

Environmental Standard Operating Procedures (ESOP)

TITLE: ESOP 9.8 | MANAGEMENT AND STORAGE OF BATTERIES

PURPOSE: This Environmental Standard Operating Procedure (ESOP) establishes the management and storage requirements for batteries aboard Marine Corps Installations East - Marine Corps Base Camp Lejeune (MCIEAST - MCB CAMLEJ). Batteries are specifically regulated under the Federal Resource Conservation and Recovery Act (RCRA) codified in 40 Code of Federal Regulations (CFR) 266.80 and 273.2. Many batteries (both spent and new) may exhibit one or more of the characteristics of hazardous waste (HW), including ignitability, corrosivity, reactivity, and/or toxicity and require management as Universal Waste (UW) under RCRA. The management of batteries starts from the time a command either: (1) purchases batteries from the military supply system, or (2) purchases batteries from a vendor located outside of the military supply system. Whichever method is employed, the management requirements are the same. The types of batteries include, but are not limited to, the following: Alkaline, Gel Cell, Lead-Acid, Lithium (all types), Magnesium, Mercury, Nickel-Cadmium, Nickel-Metal Hydride, Silver-Zinc, Wet Cell and Zinc-Carbon. **This ESOP must be placed into the unit's Environmental Hazardous Waste/Hazardous Material Operations (EHW/HM Ops) Binder.**

APPLICABILITY: This ESOP applies to all organizations organic to or tenanted aboard MCIEAST - MCB CAMLEJ, Marine Corps Air Station New River (MCASNR) and those in transit or otherwise temporarily resident because of training or mobilization.

RESPONSIBILITY: All organizations or personnel who manage or store batteries.

PROCEDURE:

1. General Storage Requirements for Batteries in a Shop:

a. All batteries should be stored in a cool, well-ventilated, dry storage area. If temperatures exceed 130 degrees Fahrenheit, flammable or reactive gas and dangerous vapors can be generated.

b. Batteries should be protected against being crushed, damaged, punctured, or short-circuited. If communication batteries are damaged in any way, they will be turned in to the Hazardous Material (HM) Consolidation Site located at building S-962, Michael Rd., or prepared for pick-up at the unit's next scheduled Curbside Service appointment by Environmental Management Division (EMD)/Resource Conservation and Recovery Section (RCRS).

c. Do not eat, drink, or smoke in battery storage areas. Smoking can ignite dangerous vapors which may be present in the storage area.

d. Batteries shall be stored separately from all other HM. HM can interact with a venting battery and potentially cause an adverse reaction such as a fire or explosion.

e. The following types of batteries are not required to be tracked in the Enterprise Application Software (EAS):

- i. Rechargeable communication batteries
- ii. Alkaline batteries
- iii. Vehicle batteries weighing 99 pounds or less

2. Communication Batteries - Specific Management Practices:

a. All communication batteries will remain bagged and boxed until used.

b. Lithium batteries shall be segregated from any other batteries. Due to the reactivity of lithium batteries, they shall be kept dry and stored away from water and high moisture sources.

c. All personnel who are responsible for battery management must attend EM101 training and the associated annual EM102 refresher training. Documentation of this training must be available for review during inspections.

d. Battery charging shall be conducted on a non-flammable surface and only in areas designated for charging.

e. Shelf/Service-Life Management. One of the most effective waste minimization programs is the active life-cycle management of HM before they expire and become HW.

i. Communication batteries come from the manufacturer marked with either an expiration date or a manufacturer's test date. An EAS shelf/service-life inspection label shall be placed on the container. If a battery remains in their original container (case, box), only one EAS label is required for that container. In the event batteries are removed from their original container for individual storage or distribution, a new shelf/service-life label will be requested for each battery. The original EAS shelf/service-life label serial number will be turned in and used as justification for new individual labels.

ii. Quarterly inspections are conducted on all HM to determine adequate shelf/service-life. Units who identify batteries that will reach the manufacturer's test date or expiration date prior to the next quarterly inspection shall turn them in to EMD/R CRS.

f. When managing spent, unserviceable or expired communication batteries not in the original container, unit personnel must immediately cover both terminals with electrical or duct tape to preclude an electrical short prior to turn-in to EMD/R CRS. The tape cannot cover any of the identifying markings on the battery.

3. Vehicle Wet Cell, Gel Cell, and Sealed Lead-Acid Batteries - Specific Management Practices:

a. Upon receipt by the end user, wet cell batteries shall be filled with the electrolyte that accompanies the kit. Any excess electrolyte shall be turned in to EMD/RCRS.

b. Refilling or "topping off" batteries with electrolyte is NOT AUTHORIZED.

c. Batteries shall not be stacked more than 2 tiers high during storage due to the potential for damage to the batteries.

d. Battery charging shall be conducted on a non-flammable surface and only in areas designated for charging.

e. Cracks, voids/missing filler caps, or other damaged areas of batteries which may result in a release of acid will be sealed with silicone or other appropriate sealant and placed into an appropriate rubber or plastic container for transport. The battery shall not be comingled with other batteries and will be turned in to the LOGCOM Battery Shop located at building 901, Sneads Ferry Rd, 451-7724.

4. Battery Turn-In Procedures:

a. Spent vehicle (wet cell, gel cell, and sealed lead-acid batteries) will be turned in to the LOGCOM Battery Shop. Batteries shall not be stacked more than two high on a pallet. Each tier of batteries shall be separated by a layer of plywood or thick/heavy cardboard. The pallet shall be secured to avoid the battery load from shifting during transport.

b. Taped communication batteries shall be placed in a Department of Transportation (DOT) approved container for corrosives for transport to EMD/RCRS. All battery types shall be segregated for transport.

c. Batteries shall not be placed into plastic bags prior to turn-in.

d. All wing nuts, bolts, and terminal ends or connectors will be removed from the battery post by unit personnel prior to loading or transport.

e. The Complete Discharge Device (CDD) switch on lithium sulfur dioxide batteries will not be activated.

f. Damaged communication batteries will be segregated from other batteries and will be identified to the EMD/RCRS staff as damaged during the unit's regularly scheduled Curbside Service appointment.

g. Single-use alkaline batteries such as AAA, AA, C, D, and 9-volt batteries produced by manufacturers like Energizer and Duracell as well as less common and/or generic manufacturers now fall below Federal and State HW standards. Regardless of these standards, units requiring disposal of alkaline batteries will turn them in during their Curbside Service appointment.

5. Spill Reporting and Response Requirements:

a. All units are required to have a Unit Level Contingency Plan (ULCP) per Marine Corps Installations East - Marine Corps Base Camp Lejeune Order (MCIEAST-MCB CAMLEJO) 5090.4. Ensure the ULCP contains policies and procedures for the control and prevention of oil and hazardous material spills. The ULCP must be posted prominently.

b. Any releases or spills that occur in and around the area of responsibility must be reported immediately to the Base Fire and Emergency Services Division (FESD) by dialing 911. A Spill Report, Form MCIEAST-MCB CAMLEJ/G-F/EMD/5090.91/18, must be completed and forwarded to the command Environmental Compliance Coordinator (ECC) via the unit ECO or Alternate Environmental Compliance Officer (AECO). A copy of the completed Spill Report must also be maintained in the unit EHW/HM Ops Binder. Forms can be obtained by the unit ECO or command ECC and may also be downloaded at <https://www.lejeune.marines.mil/Portals/27/Documents/EMD/HW-MM/UNIT%20LEVEL%20SPILL%20FORM.pdf>.

c. Units must stock appropriate amounts of spill containment and control equipment onsite for use in the event of a spill.

d. Signs are to be posted in the vicinity of the used oil, off spec fuel, used antifreeze, hazardous material, or pollution abatement facilities that will indicate the following information:

**IN CASE OF AN OIL OR HAZARDOUS MATERIALS SPILL
CALL FIRE and EMERGENCY SERVICES DIVISION AT 911
NOTIFY YOUR COMMANDER/SUPERVISOR IMMEDIATELY**

The sign must have yellow background and black lettering. Information to purchase the signs can be acquired from the cognizant ECC.

TRAINING: Unit personnel shall be trained on all provisions of this ESOP. All training must be requested through unit ECO or AECOs -> ECC-> EMD/Environmental Compliance Branch (ECB)

a. Unit commanders shall ensure that personnel who perform operations such as vehicle maintenance, fueling, or washing are properly trained in the operation and maintenance of pollution abatement facilities. Personnel shall be trained on the environmental impact of oil and HM spills, and prevention of such incidents.

b. EM 101 - Initial Hazardous Material and Hazardous Waste Training - Required for all ECOs, AECOs, ECCs, and AST Operators

c. EM 102 - Refresher Hazardous Material and Hazardous Waste Training - Required annually for all ECOs, AECOs, ECCs, and AST Operators who have received EM 101

d. EM 103 - HM Transportation for Drivers - Required annually for all ECOs, AECOs, ECCs, and AST Operators

e. EM 104 - ECO/ECC Training Class - Required annually for ECOs, AECOs, and ECCs

f. EM 105 - UST and Veeder-Root Training - Required for all Marine Corps Community Services (MCCS) ECOs, AECOs, ECCs, and MCCS UST operators

g. EM 106 - Air Quality Training - Required for all ECOs, AECOs, ECCs, and Air Emission Source Operators

h. EM 107 - AST and Spill Prevention Control and Countermeasures (SPCC) Training - Required for all ECOs, AECOs, ECCs, and AST operators

i. EM 108 - PAF/OWS Training - Required for all ECOs, AECOs, ECCs, PAF, and OWS operators

j. Shop-Level Training Modules - Modules which involve various environmental media topics applicable to shop level personnel.

k. Computer-Based Training (CBT) - Numerous CBTs are provided within the Environmental Learning Management System (eLMS) for military & civilian Marines to utilize to improve their environmental knowledge. These CBTs can be accessed at <https://www.marinenet.usmc.mil/marinenet/Courses/Catalog.aspx>

l. Training should be documented in the individuals' training record using Form MCIEAST-MCB CAMLEJ/G-F/EMD/5090.9/27. This form can be found at [https://www.lejeune.marines.mil/Portals/27/Documents/EMD/MCIEAST-MCB_CAMLEJ_G-F_EMD_5090.9_27_\(Environmental_Personnel_Training_Record\).pdf](https://www.lejeune.marines.mil/Portals/27/Documents/EMD/MCIEAST-MCB_CAMLEJ_G-F_EMD_5090.9_27_(Environmental_Personnel_Training_Record).pdf).

REFERENCES:

a. MCO 5090.2, *Environmental Compliance and Protection Program Manual, Vol. 1-21*

b. MCIEAST-MCB CAMLEJO 5090.4, *Environmental Compliance Evaluation Program Aboard MCB CAMLEJ*

c. MCIEAST-MCB CAMLEJO 5090.9, *Hazardous Material/Waste Management*

d. ESOP 9.01, *Hazardous Material Management Program*

DEFINITIONS: Most battery types come in several different shapes and sizes, including A, AA, AAA, C, D, 6V, 9V, coin, or button shaped, and battery packs (a series of connected battery cells usually encased in plastic). Some batteries are hazardous to the environment and pose health and safety risks to those using them. The following are definitions of battery types and their hazards and other terms used in this document:

a. Alkaline - The most widely used battery type; these batteries contain an electrolyte which is made up of either potassium hydroxide or sodium hydroxide. Both electrolytes are strong alkalis. If this electrolyte contacts skin or eyes it will cause severe chemical burns. These batteries are non-rechargeable.

b. Complete Discharge Device (CDD) - Device used on lithium batteries which allows the discharge of the battery while reducing the amount of lithium.

c. Enterprise Application Software (EAS) - The information technology (IT) solution chosen by Headquarters Marine Corps (HQMC) for the management of hazardous material aboard Marine Corps installations.

d. Gel Cell Batteries - Gel cell batteries use a gel that replaces the standard acid that typically is found in lead-acid or wet cell batteries.

e. Lead-Acid - These large batteries are very corrosive and should be stored separate of all other HM. The battery contains aqueous electrolyte, which is used as an electrolyte. The electrolyte content of these batteries is between 28 and 51 percent by weight.

f. Lithium - Lithium batteries include lithium-manganese dioxide, lithium-sulfur dioxide, and lithium-thionyl chloride. Lithium-sulfur dioxide batteries contain pressurized sulfur dioxide gas and lithium-thionyl chloride batteries contain liquid thionyl chloride, which vaporizes readily upon exposure to air, both of which are highly toxic and reactive.

g. Magnesium - These batteries contain an electrolyte that is made up of magnesium bromide or magnesium perchlorate. These chemicals can emit highly toxic fumes when heated. If batteries show signs of leakage, proper eye and skin protection is recommended during handling.

h. Mercury - These batteries contain an electrolyte of either aqueous potassium hydroxide or sodium hydroxide. The core of the battery is made up of 20-50 percent mercury or mercuric oxide by weight. The electrolyte can cause the same adverse effects as alkaline batteries listed above.

i. Nickel-Cadmium - Also known as Ni-Cads, contain an electrolyte that is made up of an aqueous solution of potassium hydroxide. The battery cells typically contain 13-15 percent nickel by weight. The electrolyte solution is caustic solution and can cause the same serious chemical burns as alkaline batteries.

j. Nickel-Metal Hydride - These batteries are usually rechargeable.

k. Silver-Zinc - These batteries contain an electrolyte that is made from an aqueous solution of lithium chloride or zinc chloride and zinc sulfate. The electrolyte is a mild acid (20 to 30 percent by weight) and can cause serious chemical burns to the skin and eyes.

l. Wet Cell - This type of battery usually contains some sort of acid or caustic to use as an electrolyte. A wet cell battery requires the user to "top off" the battery to gain its charge back. Some types of wet cell batteries are non-refillable, and if heated or cracked will leak their respective electrolytes. The dangers of these include burns or severe skin irritation. These electrolytes can be either strong caustic or strong acids, depending on the battery type and manufacturer.

m. Zinc-Carbon - These batteries are non-recyclable. They do contain ammonium chloride and zinc chloride which is used as an electrolyte. Both electrolytes are considered corrosive.

Record of Revision

Revision Number	Date	Summary of Change	Signature
INITIAL DISTRIBUTION	01242006	DISTRIBUTED UNDER POLICY LETTER TO DISTRIBUTION A	<i>P.H. RAPER</i> ECB/EMD
UPDATE	06012014	UPDATE FORMATTING AND CONTENT	<i>S.J. AZOK</i> ECB/EMD
UPDATE	XXXX2020	UPDATE FORMATTING AND CONTENT	<i>X.X. XXXX</i> ECB/EMD

MCIEAST-MCB CAMP LEJEUNE SPILL REPORT

SHADED AREAS ARE FOR RCRS USE ONLY

TITLE/LOCATION

DATE TIME

RESPONSE NAME/UNIT:

SPILL CATEGORY (SELECT ONE) HAZMAT HAZWASTE POL WASTEWATER OTHER

PRODUCT SPILLED

QUANTITY SPILLED

LATITUDE LONGITUDE

HOW WAS SPILL DISCOVERED

SOURCE OF THE SPILL

CAUSE OF THE SPILL

MISSION IMPACT

WERE SAMPLES TAKEN (CHECK ONE) YES NO

ANALYSES REQUESTED / PERFORMED ON SAMPLES

DID THE SPILL (CHECK ONE)	ENTER A WATERWAY?	REACH WITHIN 100' OF SURFACE WATER?	REACH WITHIN 1500' OF A WATER SUPPLY WELL?	GO OFF BASE?
<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO

HOW WAS THE SPILL CONTAINED?

WHAT DANGERS DID THE SPILL PRESENT?

WHAT WERE THE ENVIRONMENTAL IMPACTS?

WHAT RECOVERY EFFORTS WERE USED?

IF OIL SPILLED, WHAT PERCENT WAS RECOVERED?

HOW WERE RESIDUALS DISPOSED OF?

WEATHER CONDITIONS?

REPORTABLE SPILL? (CHECK ONE) YES NO WAS A REGULATORY AGENCY CONTACTED: YES NO

AGENCY NAME (IF) NCDEQ NCDEQ REPORT# NCDEM NCDEM REPORT#

REGULATORY DRIVER

NRC NOTIFIED YES NO NRC INCIDENT NUMBER:

WHAT MEASURES WERE PUT IN PLACE TO PREVENT RECURRENCE?

ADDITIONAL INFORMATION OR COMMENTS

SPILL POC E-MAIL PHONE

ENVIRONMENTAL PERSONNEL TRAINING RECORD

EMPLOYEE NAME:

EMPLOYEE UNIT:

JOB TITLE/DESCRIPTION:

DATE ASSIGNED:

DATE RECORD CLOSED/ARCHIVED:

DATE	DESCRIPTION OF TRAINING	NAME OF COMPANY OF TRAINER	TRAINING HOURS

Signature: _____
 (Assigned Individual)

Date: _____

Signature: _____
 (ECO or Supervisor)

Date: _____

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