

PROCEDURE 15 - Battery Charging and Storage Operations

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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 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.

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