or Environmental/Safety Coordinator.

(5) Regional Director, as appropriate.

b. A meeting with outside organization is suggested to provide a tour of the NWS facility if conditions of the facility or its location may effect the ability of outside organization to respond to an emergency.

23.3.6 The ERA shall be maintained at the facility which entered into the agreement. A copy of the ERA shall be forwarded to the Regional or Operating Unit Safety or Environmental/Safety Coordinator.

23.3.7 Attachment A provides a sample ERA that can be used as a guideline for developing a site specific ERA.

23.4 Quality Control

23.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

23.4.2 Station Manager

Shall review or delegate review of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

23.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

23.5 Responsibilities

23.5.1 Regional or Operating Unit Safety or Environmental/Safety Coordinator*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

23.5.2 Station Manager*

a. Shall ensure that ERAs are in place, if necessary, to ensure adequate response to on-site emergencies.

b. Shall review the existing ERAs on an annual basis to determine if the agreement is still fulfilling the needs of the NWS or if any organizational or policy changes have occurred that would affect the existing ERA.

23.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

23.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor, safety or environmental/safety focal point.

NOTE:	* - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

23.6 References

Incorporated References. The following reference is incorporated as a whole or in part into this procedure. The reference can provide additional explanation or guidance for the implementation of this procedure.

23.6.1 National Weather Service Occupational Safety and Health Procedure 5, "Emergency Action Plan."

23.7 Attachments

Attachment A. Sample Emergency Response Agreement Between the Local County Emergency Medical Service and the National Weather Service.

Attachment B. Emergency Response Agreements (WFO Springfield, MO)

ATTACHMENT A

Sample Emergency Response Agreement Between the Local County Emergency Medical Service and the National Weather Service

I. PURPOSE

This emergency response agreement is to establish a framework of cooperation between _____local Emergency Medical Service (EMS) and the National Weather Service Facility for the purpose of planning, preparedness, and response for emergency situations at _____.

(Type the facility name)

II. RESPONSIBILITIES

a. Once on site, EMS will report to the NWS Safety or Environmental/Safety Focal Point for specific assistance requests and integration into the response effort at the scene.

b. EMS will supply medical support on site which will include triage, stabilizing the patient, and transporting the patient from a triage area to a fixed medical facility.

c. NWS will provide supporting assistance as requested by EMS, if available.

III. AREAS OF COOPERATION

a. Notification: NWS will notify the Emergency Centralized Communications Organization (911, where applicable) of emergency which requires the assistance of EMS at the NWS facility. The Emergency Centralized Communications Organization will in turn notify the appropriate emergency response organizations, in this case EMS.

b. NWS Resources: NWS resources are available to EMS upon request in the event of any emergency and may be obtained by contacting the Station Manager.

c. Visitation: If it is determined that conditions of the NWS facility or the location of the facility may impact the ability of the EMS to deliver emergency response services, the NWS will host a site visit by the EMS during the month of_____ This will allow EMS personnel the opportunity to become familiar with the operation of the facility and personnel working at the NWS facility.

d. Public Affairs: NWS will conduct all public affairs activities for on-site emergencies. EMS will refer all requests for information to the Station Manager at (___) - - .

IV. TERMS OF AGREEMENT

This ERA is effective upon signature by both parties and will continue until canceled by either party with a 30-day advanced written notice to the other. Amendments or modifications to this ERA may be made upon written agreement by both parties.

APPROVED FOR _____COUNTY EMERGENCY MEDICAL SERVICE

_____ _____

Supervisor, County Emergency Medical Service Date

APPROVED FOR THE NATIONAL WEATHER SERVICE

_____ _____

Station Manager, NWS Date

ATTACHMENT B

Emergency Response Agreements for WFO Springfield, MO

January 20, 2000

Emergency response services at WFO Springfield are coordinated through Greene County, MO Emergency Services. Response for medical emergency, fire, law enforcement and hazardous material incidents are all handled by Greene County Emergency Services via the 911 system. One Emergency Response Agreement was developed to document the relationship with Greene County Emergency Services.

WFO Springfield has made arrangements for establishing a remote work/communication site should NWS personnel be forced to evacuate the WFO facility. The primary evacuation office is at the Springfield-Branson Regional Airport in space to be provided by the FAA. Should the primary evacuation office be unavailable, two alternate evacuation offices have been arranged. One is located at the Greene County 911 Dispatch Center, and the other at Missouri Highway Patrol, Troop D headquarters. ERAs have been developed to document the evacuation office arrangements with the FAA and the Highway Patrol. The arrangement with Greene County Emergency Services was documented in the ERA for emergency response.

Three ERAs are included in this Attachment:

ERA between Green County, MO Emergency Services and NWS WFO, Springfield, MO

ERA between the FAA and NWS WFO, Springfield, MO

ERA between Missouri Highway Patrol Troop D and NWS WFO, Springfield, MO

The existence of these ERAs and the procedures to implement them are reflected in the Emergency Station Duty Manual Section 4.01, Building Security/Fire/Natural Disaster/Evacuation.

EMERGENCY RESPONSE AGREEMENT

BETWEEN

GREENE COUNTY, MISSOURI EMERGENCY SERVICES

AND THE

NATIONAL WEATHER SERVICE,

WEATHER FORECAST OFFICE, SPRINGFIELD, MISSOURI

I. PURPOSE

This Emergency Response Agreement is to establish a framework of cooperation between Greene County, MO Emergency Services and the National Weather Service (NWS), Weather Forecast Office (WFO), Springfield, MO for the purpose of planning, preparedness, and response for off-normal/unusual occurrences and emergency situations at WFO Springfield.

II. RESPONSIBILITIES

a. WFO Springfield shall:

1. Request emergency response through the Greene County 911 system.
2. Provide available supporting assistance as requested by Greene County or responding organizations.
3. Provide available resources, as applicable, for use by responding organizations.
4. Participate in emergency preparedness planning by maintaining active membership in the Greene County Local Emergency Planning Committee (LEPC).

b. Greene County Emergency Services shall:

1. Provide centralized contact and dispatch for emergencies that require response by medical, fire, law enforcement, and hazardous material response organizations.
2. Continue to monitor emergency situations based on updates from WFO Springfield and emergency responders.
3. Provide facilities for WFO Springfield personnel to conduct work should an evacuation of the WFO be necessary and use of the primary backup facility be impossible.

III. AREAS OF COOPERATION

a. Notification: WFO Springfield will notify Greene County Emergency Services via the 911 system when an emergency occurs. Greene County Emergency Services will in turn notify and dispatch the appropriate emergency response agencies.

b. NWS Resources: WFO Springfield resources are available to emergency responders upon request and may be obtained by contacting the Station Manager.

c. Visitation: WFO Springfield will host a site visit by Greene County Emergency Services and associated emergency response organizations during the month of April 2000. This visit will allow emergency personnel the opportunity to become familiar with the operations and personnel at the facility, independently assess hazards at the site, identify potential resources, form preliminary response strategies, and suggest changes that could improve the safety of the facility.

d. Other:

Once on site, emergency responders will report to the senior NWS official on site for specific assistance requests and integration into the response effort at the scene. This person will be either the Station Manager or Lead Meteorologist.

NWS will conduct all public affairs activities for on-site emergencies. Emergency responders will refer all requests for information to the Station Manager, Bill Davis at (417) 889-5785.

IV. TERMS OF AGREEMENT

This ERA is effective upon signature by both parties and will continue until canceled by either party with a 30-day advanced written notice to the other. Amendments or modifications to this ERA may be made upon written agreement by both parties.

APPROVED FOR GREENE COUNTY EMERGENCY SERVICES

_____ _____

Supervisor, Greene County Emergency Services Date

APPROVED FOR THE NATIONAL WEATHER SERVICE

_____ _____

Station Manager, WFO Springfield, MO Date

EMERGENCY RESPONSE AGREEMENT

BETWEEN

FEDERAL AVIATION ADMINISTRATION,

SPRINGFIELD-BRANSON REGIONAL AIRPORT

AND THE

NATIONAL WEATHER SERVICE,

WEATHER FORECAST OFFICE, SPRINGFIELD, MISSOURI

I. PURPOSE

This Emergency Response Agreement is to establish a framework of cooperation between the Federal Aviation Administration (FAA) at Springfield-Branson Regional Airport and the National Weather Service (NWS), Weather Forecast Office (WFO), Springfield, MO for the purpose of providing work space and communications should a situation force evacuation of the WFO Springfield facility.

II. RESPONSIBILITIES

a. WFO Springfield shall:

Inform the FAA of facility evacuation and request use of the space identified in this ERA.

b. FAA Springfield-Branson Regional Airport shall:

Provide access to two unused phone jacks and counter space in the FAA Tower while the WFO evacuation is in force.

III. AREAS OF COOPERATION

a. Notification: WFO Springfield will notify the FAA of their intention to use the FAA space by calling the FAA tower at (417) 869-5284 or by dialing “#128" on the phone located at the tower entrance.

b. Visitation: WFO Springfield personnel will visit the FAA tower during the month of April 2000. This visit will allow WFO personnel to become familiar with FAA personnel, the location and use of the tower phone, and provide an opportunity to practice setup of communications using the phone jacks provided by the FAA.

c. Other:

NWS will conduct all public affairs activities for on-site emergencies. FAA personnel will refer all requests for information to the Station Manager, Bill Davis at (417) 889-5785.

IV. TERMS OF AGREEMENT

This ERA is effective upon signature by both parties and will continue until canceled by either party with a 30-day advanced written notice to the other. Amendments or modifications to this ERA may be made upon written agreement by both parties.

APPROVED FOR FAA, SPRINGFIELD-BRANSON REGIONAL AIRPORT

_____ _____

Supervisor, FAA, Springfield-Branson Regional Airport Date

APPROVED FOR THE NATIONAL WEATHER SERVICE

_____ _____

Station Manager, WFO Springfield, MO Date

EMERGENCY RESPONSE AGREEMENT

BETWEEN

MISSOURI HIGHWAY PATROL TROOP D

AND THE

NATIONAL WEATHER SERVICE,

WEATHER FORECAST OFFICE, SPRINGFIELD, MISSOURI

I. PURPOSE

This Emergency Response Agreement is to establish a framework of cooperation between Missouri Highway Patrol Troop D and the National Weather Service (NWS), Weather Forecast Office (WFO), Springfield, MO for the purpose of providing work space and communications should a situation force evacuation of the WFO Springfield facility.

II. RESPONSIBILITIES

a. WFO Springfield shall:

Inform the Highway Patrol of facility evacuation and request use of the space identified in this ERA.

b. Missouri Highway Patrol Troop D shall:

Provide access to workspace and phone lines at Troop D headquarters should an evacuation of WFO Springfield be necessary and use of the primary backup facility be impossible.

III. AREAS OF COOPERATION

a. Notification: WFO Springfield will notify Missouri Highway Patrol Troop D of their intention to use the space at Troop D headquarters by calling (417) 895-6568 when an evacuation occurs.

b. Visitation: WFO Springfield personnel will visit the Troop D headquarters during the month of April 2000. This visit will allow WFO personnel to become familiar with Troop D personnel, the location of the headquarters, and provide an opportunity to practice setup of communications using the phone jacks provided.

c. Other:

NWS will conduct all public affairs activities for on-site emergencies. Highway Patrol personnel will refer all requests for information to the Station Manager, Bill Davis at (417) 889-5785.

IV. TERMS OF AGREEMENT

This ERA is effective upon signature by both parties and will continue until canceled by either party with a 30-day advanced written notice to the other. Amendments or modifications to this ERA may be made upon written agreement by both parties.

APPROVED FOR MISSOURI HIGHWAY PATROL TROOP D

_____ _____

Supervisor, Missouri Highway Patrol Date

APPROVED FOR THE NATIONAL WEATHER SERVICE

_____ _____

Station Manager, WFO Springfield, MO Date

PROCEDURE 24 - Safety Training Program

Table of Contents Page

Synopsis 24-ii
Safety Training Program Checklist 24-iii

24 SAFETY TRAINING PROGRAM 24-1
24.1 Purpose And Scope 24-1
24.2 Definitions 24-1
24.3 Procedure 24-1
24.4 Quality Control 24-10
24.5 Responsibilities 24-10
24.6 References 24-11
24.7 Attachments 24-11

ATTACHMENT A 24-A-1
Sample Safety Orientation Outline 24-A-1

ATTACHMENT B 24-B-1
Site-Specific Training Requirements (WFO Springfield, MO) 24-B-1

Synopsis

This procedure establishes requirements and guidance for the NWS occupational safety and health training. The procedure applies to all NWS facilities, work locations, and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Develop/Obtain Documentation/Information required for Site**
  - Evaluate and document site-specific training requirements. *(24.5.2b, 24.3.3b, Attachment B*)
  - Develop site-specific Safety Orientation. *(24.5.2c, 24.3.2b, 24.3.3a, Attachment A)*
- **Designate Person to Administer Safety Training Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Safety Orientation for the visitors, contractors and newly hired site personnel. *(24.3.2b, 24.3.3a, Attachment A)*
  - Focal Points Training on safety procedures applicable to the site. *(24.3.3c)*

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Perform annual review of Site-Specific Training Requirements. *(24.4.2)*
  - Maintain/File/Review Training Records. *(24.5.3b)*
- **Provide Refresher Training of Site Personnel (as required)**
  - Focal Points Training on safety procedures applicable to the site. *(24.3.3c)*

Safety Training Program Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	24.4.2				
Do short and long term visitors and contractor personnel receive an appropriate safety orientation as required by this procedure?	24.3.2a,b Attachment A				
Are contractor personnel required to have all applicable safety training before commencing work?	24.3.2d				
Do new NWS employees receive a safety orientation within one week of being hired?	24.3.3a				
Do all site personnel receive applicable safety and health training for specific job tasks?	24.3.3b Attachment B				
Does Safety or Environmental/Safety Focal Point receive initial and periodic refresher safety training?	24.3.3c				
Has the Station Manager been provided with an overview of applicable safety procedures?	24.3.3d				
Are all training records maintained in an accessible location on site?	24.5.3b				

24 SAFETY TRAINING PROGRAM

24.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure to establish requirements and guidance for the NWS occupational safety and health training. This procedure applies to all NWS facilities, work locations, and employees.

24.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hazardous Energy Source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy that has the potential to cause injury to employees.

Long-Term Visitor. A visitor whose intended stay is estimated at more than 10 working days.

NWS Employees. For the purpose of this procedure, this includes full-time, part-time and temporary NWS employees.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Safety Orientation. An overview of NWS selected safety and health procedures and site-specific information which is presented as part of new employee and contractor orientation.

Short-Term Visitor. A visitor whose intended stay is estimated at 10 working days or less.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

24.3 Procedure

24.3.1 In an effort to provide a safe and healthful workplace, safety training will be provided to all NWS employees, contractors, and long-term visitors. The safety training will emphasize risks that are present and controls that are in place. All NWS employees shall participate in the training programs that are required for their job category. An employee who feels that more information is needed shall inform his/her supervisor and/or the Safety or Environmental/Safety Focal Point.

24.3.2 Visitors

a. Short-term visitors under escort will not be required to receive a safety orientation. However, short-term visitors without an escort shall be given a safety orientation at the time of their arrival.

b. On the day of their arrival at the NWS, long-term visitors shall be given a safety orientation. The safety orientation shall be given by the Safety or Environmental/Safety Focal Point or his/her designee. (See Attachment A: Safety Orientation Outline)

c. Before commencing work, contractors shall attend a safety orientation. This orientation will provide a brief explanation of the NWS safety requirements. (See attachment A: Safety Orientation Outline)

d. Contractor personnel shall have all safety and health training applicable to the specific work being performed.

24.3.3 NWS Personnel. All NWS personnel shall participate in an ongoing process of safety training.

a. Within one week of being hired, new employees shall be given a safety orientation.

b. Employees shall receive safety and health training applicable to the specific work being performed. NWS training courses and their applicability to employees and facilities are listed in table 24-1. (See attachment B: Site-Specific Training Requirements, WFO Springfield, MO).

c. Safety or Environmental/Safety Focal Points shall receive initial and periodic refresher training, as required, on all safety and health procedures applicable to their sites.

d. Station Managers shall be provided an overview of all safety and health procedures applicable to their sites.

Table 24 -1. Summary of NWS Training

Procedure Number and Name	Reference	Applicability to NWS
1. Fall Protection	29 CFR 1910.28, .66, .145; 29 CFR 1926.104, Subpart M, Subpart L; ANSI Z359.1-1992	Applicable to all NWS facilities. Applicable to all NWS personnel working on or near unguarded elevated surfaces or climbing/descending structures (e.g., towers, river gauges).
2. Working Alone	NWS Occupational Safety and Health Procedure #1; "Fall Protection", NWS Occupational Safety and Health Procedure #12, "Confined Space Entry"; OSHA 29 CFR 1910, Subpart Z, "Toxic Substances"; ACGIH "Threshold Limit Values"	Applicable to all NWS facilities. Applicable to NWS personnel who perform potentially hazardous duties that require additional personnel assignment.
3. Safe Electrical Work Practices	29 CFR 1910.145, .301-.308, .331-.335; NFPA 70E; NFPA 70; NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources"; NWS Occupational Safety and Health Procedure 2, "Working Alone"; NWS Occupational Safety and Health Procedure 8, "Personal Protective Equipment."	Applicable to all NWS facilities and personnel involved in maintenance and repair of electrical equipment.
4. Control of Hazardous Energy Sources	29 CFR 1910.147; ANSI Z244.1-1982; National Fire Protection Association, NFPA 70, NEC; NWS Occupational Safety and Health Procedure #3, "Safe Electrical Work Practices."	Applicable to all NWS facilities and personnel. General training applicable to all NWS employees; specific training applicable to NWS employees involved in the installation and/or the maintenance and repair of electrical equipment.

Procedure Number and Name	Reference	Applicability to NWS
5. Emergency Action Plan	29 CFR 1910.38; USDOC Occupational Safety and Health Manual; NFPA 101, 101 31.1.5; NWS Occupational Safety and Health Procedure #6, "Fire Protection"; NWS Occupational Safety and Health Procedure #23, "Emergency Response Agreements."	Applicable to all NWS facilities and personnel.
6. Fire Protection	29 CFR 1910.36-37, .157, .164, .165; 29 CFR 1910, Subpart L, Appendix A, "Fire Protection."; NFPA 10, "Fire Extinguishers"; NFPA 70, "National Electrical Code"; Americans with Disabilities Act (ADA) Section 4, "Accessible Elements and Spaces: Scope and Technical Requirements."	Applicable to all NWS facilities and personnel.
7.Hazard Communication	29 CFR 1910.1200, Hazard Communication.	Applicable to all NWS facilities and personnel working with or around hazardous chemicals.
8. Personal Protective Equipment	29 CFR 1910 Subpart I,"Personal Protective Equipment"; 29 CFR 1910.95, .145; 29 CFR 1910 Subpart Q, "Welding, Cutting and Brazing"; ANSI Z358.1-1998; ANSI Z41-1991; ANSI Z87.1-1989; ANSI Z89.1-1986; DOC Safety Manual; NWS Occupational Safety and Health Procedure #7, "Hazard Communication Program".	Applicable to all NWS facilities and personnel required to use PPE.

Procedure Number and Name	Reference	Applicability to NWS
9. Compressed Gas Safety	29 CFR 1910.101-.104, .253; CFR 1910 Subpart M; CGA P-1; NFPA, as applicable; ANSI UL 407-1995 & 248.1-1954 & B31.1-1967; Compressed Gas Association, as applicable; Federal Meteorological Handbook, No. 3.; ASME Boiler and Pressure Vessel Code; 49 CFR 173.34 "Qualifications, Maintenance and Use of Cylinders"; U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910, Subpart S, Electrical; U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.153, Liquified Petroleum Gases.	Applicable to all NWS facilities which use compressed gases. Applicable to all NWS personnel required to use/handle or work in the close proximity of compressed gas(es).
10. Respiratory Protection	29 CFR 1910.134, .139, Subpart Z; ANSI Z88.2-1992; NIOSH 84 CFR 42; Fundamentals of Industrial Hygiene, 4th Edition.	Applicable to all NWS facilities and employees who are required to use respiratory protection.
11. Hearing Conservation	29 CFR 1910.95, Occupational Noise Exposure; ACGIH TLVs for Chemicals Substances and Physical Agents, Biological Exposure Indices (1998); NIOSH Criteria for a Recommended Standard: Occupational Exposure to Noise (1972); ANSI S1.4-1983 (R1997)	Applicable to all NWS facilities. Applicable to all NWS employees exposed to noise at or above the OSHA action level.
12. Confined Space Entry	29 CFR 1910.146, .147, .252; NIOSH Alert Request for Assistance in Preventing Occupational Fatalities in Confined Spaces (1986); NIOSH A Guide to Safety in Confined Spaces, July 1987; NIOSH Criteria for a Recommended Standard Working in Confined Spaces, November 1979	Applicable to all NWS facilities which have confined spaces. Applicable to all NWS employees who are involved in confined space entry.

Procedure Number and Name	Reference	Applicability to NWS
13. Indoor Air Quality	29 CFR 1910 Subpart Z; ASHRACE Standards 55 and 62; USEPA Building Air Quality: A Guide for Building Owners and Facility Managers; ACGIH, TLVs and BEIs, Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices.	Applicable to all NWS facilities. Applicable to all NWS personnel involved with the maintenance and/or operation of HVAC systems plus individuals working with facility indoor air quality.
14. Walking and Working Surfaces	29 CFR 1910 Subpart D; NFPA 101; ANSI 14.3-1992; ANSI 1264.1-1989; ANSI A14.1-1994; ANSI A14.2-1992; ANSI A14.3-1990; ASTM A36/A36M; NWS Occupational Safety and Health Procedure #1, "Fall Protection".	Applicable to all NWS facilities and personnel.
15. Battery Charging and Storage Operations	29 CFR 1910.178; NFPA 70B-27, 110-16	Applicable to all NWS facilities which have battery systems. Applicable to all NWS personnel involved in the maintenance of batteries and equipment or those who work with or in close proximity to battery charging systems.
16. Flammable and Combustible Liquid Storage	29 CFR 1910.106; NFPA 30; NFPA 251; U.S. Environmental Protection Agency 40 CFR Part 261.21, "Characteristic of Ignitability."	Applicable to all NWS facilities using/storing flammable and/or combustible liquids. Applicable to all NWS personnel who work with or in close proximity to flammable and/or combustible liquids.

Procedure Number and Name	Reference	Applicability to NWS
17. Ionizing and Non-Ionizing Radiation Safety	29 CFR 1910.97, 1096; ACGIH TLVs for Chemical Substances and Physical Agents; 10 CFR 83.208"Occupational Radiation Protection"; NRC 10 CFR 20 "Standards for Protection Against Radiation."	Applicable to all NWS facilities which have radiation-producing equipment. Applicable to all NWS personnel required to work around radiation-producing equipment.
18. Accident /Illness Reporting and Recording	29 CFR 1960, Subpart I, Recordkeeping and Reporting Requirements; 29 CFR 1904, USDOC Occupational Safety and Health Manual Chapter 11; USDOC Department Administrative Orders Series, Chapter 9 Title: Safety	Applicable to all NWS facilities and personnel.
19. Hand and Power Tool Safety	29 CFR 1910.242-.244, Subpart I; 29 CFR 1926.21, Subpart I; NEC 250-114; ANSI B11.1-88	Applicable to all NWS facilities which use hand and power tools. Applicable to all NWS personnel who perform maintenance on or use hand and/or power tools in the performance of their jobs.
20. Machine Guarding	29 CFR 1910.212, .213, .215; 29 CFR 1926.300; USDOC Dept. AO #209-4; NEC	Applicable to all NWS facilities. Applicable to NWS employees who work on/with equipment that requires guarding.
21. Laser Safety	ACGIH TLVs for Chemical Substances and Physical Agents; ANSI Z136.1-1993; 21 CFR Parts 1000 & 1040; NWS Engineering Handbook 11; NSC Fundamentals of Industrial Hygiene 4th Edition.	Applicable to all NWS facilities which are using laser systems. Applicable to all NWS personnel involved in laser operations.

Procedure Number and Name	Reference	Applicability to NWS
22. Cranes, Hoists and Slings	29 CFR 1910.179, .180, .184; 29 CFR 1926.550; ANSI B30-2, B30-9, B30-10, B30-16	Applicable to all NWS facilities which have cranes, hoists and slings. Applicable to all NWS personnel involved in operating/using cranes, hoists and slings.
23. Emergency Response Agreements	NWS Occupational Safety and Health Procedure 5, "Emergency Action Plan"	Applicable to NWS facilities. Applicable to all NWS personnel who establish ERAs with local emergency response organizations.
24. Safety Training Program	OSHA 2254 (Revised), 1992, "Training Requirements in OSHA Standards and Training Guidelines."	Applicable to all NWS facilities, personnel, contractors and visitors
25. Ergonomics	ACGIH TLVs for Chemical and Physical Agents; IES/ANSI RP-7-1991; IES/ANSI RP-1-1982; (NIOSH), Applications Manual for the Revised Lifting Equation; (NIOSH) Lifting Work Practices Guide; Working Safety with Video Display Terminals, OSHA Publication 3092..	Applicable to all NWS facilities and personnel.
26. Trenching and Excavation Operations	CFR 1926 Subpart P; 29 CFR 1926, Subpart M, "Fall Protection."; 29 CFR 1910, Subpart Z; ACGIH TLVs for Chemical Agents and Physical Agents; NWS Occupational Safety and Health Procedures #8, "Personal Protective Equipment"; and NWS Occupational Safety and Health Procedures #10, "Respiratory Protection Program.".	Applicable to all NWS facilities and personnel involved in construction or maintenance where trenching and/or excavation is involved.
27. Forklift	29 CFR 1910.178; ANSI B56.1; NWS Occupational Safety and Health Procedure 16, "Flammable and Combustible Liquid Storage".	Applicable to all NWS facilities where forklifts are used. Applicable to all NWS personnel who operate forklifts.

Procedure Number and Name	Reference	Applicability to NWS
28. Welding/Hot Work	29 CFR 1910.252 Subpart Q; NFPA 51B; NWS Occupational Safety and Health Procedure #12, "Confined Space Entry"; NWS Occupational Safety and Health Procedure #1, "Fall Protection"; NWS Occupational Safety and Health Procedure #8, "Personal Protective Equipment"; NWS Occupational Safety and Health Procedure #6, "Fire Protection".	Applicable to NWS facilities which have welding/hot work operations. Applicable to all NWS personnel involved in welding/hot work operations.
29. Small Boat Safety	33 CFR, Navigation and Navigable Waters; NAO 217-103, Management of NOAA Small Boats; NAO 209-115, NOAA Employees Aboard Non-NOAA Vessels; NWS Occupational Safety and Health Procedure #18, "Accident/Illness Reporting and Recording".	Applicable to all NWS facilities and personnel which operate small boats.
30. Office Safety	NWS Occupational Safety and Health Procedure #25, "Ergonomics"; NWS Occupational Safety and Health Procedure #13, "Indoor Air Quality." NWS Occupational Safety and Health Procedure #14, "Walking and Working Surfaces."	Applicable to all NWS facilities. Applicable to all NWS employees who work in office facilities.
31. Asbestos Safety	U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1001, Asbestos; U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1001, Appendix D, Medical Questionnaires, Mandatory; U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.1101, Asbestos.	Applicable to all NWS facilities, and work locations which contain asbestos or asbestos-containing materials (ACMs) are used. Applicable to all NWS employees who work in facilities or work locations which contain ACMs.

Procedure Number and Name	Reference	Applicability to NWS
32. Motor Vehicle Safety	NWS Occupational Safety and Health Procedure #18, "Accident/Illness Reporting and Recording."	Applicable to all NWS facilities. Applicable to all NWS employees that operate motor vehicles in the performance of their job duties.

24.4 Quality Control

24.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to ensure that these facilities are in compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

24.4.2 Station Manager

a. The Station Manager and the Safety or Environmental/Safety Focal Point shall review this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

b. Shall annually review the site safety training requirements to ensure compliance with NWS safety procedures.

24.4.3 NWS Headquarters (NWSH)

a. The NWSH Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. This procedure shall be reviewed annually by the NWSH Safety Office to ensure its continued compliance with internal requirements and applicable regulations.

c. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

d. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

24.5 Responsibilities

24.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

24.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall evaluate and document site-specific training requirements.

c. Shall develop site-specific safety orientation outline.

d. Shall ensure that all employees receive the required training.

24.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall ensure that all training records are maintained in an accessible location on site.

24.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

24.6 References

Incorporated References. The following reference is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

24.6.1 U.S. Department of Labor, Occupational Safety and Health Administration, OSHA 2254 (Revised), 1992, "Training Requirements in OSHA Standards and Training Guidelines." Superintendent of Documents, U.S. Government Printing Office.

24.7 Attachments

Attachment A: Sample Safety Orientation Outline

Attachment B: Site-Specific Training Requirements (WFO Springfield, MO)

ATTACHMENT A

Sample Safety Orientation Outline

The Safety Orientation shall include, but not be limited to, an overview of the following areas:

1. Emergency Preparedness/Evacuations

    A Notification of personnel

    B. Assembly & Accountability Procedures

2. Reporting Requirements

    A. Accident/Incident

    B. Illness

    C. First Aid

3. Motor Vehicles

    A. Speed limit in parking areas

    B. Parking procedures

    C. Traffic flow

4. Site Requirements

    A. Designated smoking/no smoking areas

    B. Eating/Break areas

    C. Reporting damage to property

    D. Clothing

    E. Security

5. Personal Protective Equipment

    A. Building placards system

    B. Areas requiring use of PPE.

C. Types of PPE by location.

6. Fire Protection

A. Reporting of fires

B. Housekeeping

C. GFCI's and extension cords

D. No smoking areas

7. Permit Operations

A. Welding/Burning operations

B. Confined Space Entry

C. Excavations

D. Special Work

8. Hazardous/Solid Waste

A. Storage locations/Handling

B. Responsibility

C. Chemical spill procedures

D. Recycling

9. Hazard Communication

A. Right-to-Know

B. MSDS's

C. Labeling

10. Unique Hazards - As Required

ATTACHMENT B

Site-Specific Training Requirements (WFO Springfield, MO)

Procedure No. & Title	Training Required	Employee Classification	Completion Rate
1. Fall Protection	Use of Fall Protection Equipment	Electronic Technicians DAPM	
2. Working Alone	First Aid and CPR	Electronic Technician Management Meteorological Technicians and Interns	
4. Control of Hazardous Energy Sources	Safe Application Usage and Removal of Energy Control Devices	Electronic Technicians Management	
5. Emergency Action Plan	Sufficient Number of Employees to assist with evacuation, accountability, and equipment and facility protection.	Administrative Asst. Electronic Technician Forecasters Management Meteorological Technicians and Interns Meteorologist in Charge Senior Forecasters	

Procedure No. & Title	Training Required	Employee Classification	Completion Rate
6. Fire Protection	Fire extinguisher training. Awareness training. ---------- UAB Hydrogen Fire Prevention	Administrative Asst. Electronic Technician Forecasters Management Meteorological Technicians and Interns Meteorologist in Charge Senior Forecasters ---------- Electronic Technician Forecasters Management Meteorological Technicians and Interns Meteorologist in Charge Senior Forecasters	
7. HAZCOM	NWS Personnel who work with, purchase, or are potentially exposed to chemicals	Administrative Asst. Electronic Technician Forecasters Management Meteorological Technicians and Interns Meteorologist in Charge Senior Forecasters	
8. Personal Protective Equipment	Need, Use, Selection, and Care of PPE	Electronic Technician Management Meteorological Technicians and Interns	

Procedure No. & Title	Training Required	Employee Classification	Completion Rate
12. Confined Space	NWS Confined Space a. Entry Supervisor b. Entrant c. Attendant	Electronic Technician Meteorologist in Charge	
24. Safety Training	Orientation and as required by specific procedures	Administrative Asst. Electronic Technician Forecasters Management Meteorological Technicians and Interns Meteorologist in Charge Senior Forecasters Short and Long Term Visitors Contractors	

PROCEDURE 25 - Ergonomics

Table of Contents Page

Synopsis 25-ii
Ergonomics Checklist 25-iii

25 ERGONOMICS 25-1
25.1 Purpose And Scope 25-1
25.2 Definitions 25-1
25.3 Procedure 25-2
25.4 Quality Control 25-4
25.5 Responsibilities 25-5
25.6 References 25-5
25.7 Attachments 25-6

Synopsis

The purpose of this procedure is to provide guidance relative to ergonomic workplace hazards. The procedure applies to all NWS facilities, work locations, and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Optimum Workstation Seating. *(25.5.2d, 25.3.2a)*
  - Optimum Workstation Surfaces. *(25.5.2d, 25.3.2b)*
  - Suitable Computer Monitors. *(25.5.2d, 25.3.2c)*
  - Wrist Rest or Wrist Support. *(25.5.2d, 25.3.2d.2)*
  - Adequate Lighting. *(25.5.2d, 25.3.2d.3)*
  - Routine Lifting Tasks. *(25.3.3)*
- **Develop/Obtain Documentation/Information required for Site**
  - Document Findings and Corrective Actions. *(25.3.4)*
- **Designate Person to Administer Ergonomics Procedure Requirements**
- **Provide Local Training of Site Personnel**

Recurring and Annual Task Requirements:

- **Review/Update Documentation/Information required for Site**
  - Maintain Findings and Corrective Actions Documentation. *(25.3.4)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Optimum Workstation Seating. *(25.5.2d, 25.3.2a)*
  - Optimum Workstation Surfaces. *(25.5.2d, 25.3.2b)*
  - Suitable Computer Monitors. *(25.5.2d, 25.3.2c)*
  - Wrist Rest or Wrist Support. *(25.5.2d, 25.3.2d.2)*
  - Adequate Lighting. *(25.5.2d, 25.3.2d.3)*

Ergonomics Checklist

REQUIREMENTS	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	25.4.2				
Are employees ergonomics-related concerns evaluated?	25.3.4				
Are ergonomics-related findings and corrective actions being thoroughly documented?	25.3.4				
Do employees who exhibit physical symptoms consult a qualified medical professional?	25.3.4				
Do workstations provide optimum seating as described in the procedure?	25.3.2a				
Do workstations provide optimum worktable surfaces as described in this procedure?	25.3.2b				
Are guidelines for efficient use of monitors followed?	25.3.2c				
Are guidelines for lighting levels and designs in work areas followed?	25.3.2d.3 &				
Do routine lifting tasks conform to the guidelines referenced in this procedure?	25.3.3				

25 ERGONOMICS

25.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to ergonomic workplace hazards. This procedure applies to all NWS facilities, work locations, and employees.

25.2 Definitions

ACGIH. American Conference of Governmental Industrial Hygienists.

ANSI. American National Standards Institute.

Qualified Individual - An individual who, on the basis of professional training or experience, is qualified to analyze an NWS workstation for compliance with accepted ergonomics principles and who is capable of recommending corrective actions for noted deficiencies. Training courses dealing with ergonomics are available from numerous organizations, such as the American Society of Safety Engineers, American Industrial Hygiene Association, the National Safety Council, etc.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

IES. Illumination Engineering Society.

NIOSH. National Institute of Occupational Safety and Health.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

OSHA. Occupational Safety and Health Administration.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

TLV. ACGIH Threshold Limit Value, representing conditions under which it is believed that nearly all workers may be repeatedly exposed to day after day without adverse health effects.

25.3 Procedure

25.3.1 Employee computer workstations should be designed to the greatest extent feasible to fit the employees using them. (See Figure 25-1 for illustration)

a. Optimum workstation seating includes:

(1) Seat height range from 16 to 20.5 inches from the floor.

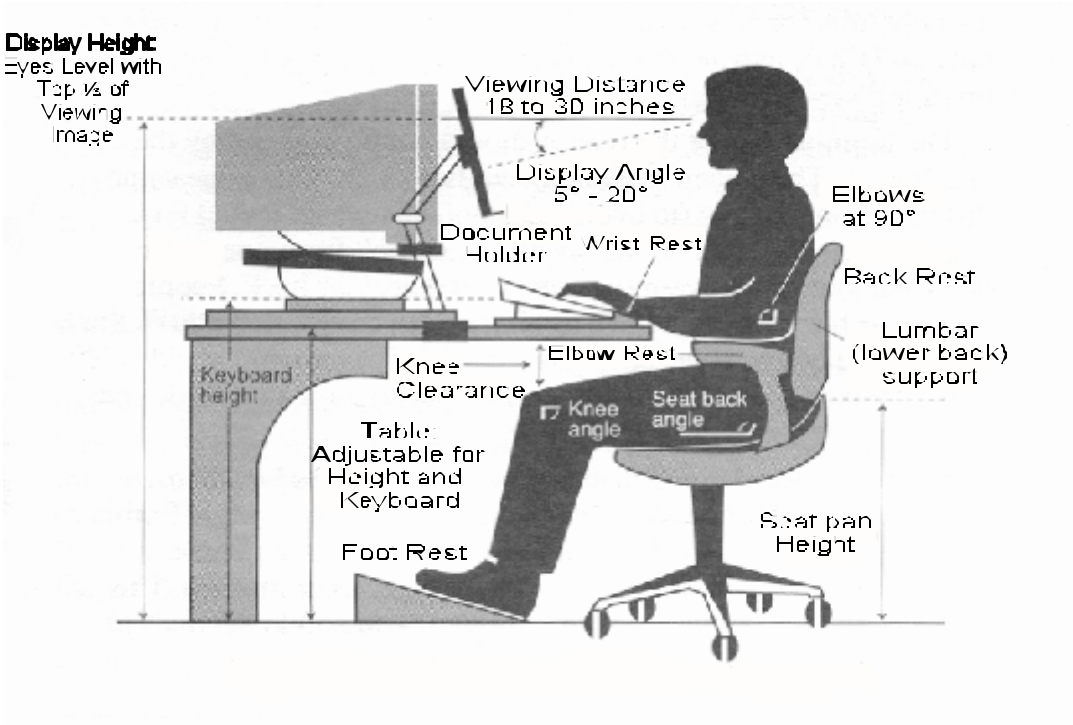
(2) The seat tilt range of 0 to 10 degrees.

(3) Seat constructed of material not conducive to sliding.

(4) Seat size of at least 18 inches wide, with a depth of 15-17 inches.

(5) Adjustable back rest to provide support to the lumbar region of the back.

Figure 1: Typical Ergonomically Designed Workstation



(6) A minimum of five casters to support the chair.

b. Optimum worktable surfaces are:

(1) Adjustable to reduce the need for adjustment of individual components, such as keyboards and monitors.

(2) Large enough to permit to components to be moved forward and backward, while allowing room for a wrist rest and working documents.

c. Monitor use can be made most efficient by:

(1) Placing the monitor on articulating platforms, which allow adjustability in all directions.

(2) Setting monitor so that there is minimal forward tilt of the head.

(3) Ensuring that the top of the monitor is never be higher than eye level.

(4) Allowing for vertical adjustment of the monitor.

(5) Placing monitor so that it can be adjusted from 18 to 30 inches from the operator's eyes.

(6) Using a monitor that is tiltable to reduce glare and reflection. A clean screen will give off less glare.

d. Miscellaneous:

(1) Articulating arms which attach to the chair or worktable and allow a large number of work positions are recommended where extensive keyboard work is required.

(2) Wrist rests or wrist supports can reduce spinal disc pressure, alleviate shoulder muscle fatigue, and decrease wrist extension. These are low-cost items that can easily be added to most work stations.

(3) Excessive light levels should be avoided to reduce glare and eye fatigue. Workstations should be placed at 90 degrees from light sources, including all windows.

(4) Fatigue and excessive repetition can be avoided by:

a. changing work tasks at least once each hour.

b. standing up, stretching, flexing muscles, rotating the head, and shifting the body's position every 15 minutes. Also, eyes can be rested by briefly closing them or changing focus by looking at distant objects.

c. using a soft touch on the keyboard and keeping the shoulders, hands and fingers relaxed.

d. using a document holder, positioned at about the same plane and distance as the display screen.

25.3.2 Routine lifting tasks should follow the guidelines listed in the NIOSH publication, "Applications Manual for the Revised Lifting Equation." The publication is used to analyze particular tasks and determine a maximum permissible load and lifting frequency.

25.3.3 All employee ergonomics-related concerns should be evaluated by the Station Manager or his/her designee (Qualified Individual) in conjunction with the Regional or Operating Unit Environmental/Safety Coordinator or the NOAA Regional Safety Manager (RSM). All findings and corrective actions should be thoroughly documented and maintained. When employees exhibit physical symptoms, a qualified medical professional should be consulted.

25.4 Quality Control

25.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

25.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

25.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this

procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

25.5 Responsibilities

25.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

25.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall assume the duties of or designate a person to serve as Ergonomics Program Manager.

c. Shall ensure that all ergonomics-related problems are investigated and that all needed corrective actions are implemented.

d. Shall ensure that employee work stations are designed and maintained in accordance with the latest ergonomic principles to the greatest extent feasible.

25.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

25.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

25.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

25.6.1 American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents, Current Edition. The Illuminating Engineering Society/American National Standards Institute, IES/ANSI

25.6.2 RP-1-1982, Office Lighting, American National Standard Practice The Illuminating Engineering Society/American National Standards Institute, IES/ANSI

25.6.3 RP-7-1991, American National Standard Practice for Industrial Lighting. Occupational Safety and Health, NIOSH Applications Manual for the Revised Lifting Equation.

25.6.4 Working with Safety Video Display Terminals, OSHA Publication 3092

Additional information can be found at the following Internet websites:

http://www.osha-slc.gov/SLTC/ergonomics/index.html

http://www.osha-slc.gov/SLTC/ergonomics/ergoreg.html

http://www.osha-slc.gov/SLTC/ergonomics/backgroundinfo.html

http://www.osha-slc.gov/SLTC/ergonomics/publicationsnew.html

http://www.osha-slc.gov/Publications/Osha3092.pdf

http://www.cdc.gov/niosh/ergosci1.html?

http://www.cdc.gov/niosh/eptolbox.html?

25.7 Attachments

None

PROCEDURE 26 - Trenching and Excavation Operations

Table of Contents Page

Synopsis 26-ii
Trenching And Excavation Operations Checklist 26-iii

26 TRENCHING AND EXCAVATION OPERATIONS 26-1
26.1 Purpose And Scope 26-1
26.2 Definitions 26-1
26.3 Procedure 26-2
26.4 Quality Control 26-6
26.5 Responsibilities 26-7
26.6 References 26-8
26.7 Attachments 26-9

Synopsis

The purpose of this procedure is to establish requirements relative to the hazards associated with trenching and excavation operations. The procedure applies to all NWS facilities, work locations and employees involved in trenching and excavation operations.

<u>Initial Implementation Requirements:</u>

- **Analyze Site Operation versus Requirements of Procedure**
- **Designate Person to Administer Trenching and Excavation Operations Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Competent Person Training. *(26.5.2b)*
- **Inventory Material/Equipment (Procure as required)**
  - Emergency Rescue Equipment. *(26.5.2c, 26.3.14f)*
  - Personal Protective Equipment. *(26.5.2c, 26.3.14d)*
  - Protective Systems. *(26.5.2c, 26.3.21 & 26.3.22)*
  - Shields. *(26.5.2c, 26.3.28)*

<u>Recurring and Annual Task Requirements:</u>

- **Perform Inspection/Assessment**
  - Conduct daily inspections of excavations, adjacent areas and protective measures *(26.3.19)*
- **Provide Refresher Training of Site Personnel (as required)**
  - Competent Person Training. *(26.5.2b)*, as appropriate
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Emergency Rescue Equipment. *(26.5.2c, 26.3.14f)*
  - Personal Protective Equipment. *(26.5.2c, 26.3.14d)*

Trenching And Excavation Operations Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	26.4.2				
Are all Excavation operations being performed in full compliance with this procedure?	26.3.1				
For excavations on NWS property, has a Competent Person been appointed?	26.3.3				
Has the Competent Person been trained according to this procedure?	26.5.4 a-h				
Are all Protective Systems designed or approved by the Competent Person, and are they in accordance with this procedure?	26.3.21-25				
Have all underground utilities been identified and flagged prior to excavation?	26.3.5				
Are structural ramps designed or approved by the Competent Person?	26.5.2b, 26.3.7				
Are adequate safeguards, approved by a Competent Person, being utilized while an excavation is open to ensure workers safety?	26.3.6				
Do all ramps, used in lieu of steps, have cleats or treated surfaces to reduce slip hazards?	26.3.10				
Are safety precautions being implemented to ensure that no employees are permitted under loads being handled by lifting or digging equipment?	26.3.12				

Requirements	Reference	YES	NO	N/A	Comments
Are employees exposed to vehicular traffic, provided with proper Personal Protective Equipment (PPE)?	26.3.13				
For all excavations greater than 4 feet in depth and where required, is air monitoring performed to determine possible hazardous or oxygen deficient atmospheric conditions?	26.3.14b				
Are engineering controls, such as ventilation, being used, if possible, where there is potential hazardous or oxygen deficient atmospheric conditions?	26.3.14d				
Is rescue equipment available near excavations, and are Qualified Personnel available to perform a rescue?	26.3.14f				
Are adequate safety precautions being taken to protect employees against hazards posed when work is being done in an excavation where there is accumulated water?	26.3.15				
Are approved support systems being used where the stability of adjoining buildings, walls, or structures are endangered by excavation operations?	26.3.16				
Are procedures being followed when excavation operation is being done below the base or footing of any foundation/retaining wall that can pose hazard to personnel?	26.3.17				
Are personnel protected from the falling hazards such as loose rock and soil?	26.3.18				
Has the Competent Person performed daily inspections of excavations, adjacent areas and protective measures?	26.3.19				

Requirements	Reference	YES	NO	N/A	Comments
Are walkways provided where employees or equipment are required or permitted to cross over an excavation?	26.3.20				
Are employees performing excavations protected from cave-ins by an adequate protection system?	26.3.21				
Are support systems being designed, constructed and installed in accordance with this procedure?	26.3.26 a-e				
Are protective shields designed and used in accordance with this procedure?	26.3.28 b-e				

26 TRENCHING AND EXCAVATION OPERATIONS

26.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with trenching and excavation operations. This procedure applies to all NWS facilities, work locations and employees involved in trenching and excavation operations.

26.2 Definitions

Accepted Engineering Practices. Those requirements which are compatible with standards of practice required by a registered Professional Engineer.

Aluminum Hydraulic Shoring. A pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). These systems are designed to support the sidewalls of an excavation and prevent a cave-in.

Bell Bottom Pier Hole. A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a bell shape.

Benching System. A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

Cave-In. The separation of a mass of rock or soil material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by sliding or falling, in sufficient quantity so that it could entrap, bury or otherwise injure an employee.

Competent Person. Defined by OSHA as one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees, and who has authority to take prompt corrective measures to eliminate them. The Competent Person must remain at the job site during operations.

Contracting Officer. Government Officer who is responsible for the award and overseeing of all contractor operations.

Engineering Controls. Ventilation system or air cleaning equipment used for remediation of hazardous air conditions.

Excavation. Any man-made cut, cavity, trench or depression in an earth surface, formed by earth removal operations.

Failure. The breakage, displacement or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hazardous Atmosphere. An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic or otherwise harmful, may cause death, illness or injury.

Kickout. The accidental release or failure of a cross brace.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Professional Engineer. An individual licensed and registered under the laws of the State having jurisdiction to engage in the practice of engineering.

Shield. A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields used in trenches are referred to as "trench boxes" or "trench shields."

Shoring System. A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

Sloping System. A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure and application of surcharge loads.

Stable Rock . Natural solid mineral that can be excavated with vertical sides and will remain intact while exposed.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Trench (Trench Excavation). A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of the trench as measured at the bottom is not greater than 15 feet.

Uprights. The vertical members of a trench-shoring system placed in contact with the earth.

Wales. Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or the earth.

26.3 Procedure

26.3.1 All excavations shall be performed in full compliance with OSHA 29 CFR 1926, Subpart P, "Excavations".

26.3.2 The Contracting Officer with assistance of a Competent Person shall ensure that all excavations are conducted in accordance with the OSHA standards.

26.3.3 The Contracting Officer shall ensure a Competent Person as defined in section 26.2 approves all procedures and hazard controls for excavations at the NWS site.

26.3.4 All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

26.3.5 The estimated location of utility installations, such as sewer, water, electrical service lines, etc., which may be affected shall be determined prior to opening an excavation. As the excavation approaches the estimated location, the actual location shall be verified by safe and acceptable means.

26.3.6 While the excavation is open, adequate safeguards shall be approved by the Competent Person to ensure underground utilities do not pose a safety or health hazard to personnel.

26.3.7 Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a Competent Person.

26.3.8 Ramps and runways constructed of two or more structural members shall have the members connected in such a way as to prevent the possibility of displacement. Members shall be of uniform thickness.

26.3.9 Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a way to prevent tripping hazards to personnel.

26.3.10 Ramps used in lieu of steps shall have cleats or a surface treatment to reduce the slipping hazard.

26.3.11 A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.

26.3.12 No employee shall be permitted under loads being handled by lifting or digging equipment.

26.3.13 Employees exposed to vehicular traffic shall be provided with and shall wear warning vests or other suitable garments capable of warning approaching traffic. Reflective or high visibility material shall be used on all these garments.

26.3.14 Potentially Hazardous or Oxygen Deficient Atmospheres.

a. No employee shall be exposed to harmful atmospheres in excavations. All contaminant levels shall be below the relevant OSHA Permissible Exposure Limits and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) and their associated Short Term Exposure Limits (STELs) and Ceiling Values.

b. Where the possibility exists of an oxygen deficient or a hazardous atmosphere, as determined by the Competent Person, air monitoring shall be conducted before the start of work by either government or contractor employees (no exception) in all excavations deeper than 4 feet. Air monitoring shall be conducted by a person trained in the use of the monitoring equipment.

NOTE: An oxygen deficient atmosphere is one with an oxygen concentration of less than 19.5 percent.

c. Continual air monitoring shall be conducted if the possibility exists of a hazardous or oxygen deficient atmosphere occurring in the excavation. A safety harness must be worn by personnel where the possibility of a hazardous atmosphere or oxygen deficient atmosphere exists to facilitate rescue.

d. Adequate engineering controls must be used to eliminate hazardous atmospheres if possible. If not, adequate personal protective equipment must be used to reduce the hazard. Respirators must be selected by the Competent Person to ensure their adequacy. All respirator usage shall conform to the requirements of NWS Occupational Safety and Health Procedure 10, "Respiratory Protection." If the oxygen concentration in the excavation is less than 19.5 percent, a supplied air or self-contained breathing apparatus must be used.

e. Adequate precautions, such as providing ventilation, shall be enacted to prevent any employee exposure to an atmosphere containing a concentration of flammable gas in excess of 20 percent of its lower flammable limit. Atmospheric testing must be conducted as frequently as necessary to ensure the continued effectiveness of the control measures.

f. Emergency rescue equipment such as breathing apparatus, a safety harness and line, or a basket stretcher shall be readily available when hazardous atmospheric conditions exist or may possibly exist. Personnel shall be properly trained on the use of the rescue equipment.

26.3.15 Employees shall not work in excavations where there is accumulated water, or where water is accumulating unless adequate precautions have been taken to protect employees against the hazards posed by the water.

26.3.16 Where the stability of adjoining buildings, walls or structures is endangered by excavation operations, support systems shall be provided to ensure the stability of the structures and the safety of employees.

26.3.17 Excavation below the base or footing of any foundation or retaining wall that could reasonably be expected to pose a hazard to personnel shall not be conducted unless:

a. A support structure to ensure the stability of the structure and the safety of employees is installed.

b. The excavation is in stable rock.

c. A registered Professional Engineer has determined that the structure is at a sufficient distance from the excavation to be unaffected.

26.3.18 Adequate protection shall be taken to ensure that personnel are protected from loose rock, soil or other falling hazards.

26.3.19 Daily inspections of excavations, adjacent areas and protective measures shall be conducted by the Competent Person for evidence of a situation which could result in a potential cave-in, indications of the failure of a protective system, hazardous atmospheres or other hazardous conditions. When any of the listed hazardous situations are identified, employees shall immediately leave the excavation and not return until adequate control measures are instituted.

26.3.20 Walkways shall be provided where employees or equipment are required or permitted to cross over an excavation. Guardrails complying with 29 CFR 1926.502 (b) shall be provided where walkways are 6 feet or more above lower levels.

26.3.21 Every employee performing excavation shall be protected from cave-ins by an adequate protection system designed in accordance with 29 CFR 1926.652, paragraphs unless:

a. The excavation is made in stable rock.

b. Excavations are less than 5 feet in depth and examination of the ground by a Competent Person provides no indication of a potential cave-in.

26.3.22 Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

26.3.23 The slopes and configuration of sloping and benching systems shall be selected and constructed by the NWS or its contractor shall be in accordance with 29 CFR 1926.652, paragraphs (b)(1), (b)(2), (b)(3) or (b)(4).

26.3.24 Materials and equipment used for protective systems shall be free from damage or defects which might impair their functions.

26.3.25 All pre-manufactured materials and equipment for protective systems shall be used and maintained in accordance with manufacturer's recommendations.

26.3.26 Support Systems.

a. The design and construction of support systems shall be selected and constructed by the NWS or its contractor and shall be in accordance with 29 CFR 1926.652, paragraphs (c)(1), (c)(2), (c)(3) or (c)(4).

b. Members of support systems shall be securely connected together to prevent sliding, falling, kickouts or other failures.

c. Support systems shall be installed and removed in a manner that protects employees from cave-ins and other failures.

d. Removal of support systems shall begin at the bottom of the excavation.

e. Backfilling shall progress together with the removal of support systems from excavations.

26.3.27 Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when the employees at the lower levels are protected from falling, rolling or sliding materials or equipment.

26.3.28 Shields.

a. Shields shall not be exposed to loads greater than their designed capacity.

b. Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

c. Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

d. Employees shall not be allowed in shields when shields are being installed, removed or moved vertically.

e. Excavations of earth material to a level not greater than 2 feet below the bottom of a shield shall be permitted.

26.3.29 Open excavations shall be protected by barricades, covers, or other means deemed appropriate by the Competent Person to prevent personnel from accidently falling into the excavation, particularly during non-work hours.

26.4 Quality Control

26.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an assessment of the regional headquarters facilities or operating unit every two years to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

26.4.2 Station Manager

Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

26.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

26.5 Responsibilities

26.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

26.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and refresher training of competent person is provided.

c. Shall ensure that initial and periodic inventory of emergency rescue equipment, PPE, shields, protective systems is accomplished and adequate stock is maintained.

26.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

26.5.4 Competent Person

a. Shall understand the requirements of this procedure and be able to recognize potential hazards associated with excavation and trenching work.

b. Shall provide requirements for the use of protective shielding and shoring systems in excavations.

c. Shall inspect excavations, at a minimum, once a day for the purpose of identifying and abating potential hazards associated with the excavation.

d. Shall have the authority to stop all work being performed in an excavation by NWS personnel or contract personnel working for the NWS due to a hazardous situation or hazardous practices.

e. Shall approve all hazard controls used at excavation sites at the facility.

f. Shall approve adequate measures to ensure underground utilities do not pose a safety or health hazard to personnel while the excavation is open.

g. Shall design structural ramps that are used solely by employees as a means of access or egress from excavations.

h. Shall determine, in all excavations greater than 4 feet deep, if the possibility of a flammable, toxic, or oxygen deficient atmosphere exists. If the possibility of any one or more of those hazardous atmosphere exists, the Competent Person shall ensure that air monitoring is conducted before the start of work by either government or contractor employees (no exception).

26.5.5 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

26.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

26.6.1 American Conference of Governmental Industrial Hygienists, TLV's and BEI's, Threshold Limit Values for Chemical Substances and Physical Agents, Current Edition.

26.6.2 National Weather Service Occupational Safety and Health Procedure 8, "Personal Protective Equipment."

26.6.3 National Weather Service Occupational Safety and Health Procedure 12, "Confined Spaces."

26.6.4 National Weather Service Occupational Safety and Health Procedure 10, "Respiratory Protection."

26.6.5 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926, Subpart P, "Excavations."

26.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926, Subpart M, "Fall Protection."

26.7 Attachments

None

PROCEDURE 27 - Forklift

Table of Contents Page

Synopsis 27-ii
Forklift Checklist 27-v

27 FORKLIFT 27-1
27.1 Purpose and Scope 27-1
27.2 Definitions 27-1
27.3 Procedure 27-1
27.4 Quality Control 27-6
27.5 Responsibilities 27-7
27.6 References 27-8
27.7 Attachments 27-8

ATTACHMENT A 27-A-1
Sample Pre-operational Checklist 27-A-1

ATTACHMENT A-1 . . . . . 27-A-1-1
Sample Pre-operational Checklist 27-A-1-1

Synopsis

The purpose of this procedure is to establish requirements relative to the hazards associated with the use of forklifts in the workplace. The procedure applies to all NWS facilities, work locations and employees where forklifts are used.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Evaluate areas where Forklifts operate. *(27.3.6)*
  - Evaluate Fueling Operations. *(27.3.2)*
  - Evaluate Battery Charging and Changing Operations. *(27.3.3)*
- **Develop/Obtain Documentation/Information required for Site**
  - Obtain Label/Identification Marks for Approved Truck or Approved Industrial Trucks
  - Develop Forklift-specific hands-on Training Program. *(27.3.5b)*
  - Develop a License Card/Equivalent Documentation for Qualified Operators. *(27.3.5c)*
  - Develop Pre-Operational Safety Inspection Checklist. *(27.3.4a)*
  - Obtain written approval by manufacturer of all Forklift attachments. *(27.3.1s)*, as required.
- **Designate Person to Administer Forklift Safety Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training of Forklift Operators. *(27.3.5)*
- **Inventory Material/Equipment (Procure as required)**
  - Carbon Monoxide Monitors (If applicable) *(27.4.2b, 27.3.6c.1)*
  - Eyewash & Drenching Facilities. *(27.4.2b, 27.3.3c)*
  - Overhead Guards. *(27.4.2b, 27.3.1l)*
  - Load Backrest Extension. *(27.4.2b, 27.3.1m)*
  - Personal Protective Equipment (PPE). *(27.4.2b, 27.3.1t & 27.3.3b)*
  - Fire Protection Equipment. *(27.4.2b, 27.3.3f.2)*
  - Carbon Filter/Siphon *(27.4.2b, 27.3.3h)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Perform pre-operational safety inspections of forklifts. *(27.3.4)*

Review/Update Documentation/Information required for Site

  - Maintain Forklift-specific hands-on Training Program. *(27.3.5a)*, as required
  - Maintain License Cards/Equivalent Documentation for Qualified Operators. *(27.3.5c)*
  - Maintain Pre-Operational Safety Inspection Checklist. *(27.3.4a)*
- **Provide Refresher Training of Site Personnel (If required)**
  - Training of Forklift Operators. *(27.3.7)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment (As required)**
  - Carbon Monoxide monitors (If applicable) *(27.4.2b, 27.3.6c.1)*
  - Eye/Face/Body Flushing Drenching Facilities *(27.4.2b, 27.3.3c)*
  - Overhead Guards. *(27.4.2b, 27.3.1l)*
  - Load Backrest Extension. *(27.4.2b, 27.3.1m)*

- Wheel Chocks. *(27.4.2b, 27.3.1i)*
- Personal Protective Equipment (PPE). *(27.4.2b, 27.3.1t & 27.3.3b)*
- Fire Protection Equipment. *(27.4.2b, 27.3.3f.2)*
- Carbon Filter/Siphon *(27.4.2b, 27.3.3h)*

Forklift Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	27.4.2				
Are forklifts being used for their intended purposes in the appropriate environment according to this procedure?	27.3.1a				
Are only trained and qualified personnel permitted to operate forklifts?	27.3.5				
Has a forklift-specific hands-on training program been developed to qualify new operators and re-qualify existing Operators?	27.3.5a				
Has a License Card and/or Documentation Program for qualified operators been implemented and maintained?	27.3.5c				
Are Pre-operational Inspections of Forklifts being conducted at the beginning of each shift?	27.3.4 Attachments A & B				
Has Pre-operational Safety Inspection Checklist, applicable to the Forklifts been developed and being used?	27.3.4a				
Are all powered industrial trucks that require repair, defective or unsafe taken out of service until repair is done?	27.3.1o				
Are general requirements for operation, maintenance and use of forklifts being followed?	27.3.1				
Is there sufficient headroom under overhead installations, lights, etc., to avoid collisions during Forklift operations?	27.3.6a				
Is there adequate lighting provided where Forklifts are being operated?	27.3.6b				

Requirements	Reference	YES	NO	N/A	Comments
Is Carbon Monoxide monitoring/recording being conducted, if applicable?	27.3.6c				
Are requirements for the storage and handling of liquid fuel being followed?	27.3.2, Procedure 16				
Are guidelines for battery changing and charging being followed?	27.3.3				
Is refueling/battery charging being done in designated areas?	27.3.3a				
Is Personal Protective Equipment (PPE) being used during battery charging and installation activities?	27.3.3b				
Are there adequate flushing/rinsing facilities for eyes, face and body during Battery Charging Operations?	27.3.3c				
Are Fire Extinguishers readily available on site?	27.3.3f.2				

27 FORKLIFT

27.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with the use of forklifts in the workplace. This procedure applies to all NWS facilities, work locations and employees where forklifts are used.

27.2 Definitions

Approved Truck or Approved Industrial Truck. A truck that is listed or approved for fire safety purposes for the intended use by a nationally recognized testing laboratory. Approved trucks shall have a label or other identifying mark indicating approval by a nationally recognized testing laboratory.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Forklift/Powered Industrial Truck. A mobile, power-driven vehicle used to carry, push, pull, lift, stack or tier material that is usually palletized. It may be known by several different names such as but not limited to high lift truck, counterbalanced truck, rider truck, side loader, pallet truck and tow motor. Excluded are earth moving and over-the-road haulage vehicles. For the purpose of this procedure Forklift, Powered Industrial Truck, Truck or Industrial Truck shall all mean the same thing.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

27.3 Procedure

27.3.1 General Requirements. The following general requirements apply to the operation, maintenance and use of forklifts at NWS facilities by NWS or contractor personnel.

a. Individuals shall only use forklifts appropriate for the intended environment in which they will be operating. 29 CFR 1910.178, “Powered Industrial Trucks,” provides guidance for the type of forklift to be used.

b. Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.

c. No person shall be allowed to stand or pass under the elevated portion of any truck whether loaded or empty.

d. Personnel other than the driver shall not be permitted to ride on forklifts.

e. Employees shall not place their arms and/or legs between the uprights of the mast or outside the running lines of the truck.

f. When a powered industrial truck is left unattended, the load shall be fully lowered, controls neutralized, power shut off and brakes set. The wheels shall be blocked if the truck is parked on an incline. (A powered industrial truck is unattended when the operator is 25 feet or more away from the vehicle which remains in view or whenever the operator leaves the vehicle and it is not in view.)

g. When the operator of an industrial truck is dismounted and within 25 feet of the truck still in view, the load shall be fully lowered, controls neutralized and the brakes set to prevent movement.

h. A safe distance shall be maintained from the edge of ramps or platforms while on an elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.

i. The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the movement of trucks, trailers or railroad cars while loading or unloading.

j. Fixed jacks shall be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor.

k. The flooring of trucks, trailers and railroad cars shall be checked for breaks and weakness before they are driven onto.

l. An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

m. A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

n. Whenever a truck is equipped with vertical only or vertical and horizontal controls that elevate with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated:

(1) A safety platform firmly secured to the lifting carriage and/or forks shall be used.

(2) A means shall be provided whereby personnel on the platform can shut off power to the truck.

(3) Protection from falling objects shall be provided as indicated by the operating conditions.

(4) Fire aisles, access to stairways and fire equipment shall be kept clear.

o. If at any time a powered industrial truck is found to be in need of repair, defective or in any way unsafe, it shall be taken out of service until restored to safe operating condition.

p. If the load being carried obstructs the drivers view the forklift will be driven in reverse.

q. Forklift drivers shall keep the load upgrade when traveling on grades in excess of 10 percent.

r. The rated capacity of the forklift shall never be exceeded.

s. Forklift attachments shall be approved in writing by the forklift manufacturer and forklift capacity plate shall be updated accordingly.

t. All NWS personnel operating a forklift shall wear a hard hat.

27.3.2 Fueling. The storage and handling of liquid fuels shall be done in accordance with the NWS Occupational Safety and Health Procedure 16, "Flammable and Combustible Liquid Storage."

a. No forklift may be operated with a leak in the fuel system until the leak has been corrected.

b. Spillage shall be avoided.

c. Spillage of oil or fuel shall be contained or completely evaporated and the fuel tank cap replaced before restarting the engine.

d. Open flames shall not be used for checking the electrolyte level in storage batteries or the gasoline level in fuel tanks.

e. Forklifts shall not have their engine running during the fueling process.

f. Forklifts using LP-Gas as a fuel shall only use DOT-approved containers having a minimum pressure of 240 psi or minimum Container Type 250, which has a 312.5 psi design pressure.

27.3.3 Batteries. Forklift batteries pose a hazard often overlooked by many operators. The following guidelines shall be followed regarding battery changing and charging:

a. Battery charging installations shall be located in areas designated for that purpose.

b. Appropriate personal protective equipment shall be used during battery charging and installation activities. This shall include, but not be limited to eye and face protection and acid resistant gloves and apron.

c. Facilities for flushing/rinsing the eyes, face, body and the work area with water shall be provided wherever electrolyte is handled, except that this requirement does not apply when employees are only checking battery electrolyte levels or adding water to batteries with gel cells (When water supply is not available, e.g., at RDA sites, portable eyewash unit shall be provided). These facilities shall be available within 10 seconds of unobstructed travel-time distance from the charging station. These facilities shall be well marked and in locations free from obstructions. Care shall be taken when locating the units so as not to create a potential electrocution or shock hazard to personnel.

d. Batteries shall be properly positioned and secured in the forklift.

e. When charging batteries, acid shall be poured into water. If water is added to acid, a violent reaction will occur.

f. The following facilities shall be provided during battery charging operations:

(1) Water hose or acid neutralizing material that can be poured onto a spill to flush and neutralize spilled electrolyte shall be provided.

(2) A fire extinguisher shall be readily available.

(3) Posts or substantial barricading shall be installed for the charging mechanism to protect the charging apparatus from damage by forklifts.

(4) Adequate ventilation for the dispersal of vapors from off-gassing batteries shall be provided.

g. A conveyor, overhead hoist or equivalent material handling equipment shall be provided for handling batteries.

h. A carbon filter or siphon shall be provided for handling electrolyte.

i. Forklifts shall be properly positioned and brakes applied before attempting to change or charge batteries.

j. Care shall be taken to assure that vent caps are functioning and the battery (or compartment) cover(s) shall be open to dissipate heat generated during the charging process.

k. Smoking shall be prohibited in the charging area.

l. Steps shall be taken to prevent open flames, sparks or electric arcs in battery-charging areas.

m. Tools and other metallic objects shall be kept away from the top of uncovered batteries.

27.3.4 Pre-Operational Checks. The operator shall perform a pre-operational check on the forklift at the beginning of each shift.

a. A pre-operational safety inspection checklist that is applicable to the forklifts and their use shall be developed and maintained. The information included on the checklist can be found in the operator's manual for the individual forklift.

b. Two types of sample checklists can be found in Attachment A of this procedure.

NOTE: These formats may be used for the checklist; however, the items shall be tailored to the specific forklift. The inspection items can be found in the operator's manual(s).

27.3.5 Operator Training. Only trained and authorized personnel shall be permitted to operate a forklift.

a. A forklift-specific, hands-on training program shall be implemented and maintained to qualify new operators and periodically re-qualify existing operators in the proper use of each forklift that they will operate.

b. The training shall include both written and practical safe work activities that are representative of actual work-site conditions and associated forklift maneuvers.

c. A license card and/or equivalent training documentation for qualified operators shall be implemented and maintained.

27.3.6 Work-Site Controls. The following requirements shall be followed in areas in which forklifts are operating.

a. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc., below which forklifts will be operating to prevent them from being struck by the forklift or the load being carried.

b. General lighting of two lumens per square foot or more shall be provided where forklifts will be operating. If general lighting does not meet this requirement, auxiliary directional lighting shall be provided on the forklift.

c. The levels of carbon monoxide gas created by forklift operations shall not exceed 50 ppm in any portion of the work area at any time. Monitoring of carbon monoxide (CO) can be performed by fixed or portable monitors. Representative sampling may be performed to ensure CO levels are not above the allowable level. However, if there is a change in the equipment used, such as a new forklift or a forklift that is putting out more CO than usual, monitoring shall be repeated to ensure the maximum level of 50 ppm is not being exceeded.

27.3.7 Refresher Training and Evaluation. Refresher training shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. Refresher training in relevant topics shall be provided to the operator when:

a. The operator has been observed to operate the vehicle in an unsafe manner.

b. The operator has been involved in an accident or near-miss accident.

c. The operator has received an evaluation that reveals that the operator is not operating the truck safely.

d. The operator is assigned to drive a different type truck.

e. A condition in the workplace changes in a manner that could affect safe operation of the truck.

f. An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.

27.4 Quality Control

27.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

27.4.2 Station Manager

a. Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

b. Shall ensure that initial and periodic inventory of PPE, eyewash and face/body rinsing facilities, fire protection equipment and other safety equipment/instrumentation is accomplished and adequate stock is maintained.

27.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

27.5 Responsibilities

27.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

27.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that forklifts are only used in areas appropriate for their designation.

c. Shall ensure that personnel operate forklifts in accordance with the requirements of this procedure.

d. Shall ensure only trained and authorized personnel are allowed to operate a forklift.

e. Shall ensure forklift operators receive adequate initial training and refresher training as needed.

27.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

27.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE:	* - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

27.6 References

Incorporated References. The following list of references is incorporated as a whole or in part part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

27.6.1 American National Standards Institute B56.1, "American National Standard for Powered Industrial Trucks", current version.

27.6.2 National Weather Service Occupational Safety and Health Procedure 16, "Flammable and Combustible Liquid Storage."

27.6.3 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.178, "Powered Industrial Trucks."

27.7 Attachments

Attachment A: Sample Pre-Operational Checklist

Attachment A-1: Sample Pre-Operational Checklist

ATTACHMENT A

Sample Pre-operational Checklist

Date:		Forklift		Shift		Time	
	#	Items to Check	/		#	/ Items to Check	
Walk-around inspection	1	Oil, fuel or coolant leaks		Lower the hood and floor plate- and sit securely (cont.)	18	Brake pedal	
	2	Tires and rims			19	Inching pedal	
	3	Wheel nuts			20	Parking brake lever	
	4	Tire pressure			21	Horn	
	5	Lights			22	Lights	
	6	Backrest extension		Turn the key to ON position	23	Amount of fuel	
	7	Forks			24	Stop lights	
	8	Tilt cylinder lock nuts			25	Backup lights and alarm	
	9	Overhead guard			26	OK monitor	
Raise the hood and seat assembly	10	Engine coolant level		Turn the key to START position	27	OK monitor	
	11	Battery electrolyte level (Use eye protection)			28	Steering wheel	
	12	Brake fluid level		Test operation	29	Lift chains	
	13	Hydraulic oil level			30	Engine	
	14	Engine oil level			31	Mast	
Lower the hood and floor plate- and sit securely	15	Seat adjustment			32	Inching	
	16	Seat Belt			33	Service brakes	
	17	Accelerator pedal			34	Steering wheel	
Other deficiencies noted:							
Operator signature:							

Report all deficiencies to supervisor or maintenance immediately.

ATTACHMENT A-1

Sample Pre-operational Checklist

SAFETY AND OPERATIONS CHECKS (Prior to Each Shift)	Shift 1,2,3		
Fuel Odor Present (DO NOT START TRUCK - Report to your Supervisor Immediately)			
Fuel Level - Leaks			
Tires - Condition and Pressure			
Overhead Guard			
Load Backrest Extension			
Finger Guards			
Capacity Plate - Attached (Including Attachment Data)			
Safety Warnings - Attached (refer to Parts Manual for Location)			
Hour Meter Functioning			
Horn			
Lights			
Shift Linkage			
Accelerator Linkage			
Service Brake			
Parking Brake			
Steering Operation			
Hoist and Lowering Control			
Tilt Control - Forward and Back			
Attachment Control			
Mast Operation			
Main Hydraulic Tank Level			
Hydraulic Leaks - Valves, Hoses, Fittings, Cylinders, Etc..			
Forks, Top Clip Retaining Pin and Heel Condition			
Unusual Noise (Must be Investigated Immediately)			
Battery - Water Level			
Propane Tank, Rust, Corrosion, Damage			
Engine Oil Level - Leaks			
Engine Oil Pressure			
Engine Air Filter - Squeeze Rubber Dirt Trap or Check the Restriction Alarm/ Indicator			
Ammeter Operating			
Water or Anti-Freeze Level - Leaks			
All Belts			
Transmission Fluid Level			
Cab - Heater, Defroster, Wipers (If Equipped)			
Other Deficiencies Noted			

Report all deficiencies to maintenance immediately: / - Item OK X - Item Deficient

1st Shift Operator Signature:	Date:
2nd Shift Operator Signature:	Date:
3rd Shift Operator Signature:	Date:

PROCEDURE 28 - Welding/Hot Work

Table of Contents Page

Synopsis 28-ii
Welding/Hot Work Checklist 28-iii

28 WELDING/HOT WORK 28-1
28.1 Purpose and Scope 28-1
28.2 Definitions 28-1
28.3 Procedure 28-1
28.4 Quality Control 28-7
28.5 Responsibilities 28-7
28.6 References 28-9
28.7 Attachments 28-9

ATTACHMENT A 28-A-1
Hot Work Permit (Template) 28-A-1

Synopsis

The purpose of this procedure is to provide requirements relative to the hazards in the workplace associated with hot work. The procedure applies to all NWS facilities, welding work locations, and employees. The requirements of this procedure do not apply to soldering operations.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
  - Establish/Evaluate Welding Areas. *(28.3.1)*
  - Inspect Established Welding Areas and implement Corrective Actions.*(28.5.3c, 28.3.1i, 28.5.2c)*
- **Develop/Obtain Documentation/Information required for Site**
  - Complete Hot Work Permit Form.*(28.3.2)*
- **Designate Person to Administer Welding/Hot Work Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training of personnel performing hot work. *(28.3.14c)*
  - Fire Watch Training. *(28.3.14b, 28.3.3c.2)*
- **Designate Person for Contractor oversight (If applicable)**
- **Inventory Material/Equipment (Procure as required)**
  - Fire Extinguishers. *(28.4.2b, 28.3.1c)*
  - Mechanical Ventilation Systems. *(28.4.2b, 28.3.1g)*
  - Guards, Shields, Fire Blankets. *(28.4.2b, 28.3.3a.2)*
  - Flash Protection. *(28.4.2b, 28.3.11d)*

Annual Review and Recurring Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Conduct annual inspections of Established Welding Areas. *(28.3.1i)*
- **Review/Update Documentation/Information required for Site**
  - Maintain Training Records. *(28.5.2b, 28.3.14)*
- **Provide Refresher Training of Site Personnel (As required)**
  - Training of site personnel on Hot Work Hazards and Protective Measures. *(28.3.14)*
  - Fire Extinguisher Training. *(28.3.14c)*
  - Training on Equipment Use. *(28.3.14c)*
  - Fire Watch Training. *(28.3.3c.2)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment (As required)**
  - Fire Extinguishers. *(28.4.2b, 28.3.1c)*
  - Mechanical Ventilation Systems. *(28.4.2b, 28.3.1g)*
  - Guards, Shields, Blankets. *(28.4.2b, 28.3.3a.2)*
  - Flash Protection. *(28.4.2b, 28.3.11d)*

Welding/Hot Work Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	28.4.2				
Have all employees affected by this procedure, read, understood, and complied with the requirements of this procedure?	28.5.4a				
Are annual assessments of Established Welding Areas performed to ensure compliance with this procedure?	28.3.1i 28.4.3				
Are Fire Watch and other NWS personnel affected by this procedure trained?	28.5.2b & 28.3.14				
Are all Established Welding Areas approved and meet the requirements of this procedure?	28.3.1a & 28.5.2c				
Are there Class ABC Fire Extinguishers installed in welding areas where there is no sprinkler system?	28.3.1c				
Are the travel distances to the Fire Extinguishers less than 20 feet?	28.3.1c				
Is a Fire Watch present when all hot work is being performed?	28.3.3c & 28.5.5a				
Is a Fire Watch present for at least a half-hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires?	28.3.3c				
Are all Fire Watchers trained in the proper use of a Fire Extinguisher?	28.3.3c.2 & 28.5.5b 28.3.14				

Requirements	Reference	YES	NO	N/A	Comments
Is ventilation available if the welding area does not have ceilings of at least 16 feet with no obstructions or the room does not provide at least 10,000 cubic feet of room volume per welder?	28.3.1e				
Are requirements listed in this procedure for welding specific materials being followed?	28.3.1e,f				
Does the Safety or Environmental/Safety Focal Point provide Hot Work Permits for work being performed in Non-Established Areas prior to commencement?	28.3.2 & 28.3.12				
Is the Hot Work Permit read and signed by the person performing the hot work and the Fire Watch prior to commencement of the work?	28.3.13				
When work cannot be moved, is the area made safe by removing combustibles or protecting combustibles from ignition sources?	28.3.3a				
Are special hazards or precautions noted on the Hot Work Permit, specific to the area in which the hot work is being performed?	28.3.6				
Are combustible floors kept wet, covered with damp sand, or protected by fire resistant shields?	28.3.3a.1 & 28.3.3e				
Are guards, shields and/or fire blankets being used on all combustible materials within 35 feet of the hot work?	28.3.3a.2				
Does all Hot Work in confined spaces meet the minimum requirements of this procedure and also NWS Occupational Safety and Health Procedure # 12, “Confined Space”?	28.3.10				
Does management ensure that welders, and supervisors are suitably trained in the safe operation of their equipment and the safe use of the process?	28.3.14				

Requirements	Reference	YES	NO	N/A	Comments
Are requirements of the NWS Occupational Safety and Health Procedure # 1, “Fall Protection” followed, if applicable?	28.3.11a				
Are welding leads and torch hoses and associated equipment being placed away from passageways, ladders and stairwells?	28.3.11b				
Is appropriate PPE being used in accordance with NWS Occupational Safety and Health Procedure # 8, “Personal Protective Equipment”	28.3.11c				
Is flash protection provided in areas where pedestrian traffic may be exposed to the welding flash?	28.3.11d				
After open flame sweating takes place, does quenching of the pipe with a damp rag take place to reduce possible physical injury or fire by conduction?	28.3.11e				

28 WELDING/HOT WORK

28.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards in the workplace associated with hot work. This procedure applies to all employees at NWS facilities where welding is performed. The requirements of this procedure do not apply to soldering operations except as referenced in 28.3.7.

28.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Fire Watch. Individual dedicated to continuous surveillance of any hot work.

Hot Work. Any open flame/open arc activity such as, but not limited to, electric arc-welding, oxy-acetylene operations, air arc, plasma arc, and brazing.

NOTE: For the purpose of this procedure, hot work and welding shall be used interchangeably to designate welding, oxy-acetylene operations, air arc, plasma arc and brazing activities.

Hot Work Permit. A standardized form that certifies an evaluation of a planned hot work activity has been performed and specifies what precautions must be taken for the work to be performed safely.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

28.3 Procedure

28.3.1 All hot work shall be performed in an Established Welding Area, if possible. Hot work performed in this area does not require a Hot Work Permit. Established Welding Areas shall meet the following criteria:

a. The Established Welding Area shall be a discrete area, sectioned off by walls, curtains, or at a minimum, by lines on the floor. If lines on the floor are used, two areas shall be marked off with the lines:

(1) The Established Welding Area within which all welding must occur.

(2) At least a 35-foot buffer area around the Established Welding Area which shall contain no combustible or flammable material.

b. There shall be no exposed, readily combustible material such as paper, rags, wood, etc., within the Established Welding Area during welding. Walls, curtains and floors shall be made of combustion-resistant materials and shall have no cracks or openings into which sparks may fall and smolder.

c. If possible, there shall be a fully operational, automatic fire protection system in the Established Welding Area. If a sprinkler system is not feasible, then there shall be a Class ABC fire extinguisher(s) installed in the welding area that is capable of extinguishing the largest fire reasonably expected to occur in the welding area. The travel distance to the extinguisher shall not exceed 20 feet.

d. The area shall have at least one of the following as a permanent feature:

(1) A ceiling height of at least 16 feet with no obstructions to cross ventilation.

(2) At least 10,000 cubic feet of room volume per welder.

e. Ventilation is required if the welding area does not have one of the features specified in “d” above or if hot work is performed which involves one of the following materials that may be present in the welding rods, welding gases, or on the base metal being worked: fluorine, zinc, beryllium, cadmium, mercury, lead, or stainless steel.

f. If welding involves any of the materials listed in paragraph “3.e” above, the requirements listed in 29 CFR 1910.252, section (c) shall be adhered to. These requirements focus on ventilation and personal protective equipment usage.

g. Mechanical ventilation shall take the form of local exhaust hoods or ventilation booths.

(1) Local exhaust hoods shall be placed as close to the work being performed as possible and shall maintain a minimum flow rate of 100 linear feet per minute at the point where the work is being performed.

(2) Ventilated welding booths shall have a top and at least two sides and maintain a face velocity of no less than 100 linear feet per minute away from the welder.

h. Established Welding Area shall be a sufficient distance from, or separated from, flammable materials and/or duct work that may carry flammable materials or may carry sparks or hot slag to areas containing flammable or combustible material.

i. The Established Welding Area shall be evaluated at least annually for adequacy and the evaluation shall be documented.

28.3.2 If hot work cannot be performed in an Established Welding Area, then a Hot Work Permit shall be issued by the Safety or Environmental/Safety Focal Point before the work may commence. A copy of the Hot Work Permit can be found in attachment A.

28.3.3 Fire Hazards. All potential fire hazards shall be removed from the area. Potential fire hazards include all flammable and readily combustible materials.

a. If all potential fire hazards cannot be removed, then the following requirements shall be met:

(1) If flammable materials cannot be removed from the area or adequately covered/guarded, the hot work shall not be permitted.

(2) Guards, shields, and or fire-blankets shall be used to confine the heat, sparks and or slag from coming into contact with the combustible material within 35 feet of the hot work.

(3) All floor openings and cracks shall be closed, sealed and/or covered to ensure that sparks cannot drop into the openings and come into contact with combustible materials.

b. Suitable fire extinguishing equipment shall be maintained in a state of readiness at all times for instant use. This may include fire extinguishers, water hoses or buckets of sand, depending on the nature of the combustible material exposed. This equipment shall be used in areas that have fixed suppression systems as well as areas without such systems.

c. A Fire Watch shall be present to ensure that sparks, slag and heat generated by the hot work do not start a fire while the welder is working.

(1) The Fire Watch shall remain at the work location for at least a half hour after the hot work has been completed to ensure that no sparks or slag are smoldering and that the heat generated by the hot work did not

cause some other material to smolder thus creating a potential fire hazard.

(2) The Fire Watch shall be trained in the proper use of fire extinguishing equipment and be prepared to use it.

(3) The Fire Watch shall also be aware of other potential hazards associated with the hot work activity such as exposure to welding fumes, welding flash and any other potential hazards unique to the area in which the work is being performed.

d. Cutting or welding on materials that are in contact with combustible walls, partitions, ceilings or roofs shall not be done if the work is close enough to ignite these surfaces by means of conduction.

e. If feasible, floors shall be wet down to prevent ignition.

28.3.4 Equipment shall be arranged so that it does not pose any additional hazards. Examples of such hazards would include placing a gasoline-powered welder near a ventilation intake, or placing an oxy-acetylene unit in an exit way.

28.3.5 Ventilation may be required when hot work is being performed due to the material on which work is being performed or due to fume build-up in small areas. The ventilation shall be equivalent to that required for Established Welding Areas to ensure the person performing the hot work and those working around them are not potentially exposed to the harmful materials.

28.3.6 Any special hazards or precautions specific to the area in which the hot work is being performed shall also be evaluated and noted on the permit.

28.3.7 Any open flame soldering, such as at the towers, shall follow the guidelines for Hot Work Activities. Depending on the type of solder used, respiratory protection may be needed, i.e. solder with lead present.

28.3.8 Hot work is prohibited from being performed in the following areas:

a. Any area not authorized by the Station Manager.

b. In buildings where the sprinkler system is impaired.

c. In the presence of explosive atmospheres or areas in which an explosive atmosphere may develop due to improper cleaning of tanks or equipment that previously contained flammable materials or combustible dusts.

28.3.9 Ducts or conveyors that may carry sparks or slag to combustible materials shall be protected or shut down during hot work activities.

28.3.10 Hot work in confined spaces shall at a minimum meet the following requirements in addition to the requirements of the NWS Occupational Safety and Health Procedure 12, "Confined Space Entry."

a. When the persons performing the hot work leave the confined space for lunch, breaks, etc., the welder shall be disconnected from its power source, the electrodes shall be removed from the leads, and the leads will be located so that accidental contact cannot occur.

b. The valves of any torches used in the confined space as well as the valves on the cylinders supplying the torch shall be closed when not in use for a substantial period of time, such as during lunch or overnight. Where practical, the torch and hose shall be removed from the confined space when not in use.

c. Gas cylinders and welders shall not be taken into the confined space. They shall be left outside of the space and the leads or hoses run into the confined space.

d. Ventilation is required in confined spaces to prevent the accumulation of toxic materials or possible oxygen deficiency. The air replacing the air withdrawn shall be clean and breathable. No employee shall be exposed to a contaminant in excess of its OSHA Permissible Exposure Limit, Short Term Exposure Limit or American Conference of Industrial Hygienists Threshold Limit Value. Additionally, no employee shall enter or work in environments with less than 19.5 percent oxygen by volume without a supplied air respirator or a self-contained breathing apparatus.

e. Oxygen shall never be used for ventilation.

f. Additional requirements shall be added depending on the nature of the confined space.

28.3.11 During hot-work activities the following requirements shall be met to provide minimal protection to personnel. Additional requirements shall be made depending on the nature of the work.

a. All personnel performing hot work shall follow the requirements of NWS Occupational Safety and Health Procedure 1, "Fall Protection", if applicable. An example would be an unguarded elevated work surface.

b. Welding leads and torch hoses and associated equipment shall be placed so that they are clear of passageways, ladders and stairwells.

c. Personnel protective equipment shall be used in accordance with NWS Occupational Safety and Health Procedure 8, "Personal Protective Equipment."

d. Flash protection shall be provided in areas where pedestrian traffic may be exposed to the welding flash.

28.3.12 The Safety or Environmental/Safety Focal Point shall issue Hot Work Permits when work shall be performed outside of Established Welding Areas.

a. Prior to issuing the permit, the Safety or Environmental/Safety Focal Point shall evaluate the area in which the work is to be performed using the criteria in this procedure and shall specify the applicable requirements on the Hot Work Permit.

b. If the Safety or Environmental/Safety Focal Point determines that adequate protection cannot be afforded to the personnel performing the work and other personnel working in the area or the facility, he/she shall not issue the permit until adequate protection can be provided.

c. Each Hot Work Permit shall be specific for the area and type of work. At no time shall the location of the work or the work described on the Hot Work Permit change without obtaining another valid Hot Work Permit or an initialed modification of the original permit. Only the Safety or Environmental/Safety Focal Point may modify the original permit.

d. Once the area has been evaluated and the permit is completed, the Safety or Environmental/Safety Focal Point shall sign the permit.

28.3.13 Persons performing hot work activities shall be aware of potential hazards in the area in which they are working and the requirements specified on the Hot Work Permit designed to mitigate these hazards.

a. The person performing the hot work and the Fire Watch shall be required to read the Hot Work Permit and sign the permit acknowledging the fact that they understand the potential hazards and will follow the requirements of the permit. The person(s) performing the hot work and the Fire Watch shall sign the permit themselves. No one else may sign the permit for them.

b. Once the hot work has been completed, the permit shall be returned to the Safety or Environmental/Safety Focal Point as soon as possible.

28.3.14 Training shall be provided initially to all personnel affected by this procedure and at any time there is a modification to this procedure that will affect work practices.

a. The Safety or Environmental/Safety Focal Point shall be given training that will ensure that he/she has adequate knowledge to evaluate an area using the criteria in this procedure and is able to specify the requirements necessary to perform the work safely.

b. The Fire Watch shall be trained in the proper use of the fire extinguishing equipment that he/she is expected to use as a Fire Watch. The Fire Watch shall also be trained in the use of any protective equipment or procedures necessary to protect himself/herself and other personnel in the area and the facility.

c. Persons performing the hot work shall be trained in the proper use of the equipment they will be using to perform the hot work.

(1) They shall also be trained in the proper use of the fire extinguishing equipment that is provided for the use of the Fire Watch.

(2) They shall also be properly trained in the use of any protective equipment or procedures necessary to protect themselves or other personnel in the area and the facility.

28.4 Quality Control

28.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

28.4.2 Station Manager

a. Shall review or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator. This review shall include a spot check of the Hot Work Permits issued over the past year to ensure that they have been properly completed.

b. Shall ensure that initial and periodic inventory of fire extinguishers, guards, shields, fire blankets, flash protection and other safety equipment is accomplished and adequate stock is maintained.

28.4.3 Safety or Environmental/Safety Focal Point

Shall perform an annual assessment of Established Welding Areas to ensure these areas are maintained in compliance with this procedure.

28.4.4 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

28.5 Responsibilities

28.5.1 Regional or Operating Unit Safety Environmental/Safety Coordinators*

a. Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

b. Shall perform an annual assessment of Established Welding Areas to ensure these areas are maintained in compliance with this procedure.

28.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that the Fire Watch and other NWS personnel affected by this procedure are trained in accordance with the requirements of this procedure and training records are maintained.

c. Shall ensure any designated welding areas meet the requirements of this procedure and approve the area for use as such and shall ensure that corrective actions are implemented.

d. Shall designate any areas in which hot work is prohibited.

28.5.3 Safety or Environmental/Safety Focal Point*

a. Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

b. Shall issue hot work permits in accordance with the requirements of this procedure and keep copies of issued Hot Work Permits for 18 months.

c. Shall, at a minimum, inspect designated welding areas to ensure the areas are in compliance with the requirements of this procedure. These inspections shall be documented and kept on file for a minimum of 3 years.

28.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

28.5.5 Fire Watch

a. Shall be present when all hot work is performed to ensure a fire is not started due to the hot work and shall remain at the location for a minimum of one-half hour after the work has been completed.

b. Shall be trained in the proper use of a fire extinguisher and be expected to use the fire extinguisher in the event of a fire.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

28.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

28.6.1 National Fire Protection Association, NFPA 51B, "Fire Prevention in Use of Cutting and Welding Processes."

28.6.2 National Weather Service, NWS Occupational Safety and Health Procedure 12, "Confined Space Entry".

28.6.3 National Weather Service, NWS Occupational Safety and Health Procedure 1, "Fall Protection."

28.6.4 National Weather Service, NWS Occupational Safety and Health Procedure 8, "Personal Protective Equipment."

28.6.5 National Weather Service, NWS Occupational Safety and Health Procedure 6, "Fire Protection."

28.6.6 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910 Sub-part Q "Welding, Cutting, and Brazing."

28.7 Attachments

Attachment A. Hot Work Permit (template)

ATTACHMENT A

Hot Work Permit (Template)

Hot Work Permit Number _____

VALID FROM _____ **EXPIRES** _____
Date Time Date Time

LOCATION OF WORK: _____

This Hot Work Permit is VALID.

_____

Safety or Environmental/Safety Focal Point Signature

WORK REQUIREMENTS

Check / All That Apply and Add Specifics

Fire Ext. _____

Cover Openings _____

Equipment Arrangement _____

Fire Suppression Equipment _____

_____

_____

Fire Watch _____

_____

_____

Relocate Combustible Materials _____

Ventilation _____

Wet Floors _____

Other Requirements _____

_____

DESCRIPTION OF WORK: _____

_____

_____

I understand and will comply with all requirements on this permit.

Signature	Printed Name

Return this permit to the Safety or Environmental/Safety Focal Point immediately upon completion of work or permit expiration.

PROCEDURE 29 - Small Boat Safety

Table of Contents Page

Synopsis 29-ii
Small Boat Safety Checklist 29-iii

29 SMALL BOAT SAFETY 29-1
29.1 Purpose and Scope 29-1
29.2 Definitions 29-1
29.3 Procedure 29-2
29.4 Quality Control 29-6
29.5 Responsibilities 29-7
29.6 References 29-8
29.7 Attachments 29-8

ATTACHMENT A 29-A-1
Casualty/Accident Report Form 29-A-1

ATTACHMENT B 29-B-1
Display of Capacity Information 29-B-1

ATTACHMENT C 29-C-1
Sample Float Plan 29-C-1

Synopsis

The purpose of this procedure is to establish requirements relative to the hazards associated with the operation of small boats. This procedure applies to all NWS work locations and employees where small boats are owned/operated by an NWS facility.

Initial Implementation Requirements:

- **Analyze Site Operations versus Procedure Requirements**
- **Develop/Obtain Documentation/Information required for Site**
  - Obtain Vessel Certification Number from State. *(29.3.1c.1)*
  - Determine Fuel Tank Capacity. *(29.3.4c)*
- **Designate Person to Administer Small Boat Safety Procedure Requirements**
- **Provide Local Training for Site Personnel**
  - Training of Certified Boat Operator (CBO) and all crew. *(29.3.11a)*
  - Emergency Procedure Training for CBO and all crew, as needed. *(29.3.11a.1)*
- **Provide Special Training of Site Personnel**
  - Certified Boat Operator Training. *(29.2.1)*
- **Inventory Material/Equipment (Procure as needed)**
  - Minimum Equipment as specified in 29.3.3a-n *(25.5.2b)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Conduct Periodic Safety Inspections. *(29.3.10a)*
  - Perform Preventive Maintenance of all required equipment. *(29.3.10b)*
- **Review/Update Documentation/Information required for Site**
- **Provide Refresher Training for Site Personnel**
  - Small Boat Safety Refresher Training for CBO and all crew. *(29.3.11a)*, as needed
  - Emergency Procedure Refresher Training for CBO and all crew, as needed. *(29.3.11a.1)*
  - Changing job assignments and additional responsibility training. *(29.3.11a.2)*, as needed
- **Provide Refresher Special Training for Site Personnel**
  - Certified Boat Operator refresher training, if applicable.
- **Inspect/Replace/Maintain Material/Equipment**
  - Minimum Equipment as specified in 29.3.3a-n *(25.5.2b)*

Small Boat Safety Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	29.4.2				
Does the Certified Boat Operator (CBO) ensure that the crew complies with all applicable safety requirements and procedures?	29.3.1c.4				
Are all boats marked with a valid certification number?	29.3.1c.1				
Do only Certified Boat Operators operate boats?	29.3.1b				
Does the CBO assign a lookout crew person for swimmers or scuba divers?	29.3.1c.5				
Are float plans being completed and supplied to the Safety or Environmental/Safety Focal Point or Station Manager prior to each boat trip?	29.3.1c.2				
Are appropriate personal flotation devices being utilized by boat personnel?	29.3.2a				
Are all boats, equipped with the minimum equipment requirements as stated in this procedure?	29.3.3.a-n				
Are proper fueling procedures being followed?	29.3.4				
Are all boats clearly marked with loading limits in accordance with this procedure?	29.3.5b				

Requirements	Reference	YES	NO	N/A	Comments
Do all CBOs complete the required safety procedures prior to operating the boat?	29.3.6a.1-10				
Are correct transfer of personnel procedures being used?	29.3.7				
Are complete shutdown/securing procedures being implemented?	29.3.8				
Are boat accidents being reported in a proper and timely manner to the Station Manager, RSM and the Regional Environmental/Safety Coordinator?	29.3.9b				
Is a “Casualty or Accident Report” being completed and submitted to the proper authorities?	29.3.9d				
Are accidents being recorded and reported according to Occupational Safety and Health Procedure # 18 “Accident/Illness Reporting and Recording” and Section 29.3.9?	29.3.1c.6				
Are periodic maintenance checks of each boat being conducted and recorded?	29.3.10a				
Is scheduled preventative maintenance conducted regularly on boats, trailers and engines?	29.3.10b				
Are all CBO’s and crew personnel trained in small boat safety and emergency procedures involving boating accidents?	29.3.11a				

Requirements	Reference	YES	NO	N/A	Comments
Are annual reviews of this procedure being conducted to ensure that the facility is complying with the requirement of this procedure?	29.4.2a				

29 SMALL BOAT SAFETY

29.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to hazards associated with the operation of small boats. This procedure applies to all NWS work locations and employees where small boats are owned/operated by an NWS facility.

29.2 Definitions

Certified Boat Operator (CBO). An National Weather Service (NWS) employee who holds either a current U.S. Coast Guard operator's license or equivalent, or has completed the 7-hour "Boating Skills and Seamanship" course conducted by the U.S. Power Squadron.

Crewman. Any NWS or contractor employee who is a passenger on an NWS boating operation.

EPIRB. Emergency position indicating radio beacon.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), or a Data Collection Office (DCO).

Lookout Crewman. A NWS employee who is appointed by the CBO to look out and warn of swimmers, scuba divers, etc., in the boating area.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Personal Floatation Device (PFD). Life preservers, buoyant vests, special purpose water safety devices, buoyant cushions, or ring buoys and work vests, each of which must be United States Coast Guard approved.

RSM. A NOAA Regional Safety Manager.

Small Boat. Any NWS boat approximately 25 feet or less in length.

Station Manager. For the purpose of this procedure, the Station Manager will be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Valid Certificate Number. An identification number placed on a vessel and issued in the state in which the vessel is principally used.

29.3 Procedure

29.3.1 Operating Boats

a. The provisions of 33 CFR, "Navigation and Navigational Water" and the regulations of the State or Territory in which the boat is operated are the basis for all safety and health procedures involving the operation of small boats. Compliance with the most current editions of these standards and all other applicable regulations is required.

b. Only a Certified Boat Operator (CBO) shall operate the boat.

c. The CBO shall:

(1) Ensure that a valid certificate number is on the boat.

(2) Leave a float plan (See Attachment C: Sample Float Plan) with the safety focal point or the station manager before departing on any boat trip. This plan should contain the boat number, a description of the boat, the number of passengers, the names and ages of all passengers, the destination and proposed route, estimated time of return and other pertinent information.

(3) Ensure that only qualified personnel are allowed to operate the boat.

(4) Ensure that all crewmen comply with all applicable safety requirements and procedures.

(5) Assign a "lookout crewman" to alert the CBO of swimmers or scuba divers.

(6) Report any accident according to Section 29.3.9 and/or according to Occupational Safety and Health Procedure 18, "Accident/Illness Reporting and Recording".

29.3.2 General Safety Procedures

a. All personnel on board an operating NWS small boat shall wear a Type I, II or III personal floatation device (PFD).

(1) Type I PFD, or Offshore Life Jacket**,** provides the most buoyancy. It is effective for all waters, especially open, rough, or remote waters where rescue may be delayed. It is designed to turn most unconscious wearers in the water to a face-up position. The Type I comes in two sizes: Adult size provides at least 22 pounds of buoyancy, the child size, 11 pounds, minimum.

(2) Type II PFD, or Near-Shore Buoyant Vest, is intended for calm, inland water or where there is a good chance of quick rescue. This type will turn some unconscious wearers to a face-up position. The turning action is not as pronounced nor as effective as a Type I. An adult size provides at least 15.5 pounds buoyancy, a medium child size provides 11 pounds. Infant and small child sizes each provide at least 7 pounds buoyancy.

(3) Type III PFD, or Floatation Aid, is good for calm, inland water, or where there is a good chance of quick rescue. It is designed so that wearers can put themselves in a face-up position in the water. The wearers may have to tilt their heads back to avoid turning face down. Type III has the same minimum buoyancy as a Type II PFD. Float coats, fishing vests, and vests designed for various water sports are examples of Type III PFDs.

b. Personnel shall only ride in or on parts of the boat designated for such use.

c. All boats shall be kept clean and free of wastes and materials that could cause a fire or tripping hazard.

d. Smoking is prohibited on all small boats.

29.3.3 Minimum Equipment Required for Small Boats

a. Back-fire flame arrestor for each carburetor of all gasoline engines except outboard motors.

b. Appropriate ventilation equipment for ventilating closed compartments that contain gasoline engines.

c. Boats 16 feet or greater in length, the boat must also contain a Type IV throwable floatation device.

d. Sound-producing device such as a whistle, bell or horn.

e. Visual distress signal devices for nighttime boat use; for boats 16 feet or greater in length, the boat must also contain signals approved for both daytime and nighttime use (required for coastal waters only).

f. All power boats, except outboards, under 26 feet and of open construction must carry one B-1, U.S. Coast Guard approved fire extinguisher.

g. Appropriate lighting, including port and starboard lights.

h. Method of two-way communication (VHF radio or cellular phone).

i. Boat hook.

j. Oar, paddle or other alternate propulsion device.

k. Knife.

l. Bow line.

m. First aid kit.

n. Anchor.

29.3.4 Fueling Boats

a. During fueling, all doors, hatches and ports must be closed. Additionally, all galley fires and pilot lights must be extinguished before fueling can begin.

b. Smoking is prohibited at all times.

c. Fuel tank capacity should be known in order to determine the amount of oil necessary if the boat requires a gasoline/oil mixture.

d. All portable tanks shall be fueled outside the boat.

e. After fueling, all fuel tank spaces shall be ventilated for at least five minutes. The machinery and fuel tank spaces shall then be checked for the presence of fuel spills or fuel vapors. If a spill or vapor is detected, clean up the spill and continue ventilating the associated spaces until the vapors are no longer detected. Note: Test equipment to identify the presence of fuel vapors is not required.

29.3.5 Safe Loading

a. The maximum weight capacity shall not be exceeded in any small boat. Weight capacity limits can be obtained from Coast Guard, 33 CFR 183, Subpart C, "Safe Loading."

b. All boats shall be clearly marked with loading limits in accordance with Coast Guard, 33 CFR 183, Subpart B, "Display of Capacity Information." (See Attachment B).

29.3.6 Preparing for Start-Up

a. The CBO shall complete the following steps before operating the boat:

(1) Check oil and gas levels.

(2) Check navigation lights and horns.

(3) Ensure the engine is in neutral.

(4) Trim engines (tilt) and test the engine steering responses to be sure no lines or other materials are fouled in the engine lower units.

(5) Secure all cargo and equipment.

(6) Check battery connections and assure battery is fully charged.

(7) Ensure all hull bilge drain plugs are in place and secure.

(8) Check bilge level and pump operation.

(9) Ensure water pumps are operational immediately after starting.

(10) Ensure proper operation of radio (call another vessel or station) and other navigation equipment (EPIRB, compass, loran C, radar, GPS, etc.).

29.3.7 Transfer of Personnel

a. Before boarding, prepare safety lines and floats. Ensure that all personnel have appropriate personal floatation devices.

b. Check wind and current and be adjust equipment to compensate for their effects. Set up all lines for safe operation.

c. Approach buoy or object from the lee side.

d. Personnel may be transferred to and from the boat on either the bow or port and starboard quarters as dictated by weather conditions and the operator's personal judgement.

e. Instruct the crewman to place fenders at the location of transfer and to never use hands, arms or legs to try and stop the contact of the boat with any object.

f. Whenever possible, moor at least one line to the buoy or object for more control.

g. Have the crewman remain at the transfer location to assist in the transfer of personnel.

h. If a person(s) falls in the water, immediately shut off engines (calm seas) or switch engines to neutral to stop propellers from moving (rough seas) and begin retrieval of the person(s) in the water.

29.3.8 Shutdown/Securing

a. The CBO and crewmen shall complete the following steps to shut down and secure the boat:

(1) Turn off gas line to engines while engines are still running.

(2) Turn off engines after the gas is depleted in the engine and line.

(3) Tilt engines fully to raised position.

(4) Secure all navigation lights and equipment and turn off battery power.

(5) Pick up all loose lines, equipment and materials and stow onboard or remove from the boat as required.

(6) Close all doors and windows.

29.3.9 Reporting Boat Accidents

a. The CBO shall give his/her name, address, and vessel identification number to the injured person(s) or to the owner(s) of damaged property.

b. The CBO shall notify the Station Manager, Regional Safety Manager, and the Regional or Operating Unit Environmental/Safety Coordinator of any accident that occurs as soon as possible.

c. The CBO shall submit the proper information in accordance with state/territory regulations and the requirements of Coast Guard, 33 CFR 173.57, "Casualty or Accident Report." (See Attachment A, Casualty/Accident Report Form).

d. The Casualty or Accident Report shall be submitted to:

(1) The reporting authority where the vessel number was issued, or

(2) The reporting authority where the accident occurred, if it occurred outside the state where the vessel is registered.

29.3.10 Maintenance and Repair

a. Periodically check the condition of the following items as applicable: ropes, anchor chain, wiring and electrical connections, hull, nuts and bolts, prop, the trailer tongue, tires, lights, structural members, rollers and guides, bearings, and winch lubrication. An entry shall be made into the boat record after each periodic check, even when the check was unscheduled.

b. Preventive maintenance (PM) to the boat, trailer, and engines shall be conducted regularly with the schedule based on engine run time and/or calendar days (monthly, quarterly, semi-annually, annually, etc.).

c. Routine repairs to the boat, trailer, and engines shall be performed based in part on the information gathered from the periodic checks and from PM inspections.

29.3.11 Training Requirements. All CBOs and crewmen shall receive training on small boat safety. Additional training shall be provided as needed:

a. On emergency procedures involving boating accidents.

b. For changing job assignments and for expanded responsibilities.

29.4 Quality Control

29.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

29.4.2 Station Manager

Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

29.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

29.5 Responsibilities

29.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

29.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall provide and maintain, as necessary, equipment listed in 29.3.3a-n.

29.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

29.5.4 Employees*

a. Employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

c.

NOTE:	* - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

29.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

29.6.1 Navigation and Navigable Waters, Title 33 of the Code of Federal Regulations.

29.6.2 Battelle Memorial Institute, Standards-Based Management System (SMBS), *Boat Operations*. http://sbms.pnl.gov:2080/standard/1m/1m00t010.htm, 1995-1998.

29.6.3 BoatSafe.com, *Nautical Know How*, International Marine Educators, Inc., 1998, http://boatsafe.com/nauticalknowhow/index.htm, November 8, 1998.

29.6.4 BoatSafe.com, The Rules of the Road: International Regulations for Avoiding Collisions at Sea, Marine Educators, Inc., 1998,. http://boatsafe.com/nauticalknowhow/index.htm, November 8, 1998.

29.6.5 NAO 217-103, Management of NOAA Small Boats.

29.6.6 NAO 209-115, NOAA Employees Aboard Non-NOAA Vessels.

29.6.7 NWS Occupational Safety and Health Procedure #18, "Accident/Illness Reporting and Recording."

29.7 Attachments

Attachment A. Casualty/Accident Report Form

Attachment B. Display of Capacity Information

Attachment C. Sample Float Plan

ATTACHMENT A

Casualty/Accident Report Form

Date:_____ Time:_____ Location:_____

Name of nearest town, county, state, body of water:_____

Visibility/weather/water conditions:_____

Estimated air/water temperatures:_____

Registration/certificate number(s) and name(s) of each vessel involved:_____
_____
_____
_____

Name and address of each owner of each vessel involved:_____
_____
_____
_____

Name and address of each operator of each vessel involved: _____
_____
_____
_____

Name, address, age or date of birth, telephone number, vessel operating experience, and boating safety training of the operator making the report:_____
_____
_____
_____
_____

Number of persons on board or towed on skiis by each vessel:_____

Name, address, and date of birth of each person injured or killed:_____
_____
_____
_____

Cause of each injury/death:_____
_____
_____

_____

_____

Weather forecasts available to, and weather reports used by, the operator before and during the use of the vessel:_____

_____

_____

_____

_____

Name and address of each owner of property involved:_____

_____

_____

_____

_____

Availability and use of personal flotation devices:_____

_____

_____

_____

_____

Type and amount of each fire extinguisher used:_____

_____

_____

_____

_____

Nature and extent of each injury:_____

_____

_____

_____

_____

Description of all property damage and vessel damage with an estimate of the cost of all repairs:_____

_____

_____

_____

_____

Description of each equipment failure that caused or contributed to the cause of the casualty:_____

_____

_____

_____

Description of the vessel casualty or accident:_____

_____

_____

_____

Type of vessel operation (cruising, drifting, etc.) and the type of accident (capsizing, sinking, fire, or explosion or other):_____

_____

_____

_____

Opinion of the person making the report as to the cause of the casualty, including whether or not alcohol and/or drugs, were a cause or contributed to causing the casualty:_____

_____

_____

_____

Make, model, type (open, cabin, house or other) beam width at widest point, length, depth from transom to keel, horsepower, propulsion, fuel, construction, and year built, of the reporting operator's vessel:_____

_____

Name, address and telephone number of each witness:_____

_____

_____

Manufacturer's hull identification number, if any, of the reporting operator's vessel:_____

_____

_____

_____

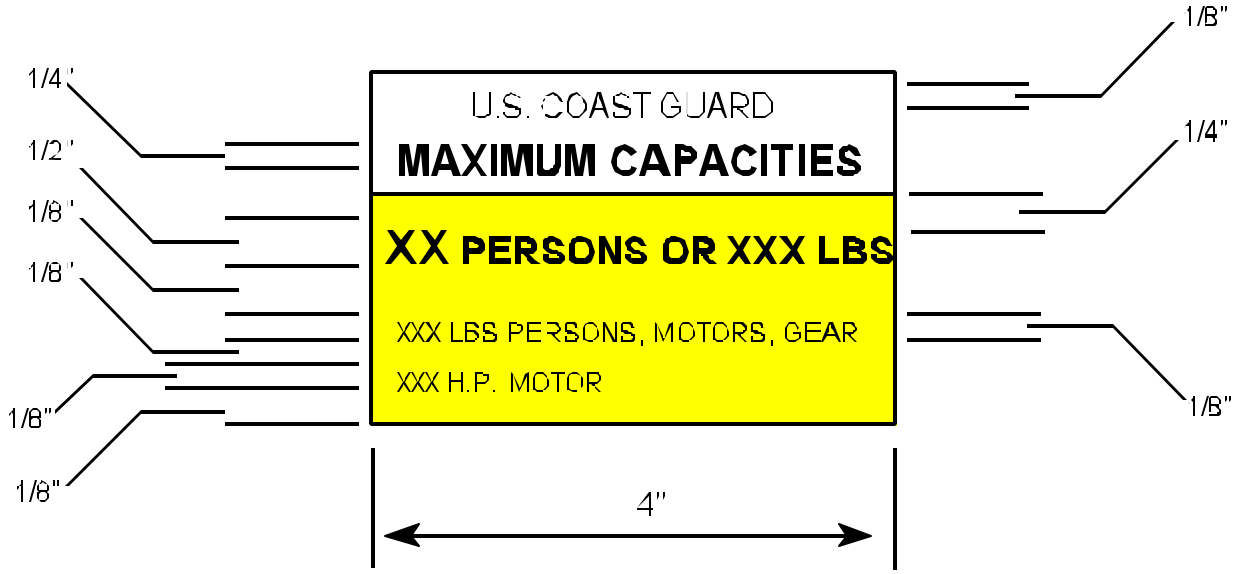
Name, address and telephone number of the person submitting the report:_____

_____

_____

ATTACHMENT B

Display of Capacity Information



All Dimensions Are Minimum

ATTACHMENT C

Sample Float Plan

Name of vessel's operator:	
Telephone Number:	
Name of Vessel:	
Registration/Certificate No.:	
Description of Vessel: Type: Make: Color of Hull: Color of Trim: Most distinguishing identifiable feature:	

Rafts/Dinghies: Number: _____ Size: _____ Color: _____

Number of persons onboard: (List additional passengers on back).

Name:	Age:	Address & Telephone

Engine Type: _____ H.P.: _____ Normal Fuel Supply: _____

Survival equipment on board: (check as appropriate)		
~ Life Jackets	~ Flares	~ Smoke Signals
~ First Aid Kit	~ EPIRB	~ Paddles
~ Fire Extinguisher	~ Boat Hook	~ Knife
~ Bow Line	~ VHF Radio/Cell Phone	~ Bell, Whistle or Horn
~ Anchor	~ Loran/GPS	~ _____
Food for _____ days - Water for _____ days		
Trip:		
Date and Time of Departure:		
Departure From:		
Departure To:		
Expected time of arrival: _____ In no case later than: _____		
Additional information:		

PROCEDURE 30 - Office Safety

Table of Contents

Synopsis 30-ii
Office Safety Checklist 30-iii

30 OFFICE SAFETY 30-1
30.1 Purpose And Scope 30-1
30.2 Definitions 30-1
30.3 Procedure 30-1
30.4 Quality Control 30-7
30.5 Responsibilities 30-7
30.6 References 30-8
30.7 Attachments 30-9

Synopsis

The purpose of this procedure is to provide guidance relative to the potential hazards associated with working in the office facilities. This procedure applies to all National Weather Service (NWS) office facilities and employees.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Office Security *(30.3.17)*
  - Evaluate office environment. *(30.5.2b, 30.3.1)*
    - < Housekeeping *(30.3.3)*
    - < Storage Procedures *(30.3.4)*
    - < Filing Cabinets and Bookcases *(30.3.5)*
    - < Ladders and step stools *(30.3.6a)*
    - < Lighting *(30.3.9)*
    - < Noise *(30.3.10)*
- **Develop/Obtain Documentation/Information required for Site**
- **Designate Person to Administer the Office Safety Procedure Requirements**
- **Provide Local Training of Site Personnel**
  - Training on safe office environment. *(30.3.1)*
- **Inventory Material/Equipment (Procure as required)**
  - Hazard Warning Signs. *(30.4.2b, 30.3.2d)*
  - Ladders, Step Stools. *(30.4.2b, 30.3.6a)*
  - Lighting. *(30.4.2b, 30.3.9)*
  - Biohazard Containers. *(30.4.2b, 30.3.13)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Evaluate office environment *(30.5.2b, 30.3.1)*
- **Review/Update Documentation/Information required for Site**
- **Provide Refresher Training of Site Personnel (If Applicable)**
- **Inspect/Replace/Maintain Material/Equipment**
  - "Hazard Warning" Signs. *(30.4.2b, 30.3.2c)*
  - Office Furniture. *(30.4.2b, 30.3.3b)*
  - Ladder or Step Stool. *(30.4.2b, 30.3.6a)*
  - Lighting. *(30.4.2b, 30.3.9)*
  - "Biohazard" Containers. *(30.4.2b, 30.3.13)*

Office Safety Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	30.4.2				
Have all individuals affected by this procedure read, understood and followed the procedure?	30.5.4				
Do all personnel at this facility comply with general safety guidelines related to working and walking surfaces?	30.3.2a-g				
Are all aisles and passageways free and clear of obstructions?	30.3.3a				
Has office furniture been inspected/repaired/replaced when damaged?	30.3.3b				
Are all office supplies and materials stored neatly and are easily accessed from the aisles?	30.3.4				
Are the guidelines concerning filing cabinets and bookcases followed?	30.3.5a-e				
Are ladders and step stools being used when retrieving objects above shoulder level?	30.3.6a				
Have “Layout and Furniture Placement Guidelines” been followed?	30.3.7a-d				
Are adequate devices provided to employees who work at computer stations, to prevent neck, shoulder, back, and leg injuries?	30.3.8				
Is adequate lighting provided to all affected personnel?	30.3.9				
Has this facility implemented guidelines stated in this procedure and NWS Occupational Safety and Health Procedure # 11, “Hearing Conservation”, to alleviate noise pollution in the workplace?	30.3.10a-g				

Requirements	Reference	YES	NO	N/A	Comments
Does this facility comply with the requirements stated in NWS Occupational Safety and Health Procedure # 13, “Indoor Air Quality”?	30.3.11				
Is waste properly disposed of and containers properly labeled at this facility?	30.3.12				
Are all contaminated “Sharps”(syringes, blood sampling devices, etc.) discarded appropriately?	30.3.13				
Does this facility comply with the requirements stated in NWS Occupational Safety and Health Procedure # 5, “Emergency Action Plan” & Procedure # 6, “Fire Protection”?	30.3.15				
Are electrical safety precautions stated in this procedure implemented at this facility?	30.3.16				
Is office security practiced by all employees?	30.3.17				
Are office personnel familiar with the purpose and operation of office safety alarms?	30.3.18				

30 OFFICE SAFETY

30.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to the potential hazards associated with working in office facilities. This procedure applies to all NWS office facilities and employees.

30.2 Definitions

Ergonomics. Ergonomics is the science of fitting the jobs to the people who work in them. The goal of an ergonomics program is to reduce work-related musculoskeletal disorders (MSDs).

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Housekeeping. Refers to the maintenance of an area in a clean, orderly and sanitary condition.

Noise. Any unwanted sound.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

30.3 Procedure

30.3.1 The NWS offices may harbor potential safety and health hazards. These hazards may be minimized or eliminated by designing jobs and offices properly. NWS supervisors shall actively support office hazard prevention and control. Education regarding potential injuries, their causes, symptoms and treatments shall be provided as a method that assists both supervisors and personnel in creating a safe office environment.

Inadequate environmental conditions, such as noise, temperature and humidity, environmental pollutants (e.g., vapors from new carpeting, paint fumes) may cause discomfort that may affect employees' productivity. Measures shall be taken to reduce these discomforts to the maximum extent possible.

30.3.2 General Safety Procedures. All facilities shall comply with the requirements listed in NWS Occupational Safety and Health Procedures 14, "Walking and Working Surfaces." Guidelines to follow include:

a. Avoid carrying objects that might obstruct view.

b. Walk with special care over wet floors or with wet shoes.

c. Wipe shoe soles on rainy or snowy days upon entering the workplace.

d. Implement use of "hazard warning signs" to avoid potential slips and falls.

e. Securely fasten floor coverings to prevent possible falls.

f. Utilize handrails when going up and down stairways in order to lower the risk of possible falls.

g. Walk with caution over icy, oily or snow covered surfaces outside the buildings. Report dangerous conditions to management personnel to ensure that a proper treatment of walking surfaces is performed.

30.3.3 Housekeeping. Poor housekeeping may lead to fires, injuries to personnel, or unhealthful working conditions. The following good housekeeping practices shall be employed at all NWS offices:

a. All aisles and passageways shall be free and clear of obstructions. The width of the aisles must be as outlined in paragraphs 6.3.5j-m of Section 6, Fire Protection. Proper layout, spacing, and arrangement of equipment, furniture, and machinery are essential.

b. Chairs, files, bookcases and desks shall be replaced or repaired when they pose a hazard to personnel safety.

c. Materials stored within supply rooms shall be neatly stacked and easily accessed by adequate aisles.

d. Materials shall not be stored so that they project into aisles and passageways.

e. The minimum vertical clearance between sprinklers, where installed, and material below shall be 18 inches (45.7 cm)

30.3.4 Storage Procedures. Guidelines to follow for safe storage include:

a. Stack boxes in straight columns, with the largest on the bottom. When stocking shelves, keep the heaviest items at waist level to minimize lifting effort.

b. Keep all aisles clear.

c. Place wastebaskets and boxes where they do not present a tripping hazard.

30.3.5 Filing Cabinets and Bookcases. Filing cabinets and bookcases can be dangerous if arranged or used incorrectly. Guidelines to follow for their safe use are:

a. Return drawers and doors to the closed position when not in use so as to prevent bumping and tripping. Do not open more than one drawer or door at the same time.

b. Place file cabinets and/or bookcases where their use will not interfere with office traffic patterns.

c. Secure or anchor file cabinets or bookcases taller than 64 inches to the wall to prevent toppling over.

d. In the case of four-drawer filing cabinets, fill the second drawer from the bottom before the others to weight the bottom and to prevent it from tilting or tipping.

e. Keep filing cabinet drawers closed when not in use.

30.3.6 Falls. Falling while attempting to retrieve items from high shelves is a common occurrence. When removing items from shelves, the following guidelines are recommended:

a. Always use a ladder or step stool to retrieve anything above shoulder level.

b. Desks, chairs, boxes, and upturned trash cans are not acceptable substitutes for ladders or step stools.

c. Ladders or step-stools shall be sturdy and conform to requirements of NWS Occupational Safety and Health Procedure 14, Walking and Working Surfaces.

30.3.7 Layout and Furniture Placement. The physical layout of a workplace and the furniture is another factor that should be considered when maximizing office safety. This includes the following:

a. Position office computers and equipment near electrical outlets to minimize the use of extension cords and to avoid stretching cords across aisles.

b. Maintain enough room in front of drawers to open fully without obstructing aisles and passageways.

c. Place desks and counter tops near primary light sources to avoid eyestrain caused by poor lighting.

d. Position desks and file cabinets so their drawers do not open into a doorway.

30.3.8 Workstation Ergonomics. Musculo-skeletal problems may be encountered by NWS personnel involved in computer operations. Most affected are the neck, shoulders and the back. Other affected parts of the body are the arms and hands and, occasionally, the legs. The degree of impact on personnel can be reduced by following the requirements listed in NWS Occupational Safety and Health Procedure 25, "Ergonomics."

30.3.9 Lighting. Different tasks require different levels of lighting. Lighting needs vary from time to time and person to person. One approach is to use adjustable lighting that can provide needed illumination without increased general lighting.

Task lamps can be used to supplement the general office light levels for those who require or prefer additional light. Some task lamps permit several light levels. Since task lamps are controlled by the individual, they can accommodate personal preferences.

30.3.10 Noise. The most common types of noise pollution in an office are generated from the operation of equipment and verbal communication. Noise pollution can decrease performance or increase errors when performing some tasks. Also, there is some indication that unexpected or unpredictable noise may have more of an effect than continuous or periodic noise. To alleviate noise pollution in the workplace, the following guidelines shall be implemented:

a. Noise levels in all work areas shall comply with the requirements listed in NWS Occupational Safety and Health Procedures 11, "Hearing Conservation."

b. Select the least noisy equipment possible when purchasing office equipment. When the choice is between two or more products of equal specifications, sound levels shall be included as a consideration for purchase and use.

c. Properly maintain equipment, lubricate and tighten loose parts that can cause noise.

d. Locate loud equipment in areas where its effect is less detrimental. For example, place impact printers away from areas where people must use the phone.

e. Use barrier walls or dividers to isolate noise sources. Use of buffers or acoustically treated materials can absorb noise that might otherwise travel further. Rubber pads to insulate vibrating equipment can also help to reduce noise.

f. Enclose noisy equipment, such as printers, with acoustical covers or housings.

g. When possible, schedule noisy tasks at times when they will have less of an effect on the other tasks in the office.

30.3.11 Indoor air quality. Air quality in all work areas shall comply with the requirements listed in NWS Occupational Safety and Health Procedures 13, "Indoor Air Quality."

30.3.12 Waste Disposal. NWS personnel shall carefully handle and properly dispose of waste. For example, a waste receptacle containing broken glass shall be labeled to warn personnel of the potential laceration/puncture hazard. In addition, if any hazardous material is improperly placed in the trash container, the safety or Environmental/Safety Focal Point, supervisor and other office personnel shall be immediately informed. Further directions regarding the disposal of trash contaminated with hazardous materials shall be obtained from the Regional or Operating Unit Environmental/Safety Coordinator or directly from the local hazardous waste disposal company.

30.3.13 Sharps Program. Sharps (e.g., syringes/blood sampling devices used by diabetics) contaminated with blood or other body fluids shall be discarded in containers immediately or as soon as feasible. The requirements for these containers are that they should be:

a. Closable.

b. Puncture resistant.

c. Leakproof on sides and bottom.

d. Labeled or color-coded with the appropriate BIOHAZARD labeling requirements.

e. Easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found.

f. Maintained upright throughout use.

g. Replaced routinely and not be allowed to overfill.

h. Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

i. Placed in a secondary container if leakage is possible. The second container shall also be closable, constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping, and must be labeled or color-coded appropriately.

j. Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of injury.

30.3.14 Machine Safety

a. All appropriate personnel shall comply with the requirements listed in NWS Occupational Safety and Health Procedure 19, “Hand and Power Tool Safety” and Procedure 20, “Machine Guarding.”

b. In addition, employees shall keep fingers and body parts away from moving and/or sharp parts when using tools such as the following:

(1) Staplers

(2) Staple removers

(3) Scissors

(4) Hole punchers

(5) Paper cutters

30.3.15 Emergencies. All personnel shall comply with the requirements listed in NWS Occupational Safety and Health Procedure 5, "Emergency Action Plan" and Procedure 6, "Fire Protection."

30.3.16 Electrical Safety. Electrical equipment used in the office (e.g., electric cords, extension cords) may present an electric-shock hazard.

a. All personnel shall comply with the requirements listed in NWS Occupational Safety and Health Procedure 3, "Safe Electrical Work Practices" and Procedure 4, "Control of Hazardous Energy Sources."

b. Electric cords shall be routinely examined for fraying and exposed wiring. Particular attention shall be given to connections behind furniture, since files and bookcases may be pushed tightly against electric outlets, severely bending the cord at the plug.

c. Extension cords:

(1) Shall only be used in situations where fixed wiring is not feasible.

(2) Shall be placed so they do not present a tripping or slipping hazard.

(3) Shall not be placed through doorways to prevent the damage of the cord when doors must be closed.

(4) Shall be used only when properly sized for the job.

(5) Shall be taped down to reduce the risk of tripping.

d. When operating any electrical appliance or machine within ten feet of running water, a Ground Fault Circuit Interrupter (GFCI) shall be installed and the appliance plug shall be grounded.

e. Addition of portable appliances, such as heaters and microwave ovens, shall be cleared through appropriate management channels to ensure the electrical system can support the increased current load.

NOTE: Heaters shall be equipped with tip-over switch and should have thermostat automatic shut-off switch for overheating protection in case if heater tips over.

f. To avoid short circuits and fires, do not plug more than two appliances into one electrical socket.

30.3.17 Office Security. All personnel must be alert to the preservation of office security which includes prevention of unauthorized entry into the building and protection of outside facilities. The following practices should be followed:

a. Keep unmonitored doors locked at all times.

b. Keep all doors locked during night-time hours.

c. View electronic monitors (if available) for activity outside the office.

d. Be alert to strange noises or activities.

30.3.18 Safety Alarms. Office personnel should be aware with the purpose and operation of safety alarms such as:

a. Fire alarms.

b. Smoke detector alarms.

c. Generator fuel leak alarms.

d. Power failure and generator operating alarm (light).

e. UPS failure alarm.

f. HVAC alarms.

30.4 Quality Control

30.4.1 Regional and Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure; and

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

30.4.2 Station Manager

a. Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

b. Shall ensure that initial and periodic inventory of safety signs, ladders, step stools and other safety equipment is accomplished and adequate stock is maintained.

30.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

30.5 Responsibilities

30.5.1 Regional and Operating Unit Environmental/Safety Coordinators*Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

a. Shall provide revisions, updates and new policies associated with employee exposure to and proper clean up and disposal of asbestos at NWS facilities.

30.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that office work environment is evaluated initially and periodically for potential safety and health hazards.

c. Shall ensure that NOAA-mandated monthly safety inspections are conducted. The inspection records must be kept on site. The suggested checklists to be used are published on the following web site:

http://www.ops1.nws.noaa.gov/SAFETY/Safety_Inspections.htm
The checklists can be modified to include site-specific requirements.

30.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

30.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

30.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

30.6.1 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1030, "Bloodborne Pathogens."

30.6.2 Carnegie Mellon University, Office Safety. September 22, 1999. http://www.cmu.edu/ehs/office-safety.html. April 6, 1999.

30.6.3 Centers for Disease Conrol and Prevention, Office Safety. September 21, 1999. http://www.cdc.gov.od/ohs/manual/ofsfty.htm/ January 2, 1997.

30.6.4 NWS Occupational Safety and Health Procedure 25, "Ergonomics."

30.6.5 NWS Occupational Safety and Health Procedure 13, "Indoor Air Quality."

30.6.6 NWS Occupational Safety and Health Procedure 14, "Walking and Working Surfaces."

30.6.7 NWS Occupational Safety and Health Procedure 11, "Hearing Conservation."

30.6.8 NWS Occupational Safety and Health Procedure 3, "Safe Electrical Work Practices."

30.6.9 NWS Occupational Safety and Health Procedure 4, "Control of Hazardous Energy Sources."

30.6.10 NWS Occupational Safety and Health Procedure 20, "Machine Guarding."

30.6.11 NWS Occupational Safety and Health Procedure 19, "Hand and Power Tool Safety."

30.6.12 NWS Occupational Safety and Health Procedure 5, "Emergency Action Plan."

30.6.13 NWS Occupational Safety and Health Procedure 6, "Fire Protection."

30.7 Attachments

None.

PROCEDURE 31 - Asbestos Safety

Table of Contents Page

Synopsis 31-ii
Asbestos Safety Checklist 31-iii

31 ASBESTOS SAFETY 31-1
31.1 Purpose And Scope 31-1
31.2 Definitions 31-1
31.3 Procedure 31-2
31.4 Quality Control 31-3
31.5 Responsibilities 31-4
31.6 References 31-4
31.7 Attachments 31-5

ATTACHMENT A 31-A-1
Sample List of Suspect Asbestos-Containing Materials 31-A-1

Synopsis

The purpose of this procedure is to establish requirements relative to the potential hazards that could result from exposure to asbestos or asbestos-containing materials. This procedure applies to all National Weather Service (NWS) facilities, work locations, and employees where asbestos or asbestos-containing materials are known or assumed to be present.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
  - Perform Visual Inspection and Instrumental Testing of "suspect" ACMs. *(31.3.2)*
  - Identify all sites where asbestos hazard may be present. *(31.3.3)*
- **Develop/Obtain Documentation/Information required for Site**
  - Develop an Asbestos Control Program. *(31.3.2)*, if applicable
- **Designate Person to Administer the Asbestos Safety Procedure Requirements** (if required)
- **Provide Local Training of Site Personnel** (if required)

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Visual Inspections and Instrumental Testing of "suspect" ACM. *(31.3.2)*, as necessary
- **Review/Update Documentation/Information required for Site**
  - Maintain Asbestos Control Program. *(31.3.2)*, if applicable
- **Provide Refresher Training of Site Personnel** (if required)

Asbestos Safety Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	31.4.2				
Have all sites where asbestos hazard may be present been identified?	31.3.3				
Have all individuals affected by this procedure, read, understood and follow the procedure?	31.5.4b				
Are all “suspect” ACMs, visually inspected and instrumentally tested?	31.3.2, Attachment A				
Has the Asbestos Control Program been developed at the facility where the potential for asbestos exposure is present?	31.3.2				

31 ASBESTOS SAFETY

31.1 Purpose And Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to the potential hazards that could result from exposure to asbestos or asbestos-containing materials. This procedure applies to all NWS facilities, work locations, and employees where asbestos or asbestos-containing materials are used.

31.2 Definitions

Asbestos. A generic term applied to a number of naturally occurring hydrated mineral silicate fibers, including chrysotile, amosite, crocidolite, tremolite, anthophyllite and actinolite. These materials are heat and/or acid resistant in nature and until the early 1970's were widely used throughout the textile, automotive, and construction industries where fireproofing or thermal or acoustical insulation was required.

Asbestos-Containing Material (ACM). Any material containing more than one percent of asbestos.

Fiber. A particulate form of asbestos, five micrometers or longer, with a length-to- diameter ratio of at least three to one.

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations Center (ROC), or the Sterling Research & Development Center (SR&DC).

Permissible Exposure Level (PEL): OSHA PEL for asbestos is an eight-hour Time-Weighted Average (TWA) limit of 0.1 fiber per cubic centimeter.

Presumed Asbestos Containing Material (PACM). "Presumed asbestos containing material" means thermal system insulation and surfacing material found in buildings constructed before 1981.

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Thermal System Insulation (TSI). TSI means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

31.3 Procedure

31.3.1 Asbestos Regulations and Controls. Occupational Safety and Health Administration (OSHA) General Industry standard 29 CFR 1910.1001 applies to occupational exposures to asbestos in all industries, with exception to construction and ship repairing and ship building industries. According to the standard, installed Thermal System Insulation (ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain) and sprayed on and troweled-on surfacing materials (e.g., acoustic plaster on ceilings and fireproofing materials on structural members), as well as asphalt and vinyl flooring shall be treated as asbestos-containing material in buildings constructed before 1981.

Any construction activity shall comply with the provisions of the OSHA standard set forth in 29 CFR 1926.1101. For the purpose of this procedure, construction activities include:

a. Demolition or salvage of structures with asbestos present.

b. Removal or encapsulation of ACMs.

c. Construction, alteration, repair, maintenance, or renovation of structures containing asbestos.

d. Installation of products containing asbestos.

e. Emergency cleanup of spills of asbestos materials.

f. Transportation, disposal, storage or containment of ACMs on or at a site where construction activities take place.

31.3.2 The Environmental Protection Agency (EPA) has summarized five basic facts concerning asbestos exposure:

a. The health risk associated with asbestos-causing diseases depends on the human exposure to asbestos-containing materials.

b. Prevailing asbestos levels in buildings and the levels of employees exposure as building occupants seem to be very low based upon available data.

c. Removal of asbestos-containing materials is often not a building owner's best course of action to reduce asbestos exposure. In fact, an improper removal can create a dangerous situation where none previously existed.

d. EPA only requires asbestos removal in order to prevent significant public exposure to asbestos, such as during building renovation or demolition.

e. EPA recommends in-place management whenever asbestos is discovered. Instead of removal, a conscientious in-place management program will usually control fiber releases, particularly when the materials are not significantly damaged and are not likely to be disturbed.

While it is often possible to "suspect" that a material or product contains asbestos by visual determination, actual determinations can only be made by instrumental analysis. Until a material or product is tested, it is best to assume that it contains asbestos, unless the label or the manufacturer verifies that it does not. A listing of typical "suspect" ACMs can be found in Attachment A.

31.3.3 Asbestos Control Program. The NWS facilities where asbestos or ACMs are potentially present (e.g., buildings and structures built before 1981), shall arrange visual inspections and testing of "suspect" materials by an accredited inspector or Certified Industrial Hygienist (CIH) who has completed an EPA-approved asbestos training course. This effort should be coordinated with NOAA Regional Environmental Compliance Officers (RECO), NOAA Regional Safety Managers (RSM) and NWS Regional Environmental/Safety Coordinators.

When presence of asbestos or ACMs is confirmed, an Asbestos Control Program shall be established and maintained in coordination with RECOs and/or RSMs.

31.4 Quality Control

31.4.1 Regional and Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to ensure that these facilities are in compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

31.4.2 Station Manager

The Station Manager and the Safety Focal Point shall review this procedure on an annual basis to ensure that the facility is complying with its requirements. A written record of this review will be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

31.4.3 NWS Headquarters (NWSH)

a. The NWSH Safety Office will perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. This procedure shall be reviewed annually by the NWSH Safety Office to ensure its continued compliance with internal requirements and applicable regulations.

c. The NWSH Safety Office will periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this

procedure. This assessment shall be performed a minimum of once every five years.

d. Requests for clarifications concerning this procedure shall be directed to the NWSH Safety Office.

31.5 Responsibilities

31.5.1 Regional and Operating Unit Environmental/Safety Coordinators

Shall ensure that the regional headquarters facilities, field offices, or operating unit facilities are in compliance with requirements of this procedure, as required.

31.5.2 Station Manager

a. Shall ensure compliance with and promote all federal, state and local regulations and policies associated with asbestos located at NWS facilities.

b. Shall have oversight of the asbestos control program (if applicable) and ensure that the requirements of this procedure are followed.

31.5.3 Safety or Environmental/Safety Focal Point

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

31.5.4 Employees

a. Shall be responsible for their own safety and, to some degree, for that of their co-workers. All unsafe practices and conditions shall be brought to the attention of the worker(s) involved and their supervisor.

b. Employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities
http://www.nws.noaa.gov/directives/050/pd05011a.pdf

31.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

31.6.1 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1910.1001, Asbestos.

31.6.2 U.S. Department of Labor, Occupational Safety and Health Administration, 29 CFR 1926.1101, Asbestos.

31.6.3 U.S. Environmental Protection Agency (EPA), Region 4 - Air, Pesticides and Toxics, The Asbestos Informer.

31.7 Attachments

Attachment A: Sample List of Suspect Asbestos-Containing Materials

ATTACHMENT A

Sample List of Suspect Asbestos-Containing Materials

Cement pipes	Elevator brake shoes
Cement wallboard	HVAC duct insulation
Cement siding	Boiler insulation
Asphalt floor tile	Breaching insulation
Vinyl floor tile	Ductwork flexible fabric connections
Vinyl sheet flooring	Cooling towers
Flooring backing	Pipe insulation
Construction mastics (floor tile, carpet, etc.)	Heating and electrical ducts
Acoustical plaster	Electrical panel partitions
Decorative plaster	Electrical cloth
Textured paints/coatings	Electrical wiring insulation
Ceiling tiles and lay-in panels	Chalkboards
Spray-applied insulation	Roofing shingles
Blown-in insulation	Roofing felt
Fireproofing materials	Base flashing
Taping compounds (thermal)	Thermal paper products
High temperature gaskets	Caulking/Putties
Laboratory hoods/table tops	Adhesives
Laboratory gloves	Wallboard
Fire blankets	Joint compounds
Fire curtains	Vinyl wall coverings
Elevator equipment panels	Spackling compounds

PROCEDURE 32 - Motor Vehicle Safety

Table of Contents Page

Synopsis 32-i
Motor Vehicle Safety Checklist 32-ii

32 MOTOR VEHICLE SAFETY 32-1
32.1 Purpose and Scope 32-1
32.2 Definitions 32-1
32.3 Procedure 32-1
32.4 Quality Control 32-7
32.5 Responsibilities 32-8
32.6 References 32-8
32.7 Attachments 32-9

ATTACHMENT A 32-A-1
NWS Vehicle Inspection Checklist 32-A-1

ATTACHMENT B 32-B-1
NWS Snowmobile/Snow Cat Pre-Trip Checklist 32-B-1

ATTACHMENT C 32-C-1
Safe Driving Guidelines 32-C-1

Synopsis

The purpose of this procedure is to provide guidelines related to potential hazards associated with on- and off-road motor vehicle operation. This procedure applies to all National Weather Service (NWS) facilities and employees that operate motor vehicles in the performance of their job duties.

Initial Implementation Requirements:

- **Analyze Site Operations versus Requirements of the Procedure**
- **Designate Person to Administer the Motor Vehicle Safety Procedure Requirements**
- **Provide Local Training of Site Personnel (If Applicable)**
  - Personnel Awareness Training. *(32.5.2, 32.5.4)*
- **Inventory Material/Equipment (Procure as required)**
  - Safety Warning Devices (e.g., Reflective Triangles, etc.). *(32.4.2b, 32.3.2c)*
  - Emergency Equipment. (e.g., Flashlight, Jumper Cables,*etc.) (32.4.2b, 32.3.3c)*
  - Communication Devices. *(32.4.2b, 32.3.1e, 32.3.4k)*
  - Personal Floatation Devices (PFD). *(32.4.2b, 32.3.4e)(if applicable)*
  - Personal Protective Equipment. *(32.4.2b, 32.3.4j)*

Recurring and Annual Task Requirements:

- **Perform Inspection/Assessment/Testing**
  - Conduct monthly inspections of all vehicles *(32.3.1c & Attachment A)*
  - Conduct Inspections of all vehicles prior to the long distance trips and driving off the road *(32.3.1c & Attachment A)*
  - Conduct pre-trip Inspections of Snowmobiles and Snow Cats *(32.3.4, Attachment B)*
  - Conduct routine Inspections of vehicles during winter conditions *(32.3.3)*
  - Conduct routine Inspections of vehicles during hot weather conditions *(32.3.5)*
- **Review/Update Documentation/Information required for Site**
  - Monthly Vehicle Safety Inspection checklists *(Attachment A)*
  - Snowmobile and Snow Cats pre-trip checklists *(Attachment B)*
  - "Snow Travel Plans". *(32.3.6g)*
- **Provide Refresher Training of Site Personnel (If Applicable)**
  - Personnel Awareness Training. *(32.5.2, 32.5.4)*
- **Inspect/Replace/Recalibrate/Maintain Material/Equipment**
  - Safety Warning Devices (e.g., Reflective Triangles, etc.). *(32.4.2b, 32.3.2c)*
  - Emergency Equipment. (e.g., Flashlight, Jumper Cables, *etc.) (32.4.2b, 32.3.3c)*
  - Communication Devices. *(32.4.2b, 32.3.1e, 32.3.4k)*
  - Personal Floatation Devices (PFD). *(32.4.2b, 32.3.4e)(if applicable)*
  - Personal Protective Equipment. *(32.4.2b, 32.3.4j)*

Motor Vehicle Safety Checklist

Requirements	Reference	YES	NO	N/A	Comments
Is initial and annual review of this procedure conducted and documented?	32.4.2				
Have all individuals affected by this procedure read, understood and followed the procedure?	32.5.4				
Are all drivers familiar with general safe driving guidelines?	Attachment C				
Do all drivers have a valid drivers license?	32.3.1a				
Are all vehicles inspected monthly and prior to making a long distance trip?	32.3.1c, Attachment A				
Do employees follow motor vehicle accident reporting procedures?	32.3.2d				
Are drivers familiar with guidelines when driving at night and in rainy, foggy conditions?	Attachment C				
Are drivers familiar with guidelines when driving in winter conditions?	32.3.3a-c				
Are FAA safety driving rules followed when driving on airport grounds?	32.3.8				
Are drivers familiar with guidelines when driving in hot weather conditions?	32.3.5				

Requirements	Reference	YES	NO	N/A	Comments
Are all vehicles equipped with the necessary emergency equipment?	32.3.3c. 1-7				
Do all Drivers of Snowmobiles and Snow Cats comply with the requirements of this procedure?	32.3.4a-k				
Are Snow Travel Plans filed with the Station Manager prior to initiating a trip?	32.3.4g				
Do all drivers comply with procedure when crossing Railroads?	32.3.6				
Do all drivers check the vehicle and inform the supervisor regarding the travel plans prior to driving off the road?	32.3.7, d Attachment A				
Do all drivers ~~and~~ follow safety guidelines while driving off the road?	32.3.7				
Are all drivers aware of safety precautions relevant to car jacking and tailgating?	32.3.11a,b				
Do all personnel follow the guidelines concerning the use of Cellular Phones while driving?	32.3.12				

32 MOTOR VEHICLE SAFETY

32.1 Purpose and Scope

As part of its goal to provide a safe and healthful workplace, the National Weather Service (NWS) is promulgating this procedure related to potential hazards associated with on- and off-road motor vehicle operation. This procedure applies to all NWS facilities and to all employees who operate motor vehicles in the performance of their job duties.

32.2 Definitions

Field Office. A Field Office may include the following: Weather Forecast Office (WFO), River Forecast Center (RFC), Weather Service Office (WSO), and a Data Collection Office (DCO).

Hydroplaning. The result of tires moving quickly across a wet surface, causing the tire(s) to be lifted off the road; most or all traction is lost.

Motor Vehicle. Any self-propelled mechanically or electrically powered vehicle designed to be operated principally on the roadway for the transportation of property or passengers.

Personal Floatation Device (PFD). Life preservers, buoyant vests, special- purpose water-safety devices, buoyant cushions, ring buoys and work vests, each of which shall be United States Coast Guard approved.

Operating Unit. For the purpose of this procedure, Operating Unit includes the National Centers for Environmental Prediction (NCEP), National Data Buoy Center (NDBC), NWS Training Center (NWSTC), National Reconditioning Center (NRC), Radar Operations (ROC), or the Sterling Research & Development Center (SR&DC).

Station Manager. For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; and Tropical Prediction Center, NP8); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SR&DC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

Stopping Distance. Is the sum of reaction distance plus braking distance. At 55 MPH, reaction distance is 60 feet. At 55 MPH, the stopping distance is 225 feet for passenger cars and 335 feet for tractor trailers.

Driver. A NWS employee who holds a valid driver's license issued by a state or territory of the United States of America.

Snowmobile or Snow Cat. An off-road vehicle used to access remote areas in the winter.

32.3 Procedure

32.3.1 General Rules. All drivers shall:

a. Have a valid drivers license.

b. Obey the laws and regulations of the state/territory in which the vehicle is operated.

c. Inspect vehicles (at least monthly) in accordance with operator's manual and manufacturer's recommendations. It is also recommended that vehicles be inspected prior to making a long trip or driving off-road (see Attachment A).

d. Have seat belts fastened when driving and ensure that passengers also fasten their seat belts.

e. Carry a two-way radio or cellular phone, if available.

f. Be prepared with the following emergency equipment in case the vehicle breaks down:

(1) Flashlight

(2) Jumper cables

(3) Flares or reflective triangles

32.3.2 Motor Vehicle Accidents. When an accident occurs, all drivers shall:

a. Get vehicle to the side of the road, if possible.

b. Put on flashers.

c. Set out reflective triangles or road flares to warn other drivers.

d. Notify authorities as soon as possible if an accident occurs and follow reporting procedures outlined in Procedure 18, "Accident/Illness Reporting and Recording."

32.3.3 Driving in Winter Conditions. The following guidelines are recommended for safe driving in winter conditions:

a. Ensure that the vehicle is in proper operating condition prior to each trip:

(1) Cooling system is full.

(2) Tires are inflated and have sufficient tread to handle slippery conditions.

(3) Heater and defrosters work.

(4) Wiper blades are in good condition, the windshield washer works and washer fluid reservoir is full.

(5) The battery is fully charged.

b. Follow safe-driving tips:

(1) Do not let ice and snow accumulate on the windshield, windows and mirrors.

(2) Check tire chains for broken hooks, worn or broken cross links, and bent or broken side chains. Carry the right number of chains and extra cross links.

(3) Start slowly in slippery conditions.

(4) Avoid making any sudden changes in direction or speed.

(5) Keep the headlights on.

c. Be prepared with the following emergency equipment in case the vehicle breaks down or becomes stuck in snow or ice:

(1) Flashlight

(2) Jumper cables

(3) Ice scraper

(4) Shovel

(5) Flares or reflective triangles

(6) Blanket

(7) Sand or other material to provide friction

32.3.4 Snowmobile and Snow Cat safety. All drivers of snowmobiles and Snow Cat vehicles shall:

a. Conduct the pre-trip inspection in accordance with operator's manual and manufacturer's specifications (See Attachment B).

b. Avoid ice covered bodies of water unless it is known that the ice is safe for vehicular travel.

c. Wear warm clothing with a windproof outer layer.

d. Wear Personal Floatation Device (PFD) when crossing bodies of water covered with ice.

e. If the ice breaks, all drivers and passengers should:

(1) Keep calm.

(2) Extend arms forward onto the unbroken ice.

(3) Kick until a level position with the ice is attained.

(4) Work forward onto the unbroken ice.

(5) Keep sliding on the ice away from the break.

(6) Do not stand up.

(7) Seek medical assistance as quickly as possible.

f. Reduce speed of Snowmobile or Snow Cat when near other vehicles, people, trees, animals and other objects;

g. File a Snow Travel Plan with the Station Manager indicating the following:

(1) Planned route.

(2) Time of departure.

(3) Names of passengers.

(4) Expected time of arrival.

h. Never enter an avalanche area.

i. Wear a safety helmet and goggles that offer protection from the wind and the sun.

j. Use a two-way radio or cellular phone.

32.3.5 Driving in Hot Weather. When driving in hot weather conditions all drivers should:

a. Check the tire mounting and air pressure.

b. Check to determine if air conditioning system is in operating condition.

c. Periodically check the water temperature or coolant temperature gauge.

32.3.6 Railroad Crossings. Railroad crossings, especially unprotected crossings in remote areas, can pose a hazard to drivers. At railroad crossings all drivers shall:

a. Slow the vehicle to allow time to look in both directions of the crossing for an oncoming train.

b. Listen for the sound of a train whistle. This may require turning down or turning off the vehicle's radio and/or interior fan.

c. Proceed through the crossing with caution.

32.3.7 Driving off the Road. The following guidelines are for drivers when driving off-road:

a. Inspect vehicles in accordance with operator's manual and manufacturer's specifications prior to the trip (see attachment A).

b. If carrying a load, be sure that the load is properly balanced. Heavy items should be placed forward of the rear axle for better traction. Avoid using roof racks as this could lead to vehicle instability in steep terrain.

c. If available, acquire a map of the area in which you will be traveling.

d. Alert the supervisor about the travel plans including time of departure, estimated time of arrival and planned route.

e. When conditions appear difficult, stop and park the vehicle. Get out and survey the area on foot to help in determining the safest route.

f. When negotiating slopes, keep the use of the clutch (if applicable) and brake to a minimum. This reduces chances of sliding and losing control of the vehicle.

g. When descending steep slopes, use first gear. Braking should be provided by the engine. Apply the accelerator carefully so that you do not cause the wheels to spin.

h. Avoid any existing wheel ruts and obstacles which may not be cleared by the chassis. Be aware of the need to maintain ground clearance.

i. If the ground is soft, you may reduce the tire pressure to a minimum and clear clogged tire treads to improve traction.

j. As a rule, do not take chances in dangerous terrain. Choose another route or turn back.

32.3.8 Driving on Airport Grounds. While driving on airport grounds, the FAA Guide entitled "The Airport Ground Vehicle Operation" must be followed. (e.g., at airports with a traffic control tower, a driver of the vehicle must get controller's permission before going onto a runway or taxiway).

32.3.9 Emergency Flashers, Horns, and Signaling. To ensure proper communication of actions to other drivers or pedestrians, follow the guidelines below:

a. Signal before making a turn.

b. Signal before changing lanes.

c. Use emergency flashers when parked at the side of the road.

d. Use headlights when driving during daylight and night-time hours.

e. Use horn to warn other drivers of the dangerous situation.

32.3.10 Leaving the Road. When leaving the road all drivers should follow these guidelines where possible:

a. Avoid braking. If possible, avoid using the brakes until speed has dropped to about 20 mph.

b. Keep one set of wheels on pavement if possible;

c. Stay on the shoulder.

d. Signal and check your mirrors before pulling back onto the road.

32.3.11 Personal Safety.

a. The following precautions are recommended to reduce the risk of *carjacking*:

(1) Do not stop to help a disabled motorist. A safer alternative is to contact a service station or the police.

(2) Keep your doors locked and windows rolled up (at least part-way, if it is hot and you don't have air conditioning), no matter how short the distance or how safe the neighborhood that you are traveling in may appear.

(3) When stopped at a red light, leave enough room between you and the car in front so that you won't be blocked in and can get away if necessary.

(4) Be suspicious of anyone approaching the car with brochures/papers, etc., asking for change or directions. Be ready to leave, even if it means running a red light or a stop sign.

(5) While driving, if struck from behind or in any suspicious way, stay in your vehicle with the doors locked and windows closed until the police arrive. Activate your vehicle's emergency flashers. Be aware of “road rage” and its implications. Make every attempt to be a courteous driver and do not stop or leave the vehicle to confront an angry driver.

(6) If you think you are being followed, drive immediately to an area with good lighting and people. If possible, drive to the nearest police station.

(7) If you have one, use your cellular phone to call for help.

b. To help ensure personal safety when being *tailgated* follow these guidelines:

(1) Avoid quick changes.

(2) Never speed up.

(3) Avoid tricks such as braking quickly to "signal" the tailgater to back off.

(4) When possible, give appropriate signal and pull off the road at a safe area to allow the tailgating driver to pass.

32.3.12 Cellular Phone Use. Cellular phones can be a lifesaver in case of automobile accidents, vehicle breakdown or when personal safety is in danger. However, unsafe operation of a cellular phone in a non-emergency situation may become a cause of an accident. To ensure safety while operating the phone, practice the following guidelines:

a. Avoid using the phone while driving, unless an emergency call must be made. Do not use the phone when driving under hazardous conditions.

b. Do not take notes or look up numbers while driving. If necessary, pull off to a safe area and make the necessary notes or check needed numbers.

c. Do not engage in stressful or distracting conversations while driving. Let the other party know you are driving and, if necessary, suspend the conversation until a later time.

d. Become familiar with all the features and operations of the phone. Read the instruction manual and learn the use of valuable features such as one-touch dialing, auto re-dial and memory dial. Work to memorize the keypad so that you can dial without taking your eyes off of the road.

e. Keep your phone within easy reach. Keep it where you can reach it without taking your eyes off the road.

f. When available, use hands-free devices. A number of hands-free phone accessories are readily available.

g. Dial 911 if assistance is needed in an emergency.

32.4 Quality Control

32.4.1 Regional or Operating Unit Environmental/Safety Coordinators

a. Shall perform an annual assessment of the regional headquarters facilities or operating unit to monitor and promote compliance with the requirements of this procedure.

b. Shall perform assessments or designate personnel to perform assessments of all field offices to monitor and promote compliance with the requirements of this procedure every two years.

32.4.2 Station Manager

a. Shall review, or delegate review, of this procedure on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review shall be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

b. Shall ensure that initial and periodic inventory of safety warning devices, emergency equipment, PPE and other safety equipment is accomplished and adequate stock is maintained.

32.4.3 NWS Headquarters (NWSH)

a. The NWS Safety Office shall perform an annual assessment of the NWSH facilities to ensure that the facilities are in compliance with this procedure.

b. The NWSH Safety Office shall periodically perform an assessment of the regional headquarters and field offices to ensure compliance with this procedure. The frequency of these regional and field office assessments shall be determined by the NWSH Safety Office.

c. Requests for clarification concerning this procedure shall be directed to the NWSH Safety Office.

32.5 Responsibilities

32.5.1 Regional or Operating Unit Environmental/Safety Coordinators*

Shall monitor and coordinate to promote compliance with the requirements of this procedure for the regional headquarters, and field offices or operating units.

32.5.2 Station Manager*

a. Shall have oversight over the implementation of this procedure, and ensure that the requirements of this procedure are followed by individuals at the NWS facility.

b. Shall ensure that initial and refresher awareness training are provided, as required.

32.5.3 Safety or Environmental/Safety Focal Point*

Shall ensure that any responsibilities delegated to them by the Station Manager are implemented in accordance with the requirements of this procedure.

32.5.4 Employees

a. Individual employees affected by this procedure are required to read, understand and comply with the requirements of this procedure.

b. Report unsafe or unhealthful conditions and practices to their supervisor or safety focal point.

NOTE: * - Reference NWS PD 50-11 for complete list of responsibilities http://www.nws.noaa.gov/directives/050/pd05011a.pdf

32.6 References

Incorporated References. The following list of references is incorporated as a whole or in part into this procedure. These references can provide additional explanation or guidance for the implementation of this procedure.

32.6.1 NWS Occupational Safety and Health Procedure 18, "Accident/Illness Reporting and Recording."

32.6.2 FAA Guide, The Airport Ground Vehicle Operation.

32.7 Attachments

Attachment A: NWS Vehicle Inspection Checklist

Attachment B: NWS Snowmobile/Snow Cat Pre-Trip Checklist

Attachment C: Safe Driving Guidelines

ATTACHMENT A

NWS Vehicle Inspection Checklist

Directions: Complete this checklist by checking the "OK" or "Deficient" column for each item. All NWS vehicles must be inspected at least monthly. It is recommended that NWS vehicles also be inspected prior to any long trip or trip off the road. **(Note: Prior to inspection, set the parking brake and release the hood).**

Item	OK	Deficient
Outside of Vehicle		
No mysterious puddles or leaks underneath vehicle		
No unreported body damage		
Windshields, windows and mirrors are clean and undamaged		
Windshield wipes are in good condition		
All four tires are properly inflated		
Spare tire is available and properly inflated		
Engine Compartment		
Oil is within one (1) quart of full		
Coolant level in expansion bottle is "full" or "max"*		
Horn, Lights, and Emergency Flashers		
Horn is functioning properly		
Lights and emergency flashers are working properly		
Belts and Batteries		
Belts and hoses are in good condition (proper adjustment to be checked routinely by servicing facility)		
No excessive corrosion around battery terminals		
Emergency Equipment		
First aid kit is fully stocked and ready for use		
Flares, road reflectors, or roadside triangles are available for use		
Winter or summer emergency equipment/supplies		
Optional Equipment		
Tire chains (if needed for winter driving)		
Cellular telephone (for emergency use)		
Fire extinguisher is properly secured and ready for quick use		

* Recommend to have a specific gravity test done before winter and summer season driving.

_____	_____	_____
Name of Inspector	Date	Vehicle Odometer Reading

ATTACHMENT B

NWS Snowmobile/Snow Cat Pre-Trip Checklist

Directions: Complete the below checklist by answering the "OK" or "Deficient" column before starting of trip. All must be OK before trip may begin.

Item	OK	Deficient
2 sets of screw drivers		
Rags and Litter Bags		
Adjustable wrench		
Black electrical tape		
Split and open end wrenches		
Starter cord		
Vise grips		
Mechanics wire		
Extra key		
First aid kit		
Pocket knife		
Trail map		
Compass		
Waterproof matches		
Candy bars or other high energy food		
Flashlight		
Flares		
50 feet nylon rope		
Emergency blanket		
Emergency shelter		
Fuel		
Oil		
Cell phone/CB		

_____ _____

Name of Inspector Date

ATTACHMENT C

Safe Driving Guidelines

1. General

a. Look ahead of the vehicle and be aware of the following:

i. Vehicles entering the highway or into your lane

ii. Brake lights from slowing vehicles

iii. Road conditions

iv. Traffic signs and signals

v. Vehicles on either side and in back of the vehicle

b. Apply the parking brake when leaving vehicle

c. Never attempt to pass a vehicle indicating a left turn

d. Slow down and take precautions when:

(1) Driving through a work and/or school zones

(2) Doing drop offs

(3) Entering off-ramps and on-ramps.

(4) Approaching pedestrians.

(5) Driving through a wildlife area.

e. Schedule trips during daylight hours, if possible; and

f. Do not take medications that may cause drowsiness before a trip.

2. Driving at Night.

a. Avoid looking directly at bright lights when driving.

b. Get off the road and rest if tired and sleepy.

c. Reduce speed when lighting is poor or confusing.

d. Use headlight high beams when not in view of other vehicles (unless foggy conditions are present). Drivers shall dim lights within 500 feet of an oncoming vehicle and when following another vehicle within 500 feet.

3. Driving in the Rain.

a. Reduce normal speed of driving.

b. Test brakes periodically.

c. Allow more distance than normal between your vehicle and the vehicle ahead.

d. If hydroplaning occurs, do not apply brakes and avoid steering in any direction but straight ahead.

e. Do not drive through standing water unless it can be verified that it is shallow enough to cross safely.

4. Driving in Foggy Conditions.

a. Use low beam lights.

b. Use wipers to clear condensation from the windshield.

c. Use the right side of the road for guidance.

ACRONYMS

AA	-	Assistant Administrator
ACGIH	-	American Conference of Governmental Industrial Hygienists
ACM	-	Asbestos-containing Material
ANSI	-	American National Standards Institute
ASC	-	Administrative Support Center
ASOS	-	Automated Surface Observation System
AST	-	Aboveground Storage Tank
ASTM	-	American Society for Testing and Materials
AUL	-	Authorized Use List
BMP	-	Best Management Practices
CAA	-	Clean Air Act
CAAA	-	Clean Air Act Amendments
CDL	-	Commercial Driver's License
CE	-	Categorical Exclusion
CERCLA	-	Comprehensive Environmental Response, Compensation, Liability Act
CESQG	-	Conditionally-Exempt Small Quantity Generator
CFC	-	Chlorofluorohydrocarbons or Freon
CFR	-	Code of Federal Regulations
CHEMTEC	-	Chemical Manufacturers Transportation Emergency Center
CIH	-	Certified Industrial Hygienist

CONUS	-	Continental United States
COTR	-	Contracting Officer's Technical Representative
CPG	-	Comprehensive Procurement Guidelines
CPSC	-	Consumer Product Safety Commission
CWA	-	Clean Water Act
CZMA	-	Coastal Zone Management Act
DCP	-	Data Collection Platform
DDS	-	Draft Data Set
DLA	-	Defense Logistics Agency
DOC	-	Department of Commerce
DOT	-	Department of Transportation
DRO	-	Designated Responsible Official
EA	-	Environmental Assessment
ECO	-	Environmental Compliance Officer
EHS	-	Extremely Hazardous Substance
EIS	-	Environmental Impact Statement
EO	-	Executive Order
EPA	-	Environmental Protection Agency
EPCRA	-	Emergency Planning and Community Right-to-Know Act
ERA	-	Emergency Response Agreements
ERG	-	Emergency Response Guidebook

ESA	-	Endangered Species Act
ET	-	Electronic Technician
FEC	-	Facility Environmental Coordinator
FEE	-	Federal Environmental Executive
FIFRA	-	Federal Insecticide, Fungicide and Rodenticide Act
FONSI	-	Finding of No Significant Impact
FSS	-	Federal Supply System
GSA	-	General Services Administration
HAZCOM	-	Hazard Communication Standard
HAZMAT	-	Hazardous Material
HAZWOPER	-	Hazardous Waste Operations and Emergency Response
HC	-	Hazardous Chemical
HIC	-	Hydrologist-in-Charge
HM	-	Hazardous Material
HMR	-	Hazardous Material Regulations
HMT	-	Hazardous Materials Table
HMTA	-	Hazardous Materials Transportation Act
HMTUSA	-	Hazardous Materials Table Uniform Safety Act
HS	-	Hazardous Substance
HSWA	-	Hazardous and Solid Waste Amendments
HUD	-	Housing and Urban Development

HW	-	Hazardous Waste
LARC	-	Limited Access Remote Collector
LBP	-	Lead-based Paint
LEL	-	Lower Explosive Limit
LEPC	-	Local Emergency Planning Committee
LQG	-	Large Quantity Generator
MAP	-	Model Accreditation Plan
MARPOL	-	Maritime Pollution (International Convention for the Prevention of Pollution from Ships)
MIC	-	Meteorologist-in-Charge
MOC	-	Marine Operations Center
MOU	-	Memorandum of Understanding
MPRSA	-	Marine Protection, Research and Sanctuaries Act
MSD	-	Marine Sanitation Device
MSDS	-	Material Safety Data Sheet
MS4	-	Municipal Separate Storm Sewer System
NA	-	Not Applicable
NAO	-	NOAA Administrative Order
NCEP	-	National Center for Environmental Prediction
NDBC	-	National Data Buoy Center
NECSAS	-	NOAA Environmental Compliance and Safety Assessment System
NEPA	-	National Environmental Policy Act

NFPA	-	National Fire Protection Agency
NHPA	-	National Historic Preservation Act
NiCad	-	Nickle Cadmium Battery
NIOSH	-	National Institute of Occupational Safety and Health
NLIC	-	National Lead Information Clearinghouse
NLSC	-	National Logistics Supply Center
NOAA	-	National Oceanic & Atmospheric Administration
n.o.s.	-	Not Otherwise Specified
NPDES	-	National Pollutant Discharge Elimination System
NRC	-	National Response Center
NWS	-	National Weather Service
NWSH	-	National Weather Service Headquarters
OIC	-	Official-in-Charge
OJT	-	On-the-Job Training
ORM-D	-	Other Regulated Materials
OSHA	-	Occupational Safety and Health Administration
OSH Act	-	Occupational Safety and Health Act
PCBs	-	Polychlorinated Biphenyls
pCi/L	-	Picocuries Per Liter
P.E.	-	Professional Engineer
PEL	-	Permissible Exposure Limit

PfDs	-	Proof Data Sets
POTW	-	Publicly-Owned Treatment Works
PPA	-	Pollution Prevention Act
PPE	-	Personal Protective Equipment
ppm	-	Parts Per Million
PRP	-	Potentially Responsible Party
P2	-	Pollution Prevention
RAC	-	Risk Assessment Code
RCRA	-	Resource Conservation and Recovery Act
RDA	-	Radar Data Acquisition
RECO	-	Regional Environmental Compliance Officer
RMAN	-	Recovered Materials Advisory Notice
ROC	-	Radar Operations Center
ROD	-	Record of Decision
RQ	-	Reportable Quantity
RSM	-	Regional Safety Manager
SARA	-	Superfund Amendments and Reauthorization Act
SDWA	-	Safe Drinking Water Act
SECO	-	Safety/Environmental Coordinator
SERC	-	State Emergency Response Commission
SFT	-	Sector Facility Technician

SIP	-	State Implementation Plan
SPCC	-	Spill Prevention Control and Countermeasures
sp.gr.	-	Specific Gravity
SQG	-	Small Quantity Generator
SR&DC	-	Sterling Research and Development Center
SWDA	-	Solid Waste Disposal Act
TLV	-	Threshold Limit Value
TPQ	-	Threshold Planning Quantity
TSCA	-	Toxic Substance Control Act
TSD	-	Treatment, Storage and Disposal
TSDF	-	Treatment, Storage and Disposal Facility
TWA	-	Time Weighted Average
UEL	-	Upper Explosive Limit
UN	-	United Nations
UN/NA	-	United Nations/North America
UST	-	Underground Storage Tank
UV	-	Ultraviolet
WFO	-	Weather Forecast Office
WQA	-	Water Quality Act
WSOM	-	Weather Service Operations Manual
WSR	-	Waste Shipment Record

XRF - X-ray Spectrophotometer