HAZARDOUS WASTE TRAINING MANUAL

COMPLIANCE TRAINING FOR:
HMDCs, HMDOs
SITE MANAGERS
HANDLERS

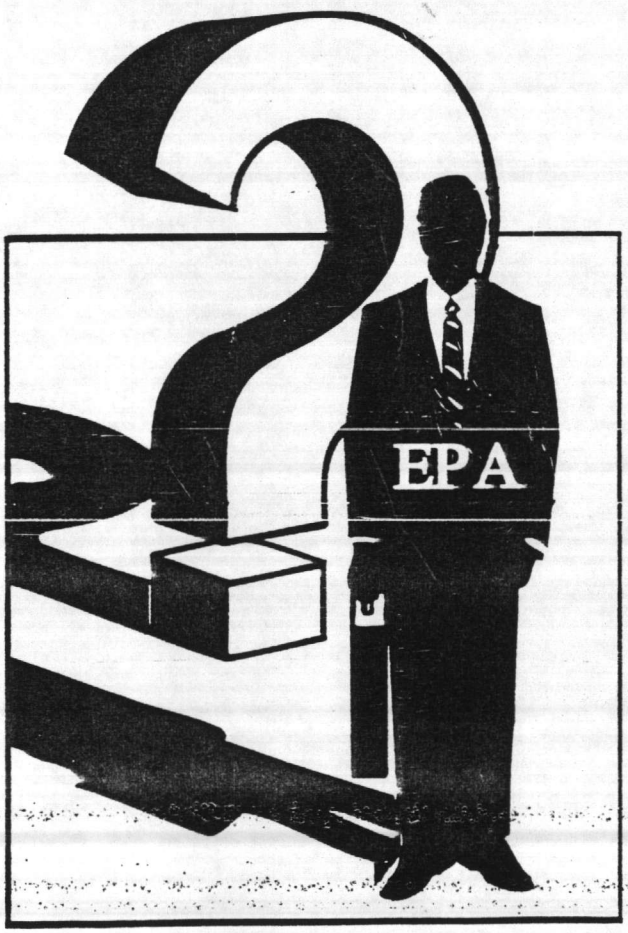
ENVIRONMENTAL MANAGEMENT DEPARTMENT
MARINE CORPS BASE, CAMP LEJEUNE, N.C.

Would You Be Ready If An EPA Inspector "Dropped In" Tomorrow?

IT'S HARD TO KEEP UP WITH ALL THE CHANGES IN THE EPA REGULATIONS. BUT YOU HAVE TO.

IT'S YOUR RESPONSIILITY TO KEEP UP TO DATE!

CAN YOU ANSWER "YES" TO THE FOLLOWING STATEMENTS?



- I'm storing my hazardous materials in the proper place.

  ____ yes ____ no ____ not sure

- I'm using the proper storage drums.

  ____ yes ____ no ____ not sure

- My materials-management records are up-to-date.

  ____ yes ____ no ____ not sure

- Employees have received all the hazardous materials training they need.

  ____ yes ____ no ____ not sure

- The labels on storage barrels are correctly displayed.

  ____ yes ____ no ____ not sure

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HAZARDOUS WASTE TRAINING PROGRAM
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UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

BO 6240.5A
NREAD/st
10 Mar 1987

BASE ORDER 6240.5A

From: Commanding General
To: Distribution List

Subj: HAZARDOUS MATERIAL DISPOSAL PROGRAM

Ref: (a) Resource Conservation and Recovery Act (Pub No. 94-580) (42 USC 6901-6987) (NOTAL)
(b) EPA Regulations contained in Code of Federal Regulations, Title: 40 Parts 260-265 (NOTAL)
(c) DOT Regulations contained in Code of Federal Regulations, Title: 49 Parts 100-179 (NOTAL)
(d) BO 11090.1B
(e) BO 11320.1G

Encl: (1) Procedures for Collection, Storage and Turn-In of Hazardous Material and Hazardous Waste for Disposal
(2) Responsibilities for Hazardous Material/Hazardous Waste Disposal
(3) Hazardous Waste Training Requirements and Guidelines

1. Purpose. To revise responsibilities, procedures and guidance for hazardous material (HM) and hazardous waste (HW) disposal and related environmental protection for the Camp Lejeune and Marine Corps Air Station, New River complex.

2. Cancellation. BO 6240.5.

3. Background

a. Congress and the state legislatures have responded to the threats to human life and the environment caused by mismanagement and illegal spilling and dumping of toxic substances by enacting laws which not only attempt to avert future threats but which impose civil and criminal penalties. In enacting many of these environmental laws, Congress waived federal supremacy, requiring federal agencies including the Marine Corps, to comply with federal, state and local environmental laws. Federal officers and employees now face the possibility that they may be personally liable for civil and criminal penalties and fines as well as imprisonment.

b. The Environmental Protection Agency (EPA) has authorized the State of North Carolina to enforce the requirements of references (a) and (b) through a state HW regulatory program. The Solid and Hazardous Waste Management Branch, Division of Health Services (DHS), is the primary enforcing agency within North Carolina. DHS enforcement personnel have authority to investigate HW spills and perform routine inspections of work sites where HW are handled and stored. These investigations and inspections can result in citations being issued to supervisors and/or personnel at the work site for civil and/or criminal violations of HW regulations.

c. State regulations promulgated under reference (a) and EPA regulations contained in reference (b) require both initial and annual refresher training for personnel involved in HW management and handling. The majority of discrepancies identified during EPA and DHS inspections can be directly, or indirectly, attributed to lack of adequate HW training. The relatively rapid rate of personnel turnover within the Camp Lejeune Complex requires that HW training be readily available. Publishing of this revised order is an essential step in strengthening the subject program. In addition to addressing the HW training issues, this revised order provides for the following: (1) better internal controls by organizations generating and handling HW; (2) improved availability of HW related supplies and equipment and; (3) formalizing efforts to reduce the volume and toxicity of HW generated within the Camp Lejeune Complex. Enclosures (1) through (3) outline revised procedures for managing HW and providing compliance with related requirements of references (a), (b) and (c).

UNITED STATES MARINE CORPS
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

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d. This order formally establishes two collateral duty positions to coordinate and to assist with the implementation of the subject program. These positions are the Hazardous Material Disposal Coordinator (HMDC) and Hazardous Material Disposal Officer (HMDO). HMDC will be established within each major command and within Marine Aircraft Groups. HMDO's will be appointed at the Battalion, Separate Company and Squadron level (or equivalent). HMDC and HMDO responsibilities are outlined in enclosure (2). The appointment and training of qualified primary and alternate HMDCs and HMDOs are essential to implementation of the complex requirements of the subject program.

4. Action

a. Organizational commanders shall on a continuing basis take action required to implement the following HW management goals and objectives:

(1) HW operations will be supervised by properly trained personnel who have access to equipment and supplies required for handling HW.

(2) Written descriptions of HW duties will be developed for all HW managers and handlers, and appropriate records maintained to document that proper training is being provided to personnel in accordance with enclosure (3).

(3) OIC/NCOIC's will ensure that HW facilities are inspected weekly and timely corrective action is taken and properly documented per this Order and related instructions of HMDO/HMDC.

(4) OIC/NCOIC's will prepare a written HW management Standard Operating Procedure (HWMSOP) in cooperation with HMDO for each facility where HW are routinely handled and stored. SOP will be readily available at HW generation and storage sites.

(5) A system of continuous internal controls will be implemented to ensure that violations of this Order are identified and if appropriate, that disciplinary action is taken to discourage recurring violations.

b. Major commands will take action required to limit HW generation to the minimum number of locations practical, to identify HW handling and storage equipment and facilities requirements and to develop and implement a system of internal controls which provides satisfactory compliance with the requirements of this Order and related regulatory requirements. As a minimum the following action will be taken:

(1) Appoint a primary and alternate HMDC with authority and resources to implement duties outlined in enclosure (2).

(2) Maintain a current listing/directory of facilities where HW are handled and stored. Ensure timely submission of waste identification documents per enclosure (1).

(3) Require OIC/NCOIC's of HW handling and storage facilities to develop and implement a written HW SOP for each facility per enclosures (1) and (3). The SOP will be readily available to personnel routinely handling HW and related emergency response.

(4) Require Commanding Officers of each Aircraft Squadron, Regiment, Battalion and Separate Company (or equivalent) to appoint a primary and alternate HMDO with authority to carry out the duties outlined in enclosure (2).

(5) Establish and promote HW management goals and objectives for supply and maintenance functions which promote the minimization of the volume and toxicity of HW generation.

(6) Within 30 days of the date of this Order, and as requested thereafter, provide a current listing of Primary and Alternate HMDO's. The list shall contain name, rank, unit and phone number. The list will be provided to the Director, Natural Resources and Environmental Affairs Division, Marine Corps Base.

c. Director, Natural Resources and Environmental Affairs Division, will inspect all points of HW generation on an annual basis, or more frequently as required, to monitor and evaluate compliance with the order and related state/federal regulations. The results of the annual inspections will be provided in writing to the inspected activity via the chain of command.

d. The Assistant Chief of Staff, Logistics and Assistant Chief of Staff, Facilities will cooperate with the local Defense Reutilization and Marketing Officer in improving HW disposal services to organizations generating HW subject to this Order.

e. Officials responsible for the preparation, awarding and implementation of various types of contracts, shall ensure that all contractor activities are carried out in accordance with the requirements of this Order and related State and Federal regulations.

5. Concurrence. This Order has been coordinated and concurred in by the Commanding Generals, II Marine Amphibious Force, 2d Marine Division, FMF, 2d Force Service Support Group (Rein), FMF, 6th Marine Amphibious Brigade, FMF, and the Commanding Officers, Marine Corps Air Station, New River, Naval Hospital and the Naval Dental Clinic.

M. C. HARRINGTON
Chief of Staff

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PROCEDURES FOR COLLECTION, STORAGE AND TURN-IN OF HAZARDOUS WASTE (HW) AND HAZARDOUS MATERIAL (HM) FOR RECYCLING OR DISPOSAL

1. Hazardous Waste Management Standard Operating Procedures (HWMSOP). Each organization routinely generating or handling HW or disposing of HM will develop desk top procedures to be followed. As a minimum, the HWMSOP will provide the following:

a. Name and telephone number of cognizant Hazardous Material Disposal Officer (HMDO) and Hazardous Material Disposal Coordinator (HMDC).

b. A copy of BO 6240.5A, BO 11090.1B, BO 11090.3, and related local instructions.

c. Name, title, HW duties and HW training records for each employee per enclosure (3) of BO 6240.5A.

d. Waste Identification Document (WID) for each HW generated or handled. WID will be completed in accordance with attachment (A) of this enclosure.

e. Procedures and responsibilities for dealing with HW/HM spills and related emergencies, i.e., HW Spill Contingency Plan.

f. Copies of weekly inspections of HW storage areas/containers.

g. Guidance provided by HMDO/HMDC's to implement HW/HM disposal program.

h. Location sketch for each HW generation, accumulation and storage area.

i. Material Safety Data Sheets, or hard copy of Hazardous Material Information Systems Data developed per MCO 5100.25 for all HW generated.

j. Sample copies of completed turn-in documents (Form DD-1348-1) and HW labels for each type of HW generated and disposed of.

2. HM/HW Collection and Storage Procedures/Requirements.

a. Possession of a properly completed and signed WID constitutes authorization to generate the specifically named HW. Failure to submit a WID to HMDC within 30 days of date HW first generated or handled or 60 days of the date of this Order (whichever is later) will be considered a violation of this Order. HMDC's are responsible for monitoring and enforcement of this requirement.

b. Only Department of Transportation (DOT) approved containers labeled per WID or HWMSOP will be used for storage of HW awaiting disposal. HMDO's are responsible for enforcing this standard.

c. All personnel routinely handling or responsible for HW management must be properly trained per this Order and references (a) and (b). OIC's are responsible for maintaining training records for personnel within their cognizance. HMDC's are responsible for enforcement of this requirement.

d. All HW containers and storage areas will be inspected weekly using format provided by cognizant HMDC/HMDO. A written record of corrective action will be maintained per HMDO/HMDC guidance. Director, Natural Resources and Environmental Affairs Division, (NREAD), MCB will assist HMDC/HMDO develop guidelines.

e. Spills of HW/HM will be promptly reported to the Base Fire Department at the Emergency Telephone Number 451-3333. OIC's are responsible for maintaining absorbents, safety equipment, and other supplies and equipment required for dealing with minor spills. HWMSOP's will give specific guidance in this area.

f. A Form DD-1348-1 will be completed and submitted to the cognizant HMDO not later than 45 days after the "accumulation start date" on the HW label on the container.

g. HMDC will be notified by telephone, confirmed in writing, of anytime DRMO has not accepted accountability of a HW within 75 days after the "accumulation start date" on any HW container.

3. Hazardous Material (HM) and Hazardous Waste (HW) Turn-in Procedures. The following steps will be taken to initiate final disposal of HM/HW. At any time that a major problem or controversy arises, the organization attempting to turn-in the item will immediately notify the responsible Hazardous Material Disposal Coordinator (HMDC). The HMDC will be responsible for coordinating efforts to resolve the problem/controversy and will utilize the assistance of the Director, Natural Resources and Environmental Affairs Division (NREAD), Facilities Department, Marine Corps Base, telephone extension 2083, 2195. Unresolved problems/controversies will be referred to the Assistant Chief of Staff, Facilities, Marine Corps Base. See Note 1 below.

STEP 1. The Officer in Charge (OIC) of the organization having physical custody of HM/HW is responsible for turn-in of HM/HW unless otherwise specified by HMDC. OIC will properly containerize the HM/HW and submit a Form DD 1348-1 to the cognizant Hazardous Material Disposal Officer (HMDO) per instructions in organization's HWMSOP. Questions not addressed by HWMSOP will be directed to HMDO.

STEP 2. The HMDO will physically inspect the HM/HW and determine if the Form DD 1348-1 is properly completed and the HM/HW is properly packaged. The HMDO will coordinate correction of any problems. Unresolved problems will be referred to cognizant HMDC for resolution. Once problem's resolved, HMDO will forward (preferably hand deliver) the Form DD 1348-1 to the Defense Reutilization and Marketing Office (DRMO) Headquarters, Bldg. 906. See Note 2 below.

STEP 3. The DRMO will inspect the HM/HW if necessary, and will determine if DRMO is accountable (i.e., responsible) for disposal of the HM/HW. If DRMO determines that the local activity, not DRMO, has responsibility for disposal of the HM/HW, the DRMO will so notify the cognizant HMDC in writing with a copy to the NREAD. The HMDC and NREAD will cooperate in developing case specific procedures for disposal of the item. Assistant Chief of Staff, Logistics, MCB, will provide contracting support.

STEP 4. If DRMO determines that DRMO is accountable for HM/HW, DRMO will determine where the HM/HW will be stored awaiting disposal. HW must be stored at the DRMO facility at TP-451 complex, unless otherwise approved by the Assistant Chief of Staff, Facilities, MCB. DRMO will submit a request to the Assistant Chief of Staff, Logistics to arrange transportation of the HM/HW to DRMO designated facility.

STEP 5. Assistant Chief of Staff, Logistics, in cooperation with HMDO, will determine if generating organization can safely, legally transport the item to DRMO designated facility. Assistant Chief of Staff, Logistics will supervise transportation of HW. Whenever practical, Command turning in a HM will provide transportation. Assistant Chief of Staff, Logistics will cooperate with the HMDC for the generating organization in promoting efficient, safe transportation. Spills or other emergencies will be promptly reported to the Base Fire Department at 451-3333. Drivers will be provided written spill prevention and response guidance.

STEP 6. When the HM/HW arrives at storage facility, DRMO will inspect prior to unloading. DRMO is authorized to refuse the HM/HW if any significant discrepancies exist. DRMO will immediately notify cognizant HMDC and NREAD of DRMO's refusal to accept the HM/HW. The transporting vehicle will be secured and will not be moved outside the immediate vicinity of DRMO facility except for emergency situations involving risk to public safety or to property. DRMO, HMDC and NREAD will cooperate in making an immediate decision on corrective action. If problems cannot be promptly resolved the HM/HW will be returned to the generating organizations facilities. When DRMO accepts physical custody of the HM/HW, turn-in is complete.

NOTE 1: Marine Corps Air Station, New River units will follow turn-in procedures set forth in Air Station Order 6280.1_.

NOTE 2: HMDO should maintain a log of documents showing date document accepted by DRMO, accumulation start dates, and the type and quantity of HW.

ENCLOSURE (1)

WASTE IDENTIFICATION DOCUMENT (WID)

DATE _____

WID # _____

RUC # _____

1. GENERATING WORK CENTER INFORMATION

_____

Shop Contact Command Building Phone Ext.

2. WASTE IDENTIFICATION

a. WASTE NAME: Common _____ Chemical(s) _____

_____

b. PHYSICAL FORM: (CHECK) ___Liquid ____Solid _____Sludge _____Other (Specify)

_____

c. MANUFACTURER: _____ d. NATIONAL STOCK NUMBER: _____

e. CONTAINER: (TYPE AND SIZE) _____

f. GENERATION RATE: (e.g., gal/day, lbs/day) _____

g. FREQUENCY OF GENERATION _____

h. EXPECTED ANNUAL GENERATION: (GALS, LBS) _____

i. DESCRIBE WASTE GENERATION PROCESS: _____

_____

_____

j. HAS WASTE BEEN MIXED WITH ANY OTHER MATERIAL? _____ Yes _____ No If yes, specify _____

_____

3. REASON FOR DISPOSAL: (CHECK)

____Exceeded shelf life _____ Served intended purpose ____ Unused ____ Other (specify) _____

4. REQUEST FOR WASTE CHARACTERIZATION BY NREAD: I am unable to properly classify the above waste. NREAD assistance is requested. Cost of Laboratory Analysis should be charged to the following Cost Account Code. _____

_____
HMDO Signature DATE

5. CERTIFICATION: I certify that the above named materials are the only compounds in the waste containers listed above and have not been mixed with any other materials.

_____
HMDO Signature DATE

Appendix A to
ENCLOSURE (1)

TO BE COMPLETED BY THE HMDC AND COPIES SENT TO THE HMDO, DRMO, AND DIRECTOR, NREAD

6. WASTE CHARACTERIZATION: DATE COMPLETED _____ LAB REPORT # _____

7. WASTE CLASSIFICATION: _____ Hazardous _____ Nonhazardous

8. EPA WASTE NUMBER(S): _____

9. REASON FOR HAZARD CLASSIFICATION: _____

_____

10. HANDLING INSTRUCTIONS: _____

_____

_____

_____

11. DTID 1348-1 REQUIRED: _____ Yes _____ No

12. CONTAINER AND LABELING REQUIREMENTS:

a. DOT/DOD CONTAINER TYPE: _____

b. DOT PROPER SHIPPING NAME: _____

c. DOT HAZARD CLASS: _____

d. UN/NA NUMBER: _____

e. ADDITIONAL REQUIREMENTS: (FOR DRMO) _____

_____

_____

_____

13. SPECIAL PRECAUTIONS AND/OR INSTRUCTIONS: _____

_____

_____

_____

_____

_____

14. _____

HMDC Code Date
Signature

RESPONSIBILITIES FOR HAZARDOUS MATERIAL (HM)/HAZARDOUS WASTE (HW) DISPOSAL

1. Compliance with hazardous waste management and disposal regulations requires the cooperative effort of many functions within the Camp Lejeune complex. The following outlines the responsibilities of various officers and managers relative to hazardous waste management:

a. Hazardous Material Disposal Officer (HMDO) will:

(1) Provide assistance to HW generators and handlers in the preparation and timely submittal of HW turn-in documents per this Order.

(2) Perform quarterly inspections of HW generation and storage sites and notify OIC's of corrective action required. Inspection format developed per paragraph 1b(2) below will be used.

(3) Keep OIC's and key personnel informed of any changes in regulations affecting HW activities within the HMDO's cognizance and ensure that HW standard operating procedures (SOP) are up-to-date and readily available for review by personnel involved in HW management.

(4) Develop a roster of personnel involved in HW management at each work site within the HMDO's cognizance.

(5) Develop and provide HW training requirements to HMDC for personnel within the HMDO's cognizance.

(6) Actively promote the reduction of volume and toxicity of HW produced by organizations within the HMDO's cognizance.

(7) Conduct surveys required to identify HW generation and storage sites within the HMDO's cognizance and provide periodic updates, as requested, to the HMDC.

b. Hazardous Material Disposal Coordinator (HMDC) will:

(1) Provide assistance to HMDO's in handling HW management problems. Serve as HMDO for organizations not having sufficient HW activity to justify appointment of a HMDO.

(2) Perform annual inspection of HW generation and storage sites and notify HMDO's of corrective action required. Inspection format will be developed in cooperation with the Director, Natural Resources and Environmental Affairs Division, (NREAD), Marine Corps Base.

(3) Inform HMDO's of any changes in regulations affecting HW activities under the HMDO's cognizance.

(4) Serve as point of contact on matters pertaining to HW management and implementation of this order within the HMDC's command.

(5) Develop listings of HW generation and storage facilities.

(6) Be responsible for identifying assistance required to provide HW training. Requests for assistance from MCB will be submitted in writing "Attention Director, NREAD."

c. Assistant Chief of Staff, Facilities will:

(1) Have overall responsibility for implementation of the subject program and maintaining compliance with requirements of references (a) and (b) and related local, state and federal regulations.

(2) Have overall responsibility for management of pollution abatement projects per latest revision of MCO P11000.8.

ENCLOSURE (2)

(3) Have overall responsibility for local implementation of Marine Corps programs to correct environmental discrepancies associated with past HM/HW disposal sites.

(4) Ensure that plans and specifications for new facilities provide adequate facilities and collateral equipment for the handling and storage of HM/HW.

d. Director, Natural Resources and Environmental Affairs Division will:

(1) Provide a staff specialist to serve as HMDC for Marine Corps Base.

(2) Provide a command point of contact with state and federal agencies on matters pertaining to the subject program.

(3) Monitor ongoing activities as required to identify, evaluate and provide up-channel reporting of environmental deficiencies related to the subject program.

(4) Coordinate day-to-day implementation of this Order and provide the following types of technical assistance:

(a) Laboratory support, if required, for HW identification.

(b) Training to HMDC's and HMDO's on state and federal environmental laws, regulations and procedures.

(c) Guidance on HM/HW SOP preparation.

(d) Guidance on HM/HW spill prevention, control, cleanup and related HW disposal.

(e) Coordination of HM/HW recycling/minimization program.

(5) Coordinate development and implementation of HW Training Program required for compliance with references (a) and (b).

e. Base Maintenance Officer will:

(1) Collect and dispose of used POL's and oily wastes from collection tanks and other oil pollution abatement facilities in a manner consistent with this Order and references (a) and (b).

(2) Unless otherwise provided, operate and maintain industrial waste collection, pretreatment and disposal facilities within the Camp Lejeune complex in a manner consistent with this order, references (a) and (b) and related State regulations.

(3) Provide HM/HW spill response services in accordance with reference (d).

f. Base Fire Chief will:

(1) Provide HM/HW spill and related emergency services per references (d) and (e) and related HW/HM Spill Contingency Plans.

(2) Provide routine inspections of facilities where HM/HW are stored and handled, and report all discrepancies to cognizant HMDC. Elimination of the following hazards will be stressed:

(a) HM/HW stored in defective containers or containers which are not properly marked with the chemical name, NSN (if appropriate) and hazard label of the contents.

(b) Incompatible HM/HW are stored in a manner with significant potential threat of fire, explosion, or release of toxic fumes or gases due to chemical reaction during spills or leaks.

(c) HM/HW stored in a manner likely to result in a significant discharge to the environment.

g. Assistant Chief of Staff, Logistics will:

(1) Appoint an officer to serve as HMDO for the Logistics Department.

(2) Ensure that suppliers provide hazardous material safety data sheets for all HM procured through open purchase and will provide one copy to unit ordering HM and one copy to the Base Safety Manager.

(3) Ensure local stocking and availability of the following on a reimbursable basis: empty containers; labels; labeling equipment; absorbents; frequently used minor equipment and HM/HW handling supplies required to implement this Order and reference (d).

(4) Provide contracting services required to dispose of HM or HW for which DRMO is not accountable.

(5) Serve as principal agent for the Commanding General on matters pertaining to HM and HW transportation, and will be responsible for:

(a) Monitoring all HW transportation for compliance with requirements of references (a), (b) and (c) and related state and federal regulations.

(b) Providing transportation services and related record keeping required for implementation of this Order and which are not available from the Defense Reutilization and Marketing Officer or the organization generating the HM/HW.

h. Assistant Chief of Staff, Manpower will:

(1) Coordinate for Marine Corps Base the development of a Hazardous Material Information System, per MCO 5100.25. Assist NREAD in providing safety data and related technical support to HMDC's, HMDO's and other cognizant officials as required to implement this Order.

(2) Provide HM related safety training required to implement HW training plans developed in accordance with paragraph 1d(5) of this enclosure.

i. Officer in Charge, Preservation, Packaging (PP&P) Section, 2dFSSG will provide PP&P support (in accordance with established regulations and procedures) to HMDO's, HMDC's, and other HW managers required to accomplish the following:

(1) Identification of type of containers and labeling required for compliance with reference (c) and this Order.

(2) Packaging of HM/HW required for safe storage and transportation during disposal per this Order.

(3) HM transportation certification required for compliance with reference (c).

j. Defense Reutilization and Marketing Officer (DRMO) will:

(1) Operate the base Long-Term Hazardous Waste Storage Facility at the TP-451 complex in accordance with state permit issued under regulations promulgated under references (a) and (b).

(2) Provide HM and HW disposal services to organizations within the Camp Lejeune/MCAS, New River complex in accordance with DOD regulations, references (a) and (b), and related state and federal regulations.

(3) Receive and process HM/HW turn-in documents in a timely manner and provide prompt notification to HMDO's of any document not satisfying applicable turn in criteria or which contain HM/HW for which DRMO is not accountable.

(4) Maintain records of DRMO HM/HW storage and disposal activity in a manner which provides information required for preparation and timely submittal of required reports to state and federal regulatory agencies.

(5) Keeps HMDC's, HMDO's and other cognizant officers informed of changes in DRMO policies and procedures which affect local implementation of the subject program.

k. Commanding Officers of the following Base Commands/Organizations will designate a Primary and Alternate HMDO to carry out duties outlined in 1a and 1b above: Marine Corps Engineer School; Rifle Range Detachment; Field Medical Service Support School; Marine Corps Service Support School; Reserve Support Unit; Infantry Training School; Support Battalion; Headquarters Battalion; Assistant Chief of Staff, Morale, Welfare and Recreation; Assistant Chief of Staff, Logistics, and Base Maintenance Officer within their respective commands/organizations.

HAZARDOUS WASTE TRAINING REQUIREMENTS AND GUIDELINES

1. Hazardous waste (HW) training is a specific requirement of state and federal regulations promulgated under the Resource Conservation and Recovery Act (RCRA). A review of RCRA requirements and the actual HW activity aboard the Camp Lejeune/Marine Corps Air Station, New River complex indicates that a relatively small percentage of personnel require highly specialized HW training. Generally, the requirements for the remaining personnel involved in HW management are satisfied by routine on-the-job training and related safety and fire-prevention training readily available locally. Providing this training will have minor impact on organizational commanders, in that training required is directly job related. Appendix (A) Part II identifies the minimum HW training required, for personnel identified in Section 2d below.

2. Initial and annual refresher HW training is required for all personnel in this Section. For the purpose of these guidelines, only those personnel directly involved in HW handling, storage and disposal will be subject to the HW training documentation requirements of RCRA. A special HW training record, i.e., Appendix (A) Part I will be developed for the following personnel:

a. All Hazardous Material Disposal Officers (HMDO), Hazardous Material Disposal Coordinators (HMDC), and alternate HMDO's and HMDC's.

b. Defense Reutilization and Marketing Officer (DRMO) and subordinate personnel routinely involved in HW handling, storage, turn-in and disposal.

c. Activity personnel involved in transportation of HW required for the implementation of this Order.

d. Personnel assigned to work places meeting the definition of HW generators, HW accumulation areas or satellite HW accumulation areas and involved in one or more of the following:

(1) Collection, handling, storage and transportation of HW.

(2) Inspection, and related follow-up, of HW handling/storage areas.

(3) Response to HW spills and related emergencies.

(4) Preparation and submittal of HW turn-in documents.

3. Other activity personnel providing professional and technical support to HW management include the following:

a. Fire Protection personnel

b. Safety specialists

c. Environmental staff

d. Industrial hygienists

Preparation of Appendix A for these staff specialists and emergency personnel is not required. Duties and training provided to these individuals will consist of standard position descriptions and civilian personnel records.

4. Responsibility for providing specialized HW training required for compliance with RCRA is assigned to Assistant Chief of Staff, Facilities. The following officials are responsible for notifying Assistant Chief of Staff, Facilities of specialized training requirements of their subordinates and other personnel as shown.

a. The DRMO for self and subordinates

b. The Assistant Chief of Staff, Logistics for subordinates.

c. HMDC's for personnel shown in 2d above within HMDC's cognizance

d. Director, Natural Resources and Environmental Affairs Division (NREAD) for subordinates and primary and alternate HMDC's and HMDO's.

5. Organizational commanders are responsible for developing and implementing plans and procedures to provide RCRA required training and maintain records outlined in Appendix A. Organizational commanders will ensure that all new/newly assigned personnel are provided appropriate HW training and close supervision required to comply with RCRA and applicable personnel safety fire prevention and occupational health standards. Organizational commanders will notify HMDC's of HW training requirements. Notification will include names and addresses of persons to be trained and an accurate description of the training required. HMDC and Assistant Chief of Staff, Facilities representative will coordinate the scheduling and funding of specialized HW training.

6. Records of HW training must be maintained for each employee for three years after employee transferred or terminated, except as follows: if an employee is transferred to a HW related position within the Camp Lejeune/Marine Corps Air Station, New River complex, the HW training records will be transferred to the new organization. Responsibility for maintaining official files of HW training records are as follows:

a. HMDC's will maintain records of HW training for HMDC's, HMDO's and alternate HMDC's and HMDO's within their cognizance.

b. DRMO will maintain HW training records for all employees identified in paragraph 2b above.

c. Assistant Chief of Staff, Logistics will maintain HW training records for all subordinates involved in activities identified in paragraph 2c above.

d. HW training records for all employees identified in paragraphs 2(a) - 2(d) will be maintained on Appendix A, Part I. HMDO will maintain HW training records for personnel identified in paragraph 2(d) above. A copy of training records for personnel identified in paragraph 2(d) above will be maintained in HWMSOP.

PART I

RECORD OF HAZARDOUS WASTE TRAINING

1. Employee Name: _____

2. Job Title/MOS: _____

3. Name of Organization: _____

4. Date this Record Established: _____

5. Description of HW Duty: _____

6. Description of HW Training Completed:

a. Date	b. Description of Training/Name of Trainer	c. Signature and Date

Appendix A to
ENCLOSURE (3)

RT I - Description of HW Training Completed - (continued)

a. Date	b. Description of Training/Name of Trainer	c. Signature and Date

PART II

MINIMUM LEVELS AND RECORD KEEPING FOR HAZARDOUS WASTE MANAGEMENT ORIENTATION TRAINING

Personnel routinely handling HW will be provided sufficient on-the-job training to ensure adequate awareness to the items listed below:

(1) The types and characteristics of HM/HW handled.

(2) Applicable activity oil and hazardous substance spill prevention and contingency plan contained in BO 11090.1_.

(3) Organizational procedures and policy for implementation of BO 6240.5.

(4) Procedures to follow in protecting personal safety during HM/HW emergencies.

(5) The HW Standard Operating Procedure for the organization.

(6) The employees specific HW handling responsibilities.

RECORD OF HAZARDOUS WASTE TRAINING

1. Employee Name: _____

2. Job Title/MOS: _____

3. Name of Organization: _____

4. Date this Record Established: _____

5. Description of HW Duty: _____

6. Description of HW Training Completed:

a. Date	b. Description of Training/Name of Trainer	c. Signature and Date

PART I - Description of HW Training Completed - (continued)

a. Date	b. Description of Training/Name of Trainer	c. Signature and Date

PART II

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(6) The employees specific HW handling responsibilities.

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
WASHINGTON, D.C. 20380-0001

MCO 6280.8
LFL-dt
23 Jul 1987

MARINE CORPS ORDER 6280.8

From: Commandant of the Marine Corps
To: Distribution List

Subj: Hazardous Waste Minimization

Ref: (a) MCO P11000.8B

Encl: (1) Hazardous Waste Minimization Techniques

Report Required: Hazardous Waste Report (Report Symbol MC-6280-02), par. 4c(4)

1. Purpose. To identify the background and concepts for the minimization of hazardous waste (HW) generation through various methods and techniques.

2. Background

a. The Marine Corps hazardous waste minimization (HAZMIN) policy is to minimize the volume and toxicity of the HW it generates in a practical and economical manner. HAZMIN consists of two parts:

(1) Avoiding HW generation through the application of best management, engineering, and equipment to Marine Corps processes and procedures.

(2) Reuse and/or treatment of HW that is generated by a Marine Corps process or procedure reducing it to a nonhazardous state.

Emphasis is on HW generation reduction and elimination. This program uses HAZMIN technologies, such as plastic media paint stripping and zero discharge hard chrome plating, as well as changed management procedures to reduce/eliminate HW generation.

b. Due to the national concern that buried waste has the potential to enter the groundwater or otherwise pollute the environment, two strict environmental laws have been implemented. These laws are: the Resource Conservation and Recovery Act (RCRA) which sets up a system to track and control the handling and disposal of HW produced today; and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or the "Superfund Law" which holds the generator of a HW responsible for that waste as long as it exists, regardless of who has assumed management custody.

If the Marine Corps generates a HW today, and it causes an environmental or health problem at anytime in the future, the Marine Corps is legally responsible for that problem and appropriate corrective action despite "proper" disposal in accordance with all requirements. In summary, this responsibility cannot be delegated to another party.

c. The RCRA recognizes the long-term problems of HW landfills. A 20-year guaranteed landfill "liner" is obviously of little comfort if a HW does not degrade with time; in fact, no one can really "guarantee" a HW landfill. Consequently, the RCRA prohibits placement of bulk or noncontainerized liquid HW in any landfill. The Office of the Secretary of Defense, noting the long-term liabilities of HW, and solvents in particular, has banned the disposal of waste solvents by landfill (whether through contract or otherwise) and required solvent users to start recycling nearly all solvents by October 1986.

d. The RCRA also requires every generator of HW to: (1) certify on the HW manifest which accompanies all HW that the generator has a program to minimize the amount and toxicity of wastes generated to the degree the generator determines to be economically practicable, and that the generator's proposed treatment, storage, or disposal method minimizes the present and future threat to human health and the environment, and; (2) inclu in the biennial report to the Environmental Protection Agency (EPA) Regional Administrator (40 CFR 262.41), the activity's efforts to reduce the waste volumes and toxicity, as well as describe the changes already accomplished. Also, any installation that holds a RCRA permit to operate a HW treatment, storage, or disposal facility must make similar certifications at least annually per 40 CFR 264.73. This certification is maintained at the facility as part of the operating record until closure of the facility.

3. Discussion

a. HAZMIN is required by law. As stated in paragraph 2d, preceding, Marine Corps installation commanders (or their designated representatives) must certify they have HAZMIN programs. There are also legal timetables in the RCRA that will shutdown future landfill disposal of many HWs, whether or not there are adequate alternate means of disposal.

b. Basic HAZMIN techniques are outlined in the enclosure. The three consecutive steps in the HAZMIN program are as follows:

(1) Avoid generation of HW through:

(a) Considering of HAZMIN in the weapons and support equipment acquisition process.

(b) Tighting control of hazardous materials at Marine Corps installations.

(c) "Delisting" of specific Marine Corps wastes from generic HW streams listed by regulatory agencies.

(d) Substituting of a material in a process so that HW generation is reduced or eliminated.

(e) Changing the process to reduce or eliminate HW generation.

(f) Extending of shelf-life and other factors which cause hazardous materials to become excess and enter the Defense Logistics Agency (DLA) reuse, transfer, donation, and sale screening process.

(2) Recycle the HW by:

(a) Using it as the input for a process which does not require the degree of purity of the original process (called cascade use).

(b) Cleansing (e.g., filtering or distilling), or otherwise upgrading the HW so that it can be used for the original or another process.

(3) Treat the HW to a nonhazardous state by neutralization, solidification, volume reduction, detoxification, or thermal destruction. (Note, there may be hazardous residues; i.e., waste, from these treatment processes.)

c. The HAZMIN program is not exclusively an environmental program; it must be a cooperative effort between acquisition, supply, production, facilities, and environmental personnel at every level of command.

d. The Department of the Navy HAZMIN program is a 5-year program to put into place equipment and procedures which will reduce the quantity of the HW now treated and disposed of off-station by contract (DLA or Navy/Marine Corps contract), or disposed of on the installation. The goals are a 50 percent reduction (by weight) in HW generated and the elimination of the disposal of all untreated HW by 1992 Marine Corps-wide. These are based on reductions considered to be achievable in each process which generates HW.

e. The HAZMIN program will be financed through several mechanisms:

(1) Local resources will be used to implement management and operational changes to effect HW generation reduction to the maximum extent practical.

(2) Limited Headquarters Marine Corps Environmental Management (P1 and R2) Operations and Maintenance Marine Corps funds are available to support HAZMIN studies and required construction (chapter 4 of the reference applies).

(3) Additional funding through the Defense Environmental Restoration Account (DERA) will periodically be available to supplement activity projects requiring procurement and installation of HW reduction equipment. These funds must be considered supplemental, and internal Marine Corps resources must be used to the maximum extent possible.

4. Action

a. The Commandant of the Marine Corps (CMC) (LF) will:

(1) Oversee implementation of a hazardous material control program at each activity.

(2) Plan, program, and budget, through normal channels, funds (beyond those made available from the DERA) for projects necessary to achieve HAZMIN goals for field activities.

(3) Initiate actions necessary to assure that HAZMIN projects and procedures do not adversely affect either the mission of the activity or the quality of the product of the activity.

(4) Provide funds for HAZMIN projects insofar as funds are available from the DERA or other fund sources.

(5) Report progress on meeting HAZMIN goals to SECNAV and Department of Defense.

b. The CMC (LM) will:

(1) Ensure that the acquisition process for all weapons and support systems considers HAZMIN. This should include review of maintenance cycles and materials recommended by vendors, to ensure they prescribe minimum maintenance frequency and use the lowest volume and toxicity of hazardous materials which will effectively maintain the equipment.

(2) Ensure to the maximum extent practicable, consumable hazardous materials which have shelf-life considerations accurately define maximum shelf-life and are procured only in quantities sufficient to meet mission requirements.

c. Commanding generals/commanding officers of Marine Corps activities shall:

(1) Develop and implement programs using the steps described in paragraph 3b, preceding, to meet HAZMIN goals.

(2) Identify and program HAZMIN projects per the procedures in chapter 4 of the reference.

(3) Certify to the Defense Reutilization and Marketing Office and on HW manifests that HAZMIN programs are implemented. This Order provides the basis for such certification.

(4) Include a description of the efforts undertaken during the year to reduce the volume and toxicity of waste generated and actual reductions achieved in the Biennial Report to the Regional Administrator of EPA. This report is due no later than 1 March of each even numbered year. Instructions and Form EPA 8700-13 (Hazardous Waste Report) are available from the cognizant EPA Regional Administrator or the EPA Forms and Publications Distribution Center, 26 West Saint Clair, Cincinnati, OH 45268. Copies of this report shall be provided to the CMC (LFL), the cognizant Naval Facility Engineering Command, Engineering Field Division, and the Naval Energy and Environmental Support Activity, Port Hueneme, CA 93043. Report Control Symbol MC-6280-02 is assigned to this report.

5. Records Disposition

a. Hazardous material control program records and related data are accumulated by Marine Corps commanders during the process of implementing HW management programs. Included are surveys, studies, and data documenting histories of unusual incidents, evaluations, and recommendations concerning hazardous conditions, together with related supportive records.

Retention period: Transfer to the Washington National Records Center when 5 years old. Destroy when 75 years old.

b. Hazardous waste manifests.

Retention period: At least 3 years from date waste was accepted by the initial transporter.

c. Biennial Report and Exception Reports.

Retention period: At least 3 years from due date of report unless unresolved enforcement actions regarding the regulated activity exist, in which case reports may not be destroyed until actions are resolved.

d. Records of test results, waste analyses, or other determinations.

Retention period: At least 3 years from date waste was sent to on-site or off-site treatment, storage, or disposal.

NOTE: Though these timeframes comply with the regulatory minimum retention periods, the long term environmental and personal liabilities associated with HW management dictate retention of these records longer if space permits.

J. J. WENT
Deputy Chief of Staff
for Installations and Logistic

DISTRIBUTION: 2020001, 002, 004, 005, 006, 008, 009/3700001, 002, 004/6025002, 003/7230001/7315001, 002

Copy to: 7000144/8145001

HAZARDOUS WASTE MINIMIZATION TECHNIQUES

Industrial Operation or Process	Hazardous Waste Generated	Hazardous Waste Reduction Techniques
Metal working/ heat treating	coolants; quenching oils; salt baths	filtration, centrifuge for reuse; fuel supplements; neutralization
Painting	thinners; heavy metals; polyurethanes	process change: airless sprays, powders, water base primers; recycle; segregation; incineration; replace water curtain with dry filters in spray booth
Transport vehicle maintenance	oils; lubricants; coolants; petroleum; alcohols	fuel supplements; waste segregation; recycle
Cleaning, degreasing	solvents; detergents; ketones; freon	fuel supplements; recovery; substitution
Electrical/electronic maintenance	heavy metals; Polychlorinated biphenyls; solvents; freon	material control; substitution; incineration
Stripping	solvents; caustics	process change: dry media blasting; laser stripping; water jet
Metal plating/ finishing	acids; bases; metal rinses	process change: zero discharge hard chrome plating; industrial waste treatment: neutralization, ion exchange, electrolytic precipitation; non-cyanide baths

ENCLOSURE (1)

Industrial Operation or Process	Hazardous Waste Generated	Hazardous Waste Reduction Techniques
Battery shop operations	acids; bases, cyanides	neutralization; industrial waste treatment; domestic waste treatment (with dilution)
Laboratory operations	spent/used/expired chemicals; silver (photography)	material control; recovery; industrial or domestic waste treatment
Test and evaluation	contaminated soils; calibration fluids	test/burning pad; recovery/reuse; static testing
Propellant, explosive manufacture	pink, red acid wastes	industrial waste treatment
Industrial waste treatment	sludges; spent carbon; ion exchangers; filters	dewatering; delisting; regeneration; incineration
Fuel storage	tank bottoms; contaminated or excess POL	biological treatment; fuel supplement; reblend; recycle
Munitions demil	OB/OD residues; contaminated soil	burning pads; containment facilities; delisting; downgrade; reuse; incineration

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

BO 11090.1B
MAIN/DDS/th
28 May 1981

BASE ORDER 11090.1B

From: Commanding General
To: Distribution List

Subj: Oil Pollution Prevention and Abatement and Oil and Other Hazardous Substances Spill Contingency Plan

Ref: (a) MCO P11000.8A
(b) Resource Conservation and Recovery Act (RCRA) of 1976 (NOTAL)
(c) Clean Water Act (NOTAL)
(d) Oil Spill Prevention Control and Countermeasure Plan of 10 June 1978, Camp Lejeune, NC (NOTAL)

Encl: (1) Oil and Hazardous Material Spill Prevention, Containment, Cleanup and Disposal Guidelines
(2) Oil and Other Hazardous Material Spill Contingency Plan

1. Purpose. To revise existing oil and other hazardous material related pollution abatement and prevention procedures for Marine Corps Base, Camp Lejeune and Marine Corps Air Station (Helicopter) (MCAS(H)), New River and to assist the Commanding General in the implementation of reference (a) with respect to pollution abatement.

2. Cancellation. BO 11090.1A.

3. Policy. It is the continuing policy of the Commanding General to actively participate in environmental pollution abatement, to take positive planning and programming action to abate and correct oil and other hazardous materials, related pollution problems and to incorporate appropriate pollution control and prevention facilities in all new construction aboard this installation. The intent of this policy is to carry out the applicable measures of references (a), (b), (c) and (d) and to prohibit the discharge of oil, oily mixtures and other hazardous substances except in designated areas by authorized personnel.

4. Responsibilities

a. Base Maintenance Officer has overall responsibility for:

(1) Maintenance of water pollution abatement facilities and the central storage and related collection and transportation of waste petroleum products.

(2) Providing personnel required for routine monitoring, surveillance, upchannel reporting and enforcement of unauthorized discharges of oil and other hazardous materials and related significant environmental problems of an ongoing nature involving the handling and disposal of petroleum products and other hazardous materials regulated by references (a), (b) and (c).

b. Commanding Officers/Area Commanders are charged with the responsibility of preventing spillage and other unauthorized discharge of oil and other hazardous materials within their own areas and will develop and implement plans and procedures which are consistent with applicable regulations and enclosures (1) and (2) for preventing, reporting, containing and cleaning up such spillage or unauthorized discharge.

c. Director, Natural Resources and Environmental Affairs Division, Base Maintenance Department or his representative will assume responsibility of On-Scene Coordinator (OSC) upon arrival at the scene of an oil or other hazardous material spill in accordance with procedures outlined in references (a) and (b) and enclosure (2).

d. Base Fire Chief or his senior representative will provide initial response and other assistance with any spill of oil or other hazardous material as outlined in enclosure (2), until a verification is made that the reported spill has occurred in an aircraft operating area aboard MCAS(H), New River. If the latter situation exists, the Base Fire Chief will provide a standby crew to assist, if the crash crew MCAS(H), New River is unable to contain the spill within the aircraft operating area.

e. Crash Crew, MCAS(H), New River will develop and implement a written procedure for the initial response to and containment and cleanup of oil and other hazardous materials spills in aircraft operating areas aboard MCAS(H), New River. Procedures will be consistent with applicable regulations and enclosure (2).

5. Action. Discharge of oils or other hazardous materials on or into the grounds and streams of this installation is prohibited. Cognizant officers will take necessary action to assure compliance. Commanding Officers/Area Commanders shall conform to the standards and criteria set forth in enclosures (1) and (2).

6. Applicability. Having received the concurrence of the Commanding Generals, 2d Marine Division, FMF; 2d Force Service Support Group, (Rein), FMFLANT; and the Commanding Officers of the Marine Corps Air Station (Helicopter), New River and tenant units; Naval Regional Medical Center; and Naval Regional Dental Center, this Order is applicable to those Commands.

J. R. FRIDELL
Chief of Staff

DISTRIBUTION: A
BMAINO (100)

OIL AND HAZARDOUS MATERIAL SPILL PREVENTION, CONTAINMENT, CLEANUP, AND DISPOSAL GUIDELINES

1. The prevention of oil and hazardous-material spills and the resultant environmental damage is the responsibility of all Commanders.

2. All Commanders and Department Heads will publish and prominently post directives setting forth detailed policies and procedures for the control and prevention of oil and hazardous-substance pollution specifically applicable to their organization.

3. All Commanders and Department Heads will take the following actions:

a. Take positive measures to prevent spills of oil and hazardous substances to include a review of the Command's maintenance and operational procedures.

b. Conduct frequent inspections of areas and facilities assigned to ensure compliance with published procedures.

c. Establish immediate action procedures for the amelioration of pollution which may result from oil and hazardous-substance spills, to include the stocking of materials required to carry out the procedures.

d. Ensure that all personnel within their Command are thoroughly indoctrinated regarding the environmental impact of oil and hazardous substance spills and proper disposition of oil and hazardous substances.

e. Encourage maximum reuse of technically contaminated fuels by multifuel-engine powered tactical vehicles.

4. The following guidelines are generally applicable to garrison operations:

a. Contaminated fuels which cannot be burned in tactical vehicles and other used petroleum products, except gasoline, will be collected in a tank of at least 250-gallon capacity equipped with a funnel, strainer and cover to prevent entrance into the tank of trash, water and other foreign matter. When the container requires emptying, the Officer in Charge (OIC) will notify the Base Maintenance Department (Telephone 5909). The Base Maintenance Department will dispatch a vehicle to remove the waste oil. In the event of an emergency 55-gallon drums may be used as a temporary expedient storage container for waste oil.

b. Waste lubrication grease will be collected, stored in suitable containers and disposed of in accordance with instructions provided by Base Maintenance Department representative. Send request via Chain of Command to the Base Maintenance Officer.

c. Oil-saturated soil in the vicinity of oil and petroleum storage areas should be removed to the sanitary landfill and replaced with fresh earth.

d. To dispose of contaminated gasoline contact the Base Fire Department (Telephone 3004).

e. Disposal of hazardous waste and other hazardous substances such as acids, poisons and solvents through any drainage system to include sinks, wash racks, storm drains and natural drainage systems is specifically prohibited. These products will be segregated and stored in suitable containers and will be disposed of in accordance with instructions provided by Commanding General, Marine Corps Base, Camp Lejeune.

f. Petroleum products containers will be disposed of at the sanitary landfill, or recycled, if appropriate, with the exception of 55-gallon drums and durable metal containers which will be disposed of through the Defense Property Disposal Officer, Building 906.

g. Personnel changing private owned vehicle (POV) oil on Base will use established Base Special Service facilities and deposit waste oil in one of the authorized collection tanks on Base and the Air Station.

h. Oil and gasoline storage containers larger than 550-gallon capacity will be diked to include a drainage line and valve which will be locked. The latter will be operated only by personnel authorized by the Unit Commander.

5. Field operations will comply with the guidance enumerated in the following subparagraphs:

a. All tactical refueling systems installed on Base must first be approved by the Base Maintenance Officer.

b. Fuel stored in tactical refueling systems will be properly diked, as required by current regulations. As a general rule, the dike must be capable of containing at least the volume of the container stored within it.

c. When using fuel tanker vehicles:

(1) Hoses, nozzles and connections will be checked frequently for serviceability to avoid leakage of fuel.

(2) Refueler operators will stay with the vehicle during refueling operations.

(3) Tanker vehicles containing fuel will be parked in such a manner as to avoid the possibility of spilled fuel entering natural or man-made drainage systems.

(4) During recirculation operations, nozzles will be secured to the vehicle.

(5) All waste petroleum products generated during field exercises will be stored (55-gallon drums, etc.) and disposal instructions obtained from the Director, Natural Resources Division, Base Maintenance Department (451-5003).

1. Reporting Spills of Oil and Other Hazardous Substances

a. Materials Classification - The following products are examples of oil compounds or hazardous substances which must be reported if spilled on the ground or water in any amount:

Lube Oils	JP-4 & JP-5 Fuels	Paint Thinner	No. 6 Fuel Oil
Gasoline	Hydraulic Fluid	Organic Solvents	
Kerosene	Acids	Cleaning Solutions	
Lube Grease	No. 2 Fuel Oil	Poisonous Chemicals	

b. Reporting Procedures - All spills of oil or hazardous materials shall be reported immediately to the Base Fire Department Phone 3333 (on base) or 451-3333 (off base). The report shall include location (Building Number) of spill, substance spilled and the approximate amount. All spills occurring at Marine Corps Air Station (Helicopter), New River will also be reported to the Station S-4 (455-6068 - 455-6518) during normal working hours and to the Station Officer of the Day after normal working hours (455-6111).

c. Posting of Oil Spill Procedure - Signs shall be posted in every building, tank location and field service location where oil or hazardous materials are used. The sign shall have a yellow background with black lettering indicating the following information:

IN CASE OF AN OIL OR HAZARDOUS MATERIAL SPILL
CALL BASE FIRE DEPARTMENT
ON BASE 3333/OFF BASE 451-3333
NOTIFY YOUR COMMANDER/SUPERVISOR IMMEDIATELY

d. Initial Containment Procedure - Remain in area - - - Do Not Wash Down With Water - - - Keep Personnel Out of the Area - - - Block Runoff with Earth Materials to Prevent Spreading, when possible.

2. Response to Spill

a. Fire Department - Fire Department shall dispatch a regular fire fighting unit to the scene of a reported spill. The Base Fire Chief or his senior represeatative shall report to the scene as soon as possible. Dispatcher will immediately notify the Base Fire Chief or his senior representative who will perform the following duties:

(1) Assume the role of On-Scene Coordinator (OSC).

(2) Take all necessary immediate steps to contain the spill, eliminate any fire hazards and protect all personnel from exposure and request the assistance of the Base Safety Officer, if required (See page 4, Enclosure (2)).

(3) Notify the Natural Resources and Environmental Affairs Director (Telephone 5003) of the spill location and the nature and quantity of spilled materials.

(4) Evaluate the spill situation and request necessary logistical support from the Base Maintenance Officer to contain the spill and facilitate the cleanup and recovery of the spilled materials.

(5) OSC duties shall transfer to the Director, Natural Resources and Environmental Affairs upon his arrival at the scene. (See page 4, Enclosure (2) for Personnel and Public Safety Coordination).

b. Base Maintenance Officer

(1) Base Maintenance Officer shall maintain the inventory of materials and equipment as established in Appendix A of enclosure (2).

(2) Base Maintenance personnel shall respond immediately to the request of the OSC with men and equipment requested.

(a) Direct supervision shall be from the OSC.

(b) Maintenance personnel shall remain at the spill scene until authorized to depart by the OSC.

c. Natural Resources and Environmental Affairs Division

(1) The Director or his authorized representative shall proceed to the scene and assume the duties of the OSC. The duties shall include the following categories:

(a) Direct all containment and cleanup activities.

(b) Report oil spills that discharge into the inland waters or coastal waters to the following: Base Maintenance Officer; Assistant Chief of Staff, Facilities, Marine Corps Base; Marine Safety Officer, U. S. Coast Guard, Wilmington, North Carolina and the Environmental Regulatory Agencies, as required.

(c) Request U. S. Coast Guard assistance for spills into waters that cannot be contained promptly by joint efforts of the Fire Department and Base Maintenance crews.

(2) The Natural Resources and Environmental Affairs Division Director or his representative shall remain at the scene of the spill until all contaminant is properly contained and the danger of oil contamination of waterways is eliminated.

(3) At the conclusion of all cleanup operations, the official report submitted to the Environmental Protection Agency (EPA), Region IV, shall be prepared in accordance with requirements of Federal Water Pollution Control Act and EPA regulations in effect at the time. The report shall be transmitted to EPA through the directives of the Commanding General.

3. Spill Containment and Cleanup

a. Small Spills (less than one gallon)

(1) Cause: Gasoline or fuel oil spills at fueling locations occur by overfilling or blow back from the tank receiving the fuel.

(2) Reporting: This type of spill requires reporting to the Office of Natural Resources and Environmental Affairs (Phone 1-919-451-5003). The fuel spill must be promptly cleaned up by the person at the scene.

(3) Containment Procedures:

(a) DO NOT FLUSH INTO STORM SEWER OR DRAINAGE DITCH.

(b) Cover entire spill with sand or absorbent material from storage bin or container. Add material as liquid appears in the surface of the sand or absorbent material.

(c) Cleanup contaminated sand or absorbent material with broom and shovel placing it in a container (metal) for disposal or possible reuse. The container shall be labeled "Waste Oil Refuse".

(d) If storage bin of sand or absorbent material is less than one-half full after using, call Base Maintenance Department (3001) to inform them of the location needing additional material.

(e) Reapply a second coat of sand or absorbent material in a very light layer to assure all gasoline or fuel oils have been blotted up. Brush material back and forth over the area and then sweep up completely. This material can be replaced in the fresh storage bin rather than depositing it in the "Waste Oil Refuse" container.

b. Spills on Concrete Aprons (more than one gallon)

(1) Reporting: Call Base Fire Department

(2) Containment Procedures:

(a) DO NOT FLUSH INTO STORM SEWER OR DRAINAGE DITCH.

(b) The person on-site shall erect a two-to-three inch high sand or earth dam on the concrete or at the edge of the concrete below (downstream) the direction that the spill is flowing. This is the first step in containment.

(c) Apply sand or absorbent materials that are available around the perimeter of the spill until the Fire Department arrives. Keep other personnel away from the area.

(d) Fire Department shall continue abatement methods using equipment available until the Director of Natural Resources and Environmental Affairs Division or his representative arrives to determine further containment and cleanup requirements.

(e) Base Maintenance personnel shall install dams, straw barriers, pumping equipment and other abatement or cleanup equipment as directed by the OSC.

c. Spills on Ground (more than one gallon)

(1) Reporting: Call Base Fire Department

(2) Containment Procedures:

(a) DO NOT FLUSH INTO STORM SEWER OR DRAINAGE DITCH.

(b) The person on-site shall erect a minimum three-inch high sand or earth dam below (downstream) the direction that the spill is flowing. The dam should be made higher if the liquid pool behind the temporary dam rises to within two inches of the top. A trench or sump may be used in lieu of a dam. This is the first step in containment that must be taken promptly to prevent spreading into surface waters.

(c) Apply sand or absorbent materials that are available around the perimeter of the spill until the Fire Department arrives. Keep other personnel away from the area.

(d) Fire Department shall continue abatement methods using equipment available until the Director of Natural Resources and Environmental Affairs Division or his representative arrives to determine further containment and cleanup requirements.

(e) Base Maintenance personnel shall install dams, straw barriers, absorbents, pumping equipment and other abatement or cleanup equipment as directed by the OSC.

d. Spills Entering Storm Drainage System

(1) Reporting: Call Base Fire Department and emphasize that the liquid has entered a catch basin, manhole, drainage ditch, or any structure (pit) below ground.

(2) Containment Procedures:

(a) DO NOT ADD WATER TO FLUSH OUT STORM SEWER OR STRUCTURE.

(b) The person on-site shall attempt to erect a sand or earth dam around or cover with polyethylene or other plastic materials the manhole or catch basin to prevent further entrance of liquid into the structure. This is the first step in containment that must be taken promptly to minimize the quantity of liquid that will be discharged into surface waters.

(c) The person on-site shall apply sand or absorbent materials that may be available around the perimeter of the spill and at the manhole or catch basin until the Fire Department arrives.

(d) Base Maintenance personnel shall place oil booms across storm drains to prevent further discharge. Public Works Department will develop maps of drainage systems required for siting booms. After spill is contained, cleanup will be initiated. Action may include the following:

1 Inspect downstream manholes for evidence of oil progression toward discharge. If storm system has a very low flow, install straw barrier or absorption dam inside manhole.

2 Where practical, install plug in upstream side of manhole, to contain in the pipe system.

3 If the drainage system has an open ditch, install straw bale dams or aborption dam to collect spilled materials.

4 Isolate streets with contaminated manhole to prevent fires or explosions.

(e) The Director, Natural Resources and Environmental Affairs Division, or his representative shall determine further containment and cleanup requirements after arriving on the scene.

(f) Base Maintenance personnel shall install dams, straw barriers, aborbents, pumping equipment and other abatement and cleanup equipment as directed by the OSC.

e. Spills Entering Surface Waters

(1) Reporting: Call Base Fire Department and emphasize that the liquid was discharged directly into the surface waters.

(2) Containment Procedure:

(a) Person at the site should check the source of discharge to be assured that no further discharge can occur. Close valves, remove hose, or isolate the source from causing any further release of materials.

(b) Do not allow boats or equipment to enter the surface waters where the spill has occurred. If surface type oil absorbents are available, begin spreading this material wherever an oil skim is observed. Do not enter the water to apply this material until the Fire Department arrives.

(c) Fire Department shall continue abatement methods using equipment available until the Director of Natural Resources and Environmental Affairs Division, or his representative arrives to determine further containment and cleanup requirements.

(d) Base Maintenance personnel shall install booms, skimmers, pumps and other abatement or cleanup equipment as directed by the OSC.

4. Responsibilities for Ensuring Personnel and Public Safety

a. Overall responsibility for ensuring the safety of personnel involved in the containment and cleanup of hazardous material spill is assigned to the Base Fire Chief or his senior representative. The Base Fire Chief representative shall continue to monitor the situation and will provide required standby personnel and equipment. The Base Fire Chief representative will request the assistance of the Base Safety Officer as needed. The Base Fire Chief representative shall keep the OSC informed of any safety considerations affecting the containment and cleanup of the spill. In the event of imminent hazard to personnel involved in the spill cleanup or to the public, Base Fire Chief representative shall take appropriate action. The OSC shall assist the Base Fire Chief representative implement safety procedures required.

b. Base Safety shall dispatch a safety representative to the spill scene upon request from the Base Fire Chief representative. The Base Safety representative will remain at the scene until advised by the Base Fire Chief representative that assistance is no longer required. Base Safety representative will monitor all activity at or near the spill and make appropriate recommendations to the Base Fire Chief representative.

MATERIALS AND EQUIPMENT FOR OIL SPILL CONTAINMENT AND COUNTERMEASURE

Item No.	Description	Quantity
1.	Gasoline engine driven (portable) trailer mounted diaphragm pump with sectional suction and discharge hose - minimum capacity 25 gallons per minute.	2
2.	Sectional aluminum oil boom	
3.	Inflatable oil barrier, Whittaker Expandi self-inflating	300 L. F.
4.	Collapsible bag for field filling of collected oil-250 gallon capacity	2
5.	Oil skimmer (portable)type for water floating oil pick-up	1
6.	Baled hay or straw with wire or nylon baling (located at strategic areas)	200 Bales
7.	Steel fence stakes (6 feet long)	50 each
8.	Woven wire mesh (chicken wire) 3ft. width 4ft. width	200 L.F. 100 L.F.
9.	Sledge hammer - 10 lb. 5 lb. 2½ lb.	3 5 5
10.	Shovels - Long handle round point Long handle flat blade Short handle round point Short handle flat point	5 5 5 5
11.	Oil Absorbent Compound - for water spill clean up	2000 lbs.
12.	Oil Absorbent Compound for ground spill clean up - Randustrial P-218 Oil Absorbent (55-gallon drum)	25 drums
13.	Nylon rope - ¼" diameter ½" diameter 3/4" diameter	200 L.F. 400 L.F. 400 L.F.
14.	Oil Sorbent Material - 3M, Conwed or Grefco	500 lb.

HAZARDOUS WASTE SPILL AND RELATED EMERGENCY
CONTINGENCY PLAN FOR

_____ _____
(NAME OF FACILITY) BLDG. #

A. IN THE EVENT THAT A HAZARDOUS MATERIAL/HAZARDOUS WASTE SPILL, FIRE, RELEASE OF TOXIC FUMES OR SIMILAR EMERGENCY OCCURS, THE FOLLOWING ACTION WILL BE TAKEN:

-- FIRST, IMMEDIATELY ALERT EMPLOYEES/PERSONS IN THE IMMEDIATE AREA OF THE EMERGENCY AND BEGIN EVACUATION OF ANY PERSONS SUBJECT TO INJURY BY THE EMERGENCY. EVACUEES SHALL ASSEMBLE AT _____.

-- IMMEDIATELY, NOTIFY THE BASE FIRE DEPARTMENT, EXTENSION 3333. PROVIDE THE FIRE DEPARTMENT DISPATCHER WITH THE BEST ESTIMATE/AVAILABLE KNOWLEDGE OF THE AMOUNT AND TYPE OF HAZARDOUS SUBSTANCE SPILLED; LOCATION OF THE EMERGENCY; WHETHER OR NOT ANY PERSONS HAVE BEEN OR ARE LIKELY TO BE INJURED AND ANY OTHER INFORMATION HELPFUL TO EMERGENCY RESPONSE PERSONNEL. STAY ON THE LINE WITH THE DISPATCHER AND FOLLOW DISPATCHER'S INSTRUCTIONS IF YOU CAN SAFELY DO SO. CONTINUE TO ADVISE DISPATCHER OF CHANGING CIRCUMSTANCES.

-- ASSIGN ONE PERSON TO MEET THE EMERGENCY VEHICLE AND GUIDE FIRE DEPARTMENT PERSONNEL TO SPILL/EMERGENCY SITE.

-- BEGIN ASSEMBLING EMERGENCY SUPPLIES AND EQUIPMENT AVAILABLE AT THE WORK SITE. A LIST OF THESE ITEMS, THEIR LOCATION AND PERSONS RESPONSIBLE FOR PROVIDING THEM ARE CONTAINED IN ATTACHMENT (A).

-- IF THE CIRCUMSTANCES OF THE EMERGENCY PERMIT, BEGIN CONTAINMENT OF THE SPILL BY SHUTTING OFF VALVES, CONSTRUCTION OF EARTHEN DIKES AND APPLICATION OF ABSORBENT. ONLY PERSONNEL TRAINED AND AUTHORIZED BY THE OIC SHALL BE ALLOWED TO ENTER THE IMMEDIATE AREA OF THE SPILL. SECTION D PROVIDES A LIST OF PERSONNEL AUTHORIZED TO ENTER THE AREA AND ACTIONS THEY ARE EXPECTED TO TAKE. UPON ARRIVAL AT THE SCENE, THE FIRE DEPARTMENT WILL CONTROL ACCESS TO SITE.

-- UNDER NO CIRCUMSTANCES SHALL PERSONNEL UNDERTAKE ANY ACTION WHICH WOULD EXPOSE THEM TO TOXIC CHEMICALS, FUMES AND GASES UNLESS THE PROPER TYPE(S) OF WELL MAINTAINED PERSONNEL PROTECTIVE EQUIPMENT IS USED.

B. THE LATEST REVISION OF THE BASE SPILL CONTINGENCY ORDER, BO 11090.1_, IS PROVIDED AS ATTACHMENT (B). THE SENIOR FIRE DEPARTMENT OFFICIAL ON SCENE WILL SERVE AS THE NAVY ON-SCENE-COMMANDER. ALL MARINE CORPS, NAVY AND CIVILIAN PERSONNEL ON THE SCENE ARE EXPECTED TO PROVIDE AVAILABLE RESOURCES AS THE ON-SCENE-COMMANDER DEEMS NECESSARY TO ABATE THE EMERGENCY AND PROTECT LIFE AND PROPERTY.

C. OTHER OFFICIALS TO BE NOTIFIED:

-- OIC REPRESENTATIVE _____ (name/rank/title) _____ (phone #)

-- HAZARDOUS MATERIAL DISPOSAL OFFICER _____ (name/rank) _____ (phone #)

D. ROSTER OF SHOP PERSONNEL AUTHORIZED AND TRAINED TO RESPOND TO HAZARDOUS MATERIAL AND WASTE SPILLS/EMERGENCIES:

NAME/RANK/TITLE OF INDIVIDUAL	HAZARDOUS MATERIAL/WASTE EMERGENCY RESPONSIBILITIES

I hereby certify that the above personnel are properly trained and authorized to carry out the specific responsibilities shown above. These individuals shall assist in handling hazardous material/waste spills and related emergencies to the extent that they can do so safely.

_____ (OIC REPRESENTATIVE) _____ (DATE)

ITEM DESCRIPTION/LOCATION/ NAME AND PHONE NO. OF PERSON RESPONSIBLE FOR MAINTAINING AND PROVIDING ITEM	TYPES OF HAZARDOUS MATERIAL AND WASTE TO BE USED ON

Inventory of available Hazardous Material/Waste Spill Response, and Clean-up Equipment and Supplies

ATTACHMENT (A)

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

BO 11090.3
MAIN/DDS/th
18 May 1982

BASE ORDER 11090.3

From: Commanding General
To: Distribution List

Subj: Operation and Maintenance of Oil Pollution Abatement Facilities

Ref: (a) NPDES Permit No. NC0003239, Marine Corps Base, Camp Lejeune (NOTAL)
(b) CLean Water Act (NOTAL)
(c) BO 11090.1B

1. Purpose. To publish responsibilities for the operation and maintenance of pollution abatement facilities required to be in compliance with federal and state water quality standards established under references (a) and (b).

2. Background

a. Reference (c) established policy and procedures regarding the prevention and abatement of pollution resulting from accidental spills or unauthorized discharge of petroleum oil and lubricants (POLs) (e.g., diesel fuel, kerosene, lube oil, etc.) and other hazardous material or waste (e.g., mogas, paint; solvents, acid, etc.). Addressees should be aware that a major part of the oil related pollutants being discharged into storm drains and streams comes from washrack runoff and from maintenance shops where leaks and spills of POLs during routine maintenance operations are not adequately controlled and cleaned up.

b. Facilities are being constructed at Camp Lejeune and Marine Corps Air Station (Helicopter), New River to provide compliance with references (a) and (b). These facilities connect oil contaminated wastewater drainage lines to the sanitary sewer. Oil/water separators, grit chambers, storm-water storage tanks and related devices are provided to reduce the amount of POLs in the wastewater and to prevent relatively small oil spills from entering and damaging the sanitary sewer and sewage treatment plants. Maintenance shops and other facilities constructed in the future must be equipped with pollution abatement devices in order to comply with reference (a).

c. Explosions, gases, fumes, etc. resulting from discharge of gasoline and other flammable or hazardous material into the sanitary sewer present a serious threat to personnel safety and may result in severe damage to facilities and equipment. Further, excessive quantity of POLs entering the sanitary sewer will have a significant impact on effective sewage treatment thus causing a violation of environmental standards. Such discharges (spills) are regulated by reference (c) and must be reported to the Base Fire Department (451-3333), immediately.

d. Washracks and related pollution abatement structures for tactical and tracked vehicles present ongoing maintenance problems due to the amount of soil washed from vehicles. Drainlines on all devices are relatively small in order to control rate of storm-water entering sewer. Keeping these drains open and flowing will require proper operation and routine maintenance.

3. Responsibilities. Operation, maintenance and repair of pollution abatement facilities:

a. Using organization will:

(1) Train personnel to operate pollution abatement facilities located at the work site.

(2) Ensure that cans, oil filters, rags, brushes, litter or other foreign objects are not discarded on washracks or into oil/water separators, grit chambers, storm-water bypass chambers, storm-water storage tanks, etc.

(3) Ensure that used oil is disposed of into properly marked waste oil containers and not on the ground or into oil/water separators, grit chambers, storm-water bypass chambers, etc.

(4) Ensure that neither gasoline nor hazardous waste (e.g., solvents, degreasers, paint, etc.) are disposed of into waste oil tanks/collection systems.

(5) Clean up oil contaminated soil at the work site (contact Base Maintenance Division 451-2083/1690 for disposal instructions).

(6) Notify Base Maintenance Division (451-3001) of required maintenance and repair. Marine Corps Air Station (Helicopter), New River commands will notify the Station S-4 Officer of any required maintenance and repair.

(7) Notify Base Maintenance Division (451-5909) of waste oil containers that require emptying.

b. Base Maintenance Officer will:

(1) Provide periodic inspection of maintenance and operation of pollution abatement facilities and initiate action to correct maintenance discrepancies. Report operational deficiencies to the using organizational commanding officer. Close the facility when it is apparent that continued operation will immediately jeopardize the capability of the sewage treatment facility.

(2) Service used (waste) oil collection facilities to include pumping out oil storage tanks at regular intervals and initiating action required to maintain and repair tanks and related signs, funnels, gauges and drainlines.

(3) Service oil/water separators, grit chambers, storm-water bypass chambers and storm-water storage tanks to include removing oily waste and solids, unclogging drainlines and initiating action to make needed repairs.

(4) Operate, maintain and repair wastewater lift stations and related mechanical equipment.

(5) Operate, maintain and repair pollution abatement facilities associated with swimming pools, heating plants and water treatment plants.

c. Public Works Officer will:

(1) Incorporate appropriate pollution abatement devices and structures in facilities constructed aboard Camp Lejeune, as required to provide compliance with the requirements of references (a), (b) and (c).

(2) Review planned pollution abatement devices and structures with appropriate representatives of the Base Maintenance Officer in order to ensure compatibility with existing sewage collection and treatment facilities and maintenance programs.

4. Action. Commanding Officers/area commanders will take action required to assure that organizations and personnel assigned to shops and other facilities equipped with washracks, waste oil collection systems, oil/water separators and related pollution abatement structures are aware of the requirements of this Order. Commanding officers will investigate cases of unauthorized discharge (spills) of POLs or other hazardous material/waste by individuals or organizations within their cognizance and take action required to avoid recurrence of the discharge.

5. Applicability. Having received the concurrence of the Commanding Generals, 2d Marine Division, FMF; 2d Force Service Support Group, (Rein), FMFLANT; and the Commanding Officers of the Marine Corps Air Station (Helicopter), New River and tenant units; Naval Regional Medical Center; and Naval Regional Dental Center, this Order is applicable to those Commands.

J. R. FRIDELL
Chief of Staff

DISTRIBUTION: A
BMAINO (100)

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

4

BASE ORDER 5100.20

From: Commanding General
To: Distribution List

Subj: HAZARD COMMUNICATION PROGRAM

Ref: (a) 29 Code of Federal Regulations, Part 1910.1200
(b) MCO 5100.25

1. Purpose. The Hazard Communication Program is designed to ensure pertinent data concerning the safe usage of hazardous materials is made available to the users of those materials. The purpose of this Order is to establish a Hazard Communication Program at Marine Corps Base, Camp Lejeune and to set forth responsibility for administration of the program.

2. Background. The growing list of hazardous materials within the government supply system requires constant vigilance against unsafe handling, mixing, storing and disposal. Exposures to hazardous materials may cause or contribute to many serious health problems such as heart and lung disorders, kidney and liver damage, cancer, sterility, mutation and skin diseases. Some materials may also have the potential to cause fires, explosions, or other serious mishaps. It becomes imperative to protect the user, the general public, and the environment by regulating the identification, transportation, storage, handling and use of hazardous material by providing a communication program.

3. Definition. For the purpose of this Order, a hazardous material is any material which because of its quantity, concentration, physical, chemical or infectious characteristics may pose a substantial hazard to human health or the environment when used, released or spilled into the environment. This Order does not apply to any consumer products. A consumer product is any product with which department heads/organizational commanders/directors can demonstrate is used in the workplace in the same manner as normal consumer usage. Workers such as office workers, bank tellers, etc., who encounter hazardous materials only in non-routine, isolated instances are not covered by the provisions of this Order. This Order includes but is not limited to:

a. Labeling of hazardous materials.

b. Material Safety Data Sheets (MSDS) requirements.

c. Personnel information and training, including training for non-routine tasks.

d. Hazardous material inventory.

e. Hazardous material information for contractors working aboard Marine Corps Base, Camp Lejeune.

4. Labeling

a. Hazardous material must be clearly identified throughout its history with particular emphasis on identification for the end user. The affixing of appropriate warning labels to containers is the most practical means of accomplishing this objective.

b. Manufacturers, importers, and distributors are required by reference (a) to ensure that each container of hazardous material shipped to the user is labeled with the identity of the hazardous chemical, appropriate hazard warning, and the name and address of the chemical manufacturer or importer.

c. Existing manufacturers labels on containers of hazardous materials shall not be removed or defaced unless the containers are immediately marked with the required label information as included in paragraph 4.b.

d. Upon removal from original shipping containers, the individual unit of packages of all hazardous materials must be immediately labeled as required in paragraph 4.b. Hazard labels shall be provided on each container prior to issue.

5. Material Safety Data Sheets (MSDS)

a. The MSDS is written or printed material which is designed to be a source of detailed information on chemical and physical hazards of material used in the workplace. The MSDS includes information on the specific identity of the hazardous product, its physical and chemical characteristics, known acute and chronic health effects and related health information, exposure limits, whether the material is considered to be a carcinogen, precautionary measures for handling, emergency first aid procedures, and the identification of the organization responsible for preparing information. Manufacturers are required to develop a MSDS for each hazardous material they produce and to furnish the appropriate MSDS to purchasers of the hazardous material.

b. Material Safety Data Sheets for all hazardous materials used must be readily available to personnel during each work shift.

c. Shop supervisors shall maintain copies of MSDS's covering hazardous materials used in their shops in a file or manual available to shop workers on all shifts. In addition to manufacturers MSDS's, the Assistant Chief of Staff, Logistics will have available the Hazardous Material Information System (HMIS) microfiche for hard print information on hazardous materials that are procured by national stock number.

Training

a. References (a) and (b) outline the basic operation and requirements for the Occupational Safety and Health Training Program. The objective of the training program is to reduce the incidence of job-related hazardous material exposure and delineate necessary protective measures. Reference (a) more specifically requires that personnel be provided with information and training on hazardous material in their work areas at the time of initial assignment and whenever a new hazard is introduced into the work area.

b. Hazardous material training must cover, at a minimum, information on the requirements of reference (a); the availability and details of this Order, including an explanation of the labeling requirements; an explanation of the MSDS, and how personnel may obtain and use the hazard information; the physical and health hazards of specific materials used in the work area; measures personnel can take to protect themselves, including personal protective equipment (PPE), engineering controls of the process, appropriate work practices, and emergency procedures; and methods that may be used to detect the presence or release of a hazardous material in the work area. Personnel must also be informed of the hazards of non-routine tasks that may take place in their work area.

c. Supervisory personnel will receive a minimum of two hours of documented formal training annually as required by reference (b) and as established by this Order. The training will be designed to prepare supervisors in complying with the labeling, MSDS, and inventory requirements of reference (a), as well as to assist them in ongoing subordinate personnel training.

d. All personnel involved in the handling or use of hazardous material must receive at a minimum one hour initial documented formal hazardous material training. Training must be updated when personnel are assigned to new areas or when shop processes change to introduce new chemical hazards to the work area. Shop supervisors will ensure that initial training is provided to personnel newly assigned to their areas. Updates of training due to process changes will be accomplished as necessary by shop supervisors during weekly standup safety meetings. Informal training and updating proviced by the supervisor must be documented quarterly on a cumulative basis

and reported to the Civilian Personnel Division and Nonappropriated Fund Personnel Division quarterly for inclusion in the Official Personnel Folder. Training records for military personnel will be retained at the unit level.

7. Hazardous Material Inventory

a. A complete inventory of all hazardous materials used must be developed and maintained for each shop. This inventory will serve as a tool in the process of providing hazardous material information to personnel. The updated inventory listing will be printed at least quarterly and will include location and chemical or common name for each hazardous material, matching that found on appropriate corresponding MSDS's.

b. Maintenance personnel are frequently called upon to perform repair operations in areas where hazardous materials are present. They must have information about such materials and the potential dangers before they enter these areas in order to take the necessary precautions to protect themselves. Before assigning jobs in high hazard areas, maintenance supervisors should contact the Industrial Hygienist, extensions 5707/2707, and Base Safety, extensions 3891/5725, for an evaluation of the hazards and requirements for work precautions. Supervisors of the Base Maintenance Division should contact the Base Maintenance Industrial Hygienist, extension 3046, for an evaluation and recommendations prior to job assignment in high hazard areas. High hazard areas include but are not limited to, areas in and around process and storage tanks, confined spaces, ventilation duct work and piping for chemical tanks, and storage compounds for hazardous materials.

8. Action

a. Department Heads/Commanders and Directors

(1) Appoint in writing a Hazardous Material Safety Officer (HMSO) for those units engaged in industrial operations, i.e., Facilities, Logistics, Special Services, the Dependent Schools Maintenance Section, etc. The HMSO may appoint in writing a Hazardous Material Safety Coordinator(s) (HMSC) to serve in the absence of and to assist the HMSO in order to provide continuity at the using unit level for hazardous material information, training, inventory, and MSDS control.

(2) Provide the Base Safety Manager, Industrial Hygienist and Base Fire Protection Division with updated list of HMSO's and HMSC's.

(3) Ensure that supervisors and HMSO's are trained in the use and interpretation of MSDS's to enable them to effectively provide the required training for subordinate personnel. MSDS training for HMSO's/HMSC's and supervisors is available through the Base Safety Office.

b. Assistant Chief of Staff, Logistics

(1) Implement procedures to ensure acquisition and distribution of MSDS's for all hazardous materials purchased, to include open purchase, BPA, etc.

(2) Maintain the HMIS and provide hard print copies of MSDS's to all Marine Corps Base and HMSO's and the Base Safety Manager upon request.

(3) Implement procedures to ensure that all containers of hazardous materials are labeled in accordance with reference (a) prior to issue.

c. Assistant Chief of Staff, Morale, Welfare and Recreation

(1) Implement procedures to ensure acquisition and distribution of MSDS's for all hazardous materials purchased by Morale, Welfare and Recreation Department.

(2) Coordinate with Assistant Chief of Staff, Logistics to obtain MSDS information from the Marine Corps HMIS.

(3) Forward copies of MSDS's received to Assistant Chief of Staff, Logistics to ensure inclusion of MSDS's in MSDS file.

c. Base Safety Manager

(1) Maintain on file MSDS's for all locally purchased, non-standard stock hazardous items, i.e., those procured in small quantities for local use, Blanket Purchase Agreements (BPA's), open purchase, etc., in support of the Hazardous Material Safety Training Program.

(2) Monitor the overall Hazard Communication Program by adequate inspections and surveys.

(3) Upon request, provide technical assistance to Marine Corps Base units in developing Hazardous Communication Program procedures.

(4) Provide support to the Civilian Personnel Division, Training Branch and Non-Appropriated Fund Personnel Division (NAFPD) by making available specific information and instructions on hazardous materials.

(5) Provide assistance to Department Heads/Commanders and Directors for training shop supervisors, and HMSO's.

e. Hazardous Material Safety Officer (HMSO)

(1) Hazardous Material Safety Officers will serve as the unit point of contact for all matters relating to hazardous materials.

(2) Compile and maintain a comprehensive inventory of hazardous materials utilized in each respective workplace.

(3) Ensure MSDS's are on file and current for each hazardous item identified on the unit inventory. Ensure acquisition of MSDS's on all nonstandard, nonstocked hazardous materials which are procured by open purchase. Copies of such MSDS's shall be forwarded to the Base Safety Manager.

(4) Ensure that safety and health education training is presented to all personnel working with hazardous materials to include awareness of the potential hazards involved, relevant systems of exposure, emergency treatment, precautions for safe use and disposal as well as PPE and controls appropriate to the situation. Information contained in MSDS's form the basis for this training.

(5) Maintain an adequate supply of "GENERIC" (fill in the blank) hazard labels to be affixed to any container into which a hazardous chemical is transferred from its original container. The label must contain the chemical name, hazard warning, and protection required.

f. Civilian Personnel Division/Director, Non-Appropriated Fund Personnel Division

(1) Provide training support in the development and implementation of a training program for all personnel who handle and use hazardous materials.

(2) Will maintain the training records for personnel as required by current directives.

g. Supervisors

(1) Will familiarize themselves with the hazards presented by each hazardous material used or stored in their cognizant area. This will be accomplished by frequent review and study of relevant MSDS's. The supervisor will be aware of material hazards, adverse effects, characteristics and protective measures required for each hazardous material encountered in their work area.

(2) Ensure that subordinate personnel are trained in accordance with references (a) and (b) as well as paragraph 6 of this Order.

(3) Provide and enforce the use of PPE needed to protect personnel from known or potentially adverse effects of hazardous materials.

(4) Ensure that all containers of hazardous material issued to and used in the shop are clearly marked with the identity of the contents and appropriate hazard warnings.

(5) Ensure that all process tanks, equipment and portable containers are clearly labeled with the name of the contents and appropriate hazard information.

(6) Ensure that all personnel read and understand all hazardous material labels, MSDS's, and other hazard information appropriate to the work area.

(7) Ensure that a copy of this Order is readily available to personnel upon request.

h. Resident Officer-in-Charge of Construction. Ensure all service and construction contracts under ROICC cognizance require a meeting between the contractor, a Base Safety representative and the affected shop supervisor prior to the contractor initiating work within the facility. The meeting will be scheduled for the purpose of informing the contractor of hazardous materials which their personnel may encounter and of appropriate work precautions and protective equipment. Ensure contracts also specify the contractor furnish the Base Safety Office, Industrial Hygienist and Base Fire Protection Division with a MSDS for each hazardous material the contractor will introduce into facility workplaces occupied by Marine Corps Base personnel and, further, ensure the contractor complies with the requirements of reference (a) for such materials.

10. Concurrence. This Order has been coordinated and concurred in by the Director, East Coast Commissary Complex.

G. W. KEISER
Chief of Staff

DISTRIBUTION: A

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

BO 4555.1C
LOG
3 Aug 89

BASE ORDER 4555.1C

From: Commanding General
To: Distribution List

Subj: RECLAMATION AND UTILIZATION OF PRECIOUS METALS FROM SCRAP AND WASTE MATERIALS

Ref: (a) MCO 4555.3C

Encl: (1) Silver-Bearing and Gold-Bearing Scrap Descriptions
(2) DD 1348-1 Sample Turn-in Document

1. Purpose. To provide information and instructions in establishing an effective Precious Metals Recovery Program within Marine Corps Base, Camp Lejeune, North Carolina 28542.

2. Cancellation. BO 4555.1B.

3. Background. The reference requires activity commanders to designate a local Precious Metals Recovery Coordinator to internally implement, monitor, and coordinate the activity's Precious Metals Recovery Program as prescribed therein.

4. Information. While the Printing Plant, Photographic Laboratory, Medical and Dental Facilities are the most probable sources for recovery of silver from solutions used in processing photographic and x-ray film (fixing baths), there are other sources where silver bearing material is generated. Enclosure (1) contains a list of silver and gold bearing scrap descriptions.

5. Policy

a. Maximum participation in the Precious Metals Recovery Program is required by all Marine Corps activities, including photographic, medical laboratories, printing plants, etc. Expenses incurred by activities participating in the program are not reimbursable.

b. Generating activities are responsible for the transportation of precious metals scrap (film, recovery cartridges) and harvested silver to the local Defense Reutilization Marketing Office (DRMO). Transportation costs are not reimbursable.

c. The DRMO is responsible for accepting all excess and surplus precious metal or precious metal-bearing materials, including scrap or harvested silver generated by the military services.

6. Action

* a. In accordance with instructions contained in the reference, the Operations Officer, Assistant Chief of Staff, Logistics is designated as the Base Coordinator for the Precious Metals Recovery Program for commands located on Marine Corps Base, Camp Lejeune. All generating activities will provide the Base Coordinator a point of contact for their command. The Base Coordinator, guided by the instructions contained in the reference, will establish an effective Precious Metals Recovery Program for Marine Corps Base, Camp Lejeune and tenant commands. Tenant Commanders should also designate a precious metals coordinator to consolidate and monitor the precious metal recovery effort within their Commands (appointment shall be in writing and be an E-6 or above). Addressees are enjoined to cooperate with the Base Coordinator to the extent necessary to ensure that Marine Corps Base, Camp Lejeune, has an effective Precious Metals Recovery Program.

2

b. Those activities turning in precious metal bearing materials to DRMO (Building 906) will identify on the turn-in document (DD 1348-1) the type of metals being turned in and the precious metal content. The turn-in document will be prepared as shown on enclosure (2). After turn-in of material, DRMO will provide a receipted copy of the 1348-1 to the generating unit and the Base Coordinator.

* c. Activities generating precious metals bearing material (i.e, hyposolution) but not having a recovery unit at their activities will obtain written permission from the Base Coordinator Office prior to the transporting of any precious metals material to a recovery site. Once permission has been obtained, the owning activity will observe proper change of custody between the owning activity and the receiving activity. Change of custody should reflect the following information:

(1) Date and Time.

(2) Owning Activity/Name of Individual/Rank.

(3) Receiving Activity/Name of Individual/Rank.

(4) Name of Items being transferred.

(5) Quantity, number gallons, pound, etc.

* d. All generating and/or processing (recovery) activities should have complete accounting records of all precious metals activity in their commands. The above procedure can be conducted utilizing a log book entry.

e. The DRMO will provide generating activities technical assistance, as required, to ensure visibility of precious metal generations, collection/recovery training requirements, and adequacy of collection/recovery methods, system, and equipment.

7. Summary of Revision. This directive has been revised and contains the following major changes:

a. Paragraph 6a. All precious metals coordinators will be appointed in writing (an E-6 or above).

b. Paragraph 6c. Permission must be obtained from the Base Precious Metals Coordinator prior to transporting hyposolution.

c. Paragraph 6d. A log record of all precious metals recovery should be maintained.

8. Concurrence. This Order has been coordinated and concurred in by the Commanding Generals, II Marine Expeditionary Force, 2d Marine Division, FMF, 2d Marine Expeditionary Brigade, FMF, 6th Marine Expeditionary Brigade, FMF, 2d Force Service Support Group, FMF and the Commanding Officers, 2d Surveillance Reconnaissance and Intelligence Group, Naval Hospital, and Naval Dental Clinic.

J. J. CARROLL
Chief of Staff

DISTRIBUTION: A

SILVER-BEARING AND GOLD-BEARING SCRAP DESCRIPTIONS

1. Silver-Bearing Scrap Designations

Class	Estimated Silver Percentage
CLASS A	90 (13.13) 1/

Consists of used anodes, drillings from anodes and grain silver, wire for welding or brazing, silver flakes, silver extracted from spent hyposolution by the electrolytic process, and all other silver of a purity content of 90 percent or better.

CLASS B	49 (7.15) 1/

Consists of silver foil battery plates separated by magnesium plates and silver chloride sheets (primarily MK 61-0 and 67-1 batteries).

CLASS C (Reserved)

CLASS D	1 (1.15) 1/

X-ray film, exposed industrial film and aerial film, millimeter film, and all types of shredded or cut-up film.

CLASS E	1.5 (2.22) 1/

Battery cell sections consisting of a plastic container (approximately 1/8 inch thick); some cells containing a silver chloride solution (primarily MK 53-0), 42-0, 58-0, and 66-0 batteries).

CLASS F (Reserved)

CLASS G (Reserved)

CLASS H (Reserved)

CLASS K	33 (4.81) 1/

Silver-bearing amalgam.

CLASS L	8 (1.14) 1/

Silver-bearing plated electrical components, such as leads, capacitors, and other silver-plated or bonded materials.

CLASS M	31 (4.47) 1/

Silver sludge and silver-bearing ash.

ENCLOSURE (1)

Class	Estimated Silver Percentage
CLASS N	10 (1.46) 1/

Silver-bearing missile batteries encapsulated in epoxy-type plastic with metal cases and attachments.

CLASS P	8 (1.14) 1/

Silver recovery cartridge consisting of a spun metallic filter through which the spent hyposolution has been filtered.

CLASS R	24 (3.50) 1/

Desalter kits.

1/ Conversion factors shown in parentheses when used as multipliers applied to the number of avoirdupois pounds of scrap will produce a reasonably accurate estimate of the silver content equated to troy ounces.

2. Gold-Bearing Scrap Designations

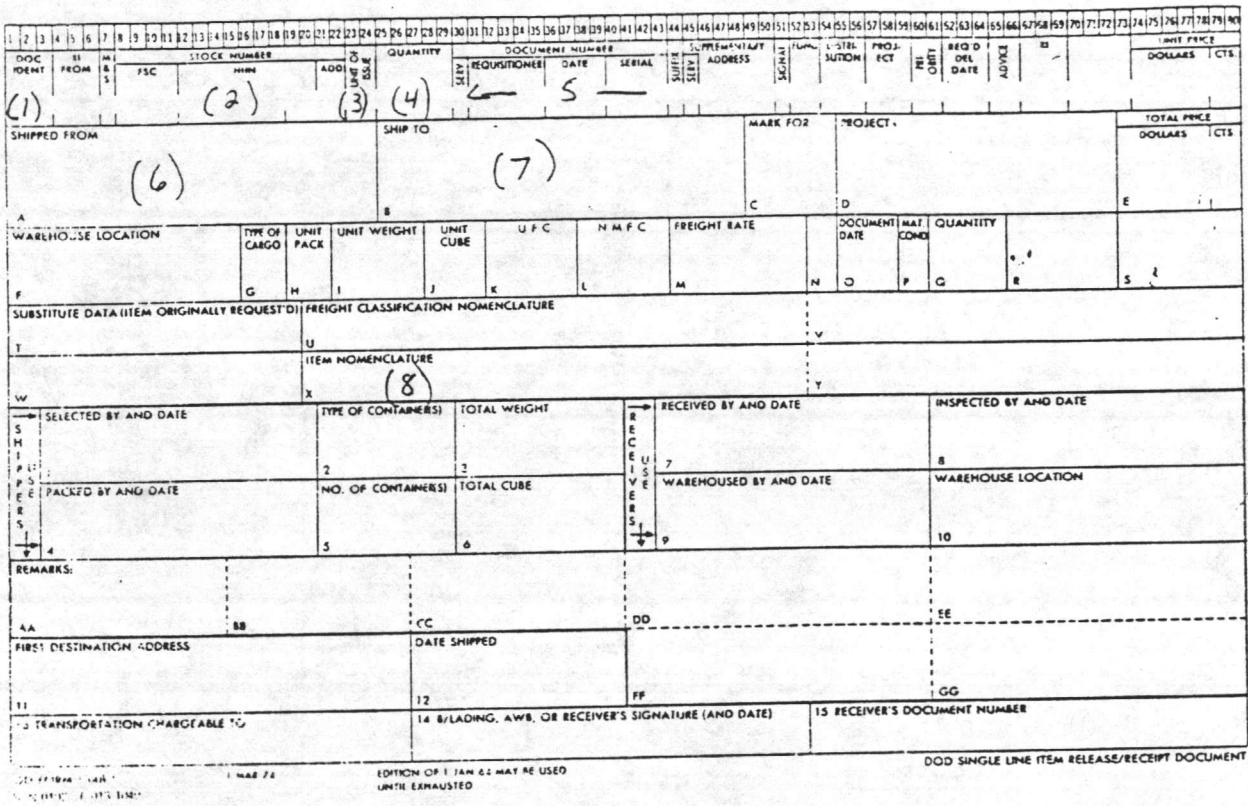
Class	Description	Est. Gold % by Weight
A	Dental Scrap	40.00% (5.8332)
A-1	Metallic (foil, leaf, wire, casting, and brazing alloy)	65.00% (9.4790)
A-2	Dental sweepings	15.00% (2.1875)
B	Electronic scrap (plated or washed)	0.40% (0.0583)
B-1	Integrated circuits/assembly and pins (not boards or transistors) (pins are ferro magnetic)	12.00% (1.7500)
B-2	Electronic circuits/assembly and strips	6.50% (0.9479)
B-3	Electronic hardware, pins and connectors	0.60% (0.0875)
B-4	Rivets (gold-plated)	0.50% (0.0729)
B-5	Electronic chassis parts	0.20% (0.0292)
C	Eyeglass frames (gold-filled)	4.00% (0.5833)
D	Buttons	0.90% (0.1313)

ENCLOSURE (1)

Class	Description	Est. Gold % By weight
E	Insignia and medals	0.10% (0.0146)
F	Gold solutions, 8.3 pounds per gallon (.7 troy ounces per gallon)	0.60% (0.0875)

ENCLOSURE (1)

DD 1348-1 SAMPLE TURN-IN DOCUMENT



1. BWA
2. NSN
3. Unit of Issue
4. Quantity
5. Document #
6. Unit Name
7. DRMO
8. Type of Material & Metal Content

ENCLOSURE (2)

TAB PLACEMENT HERE

DESCRIPTION:

Messages I II

Disposal Methods

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Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

MESSAGES / II
DISPOSAL METHODS

16

ROUTINE

R 132015Z OCT 89

FM CG MCB CAMP LEJEUNE NC//NREA//

TO CG II MEF
CG SECOND FSSG
SECOND SRI GROUP
NAVDENCLINIC CAMP LEJEUNE NC
CG SECOND MARDIV
CG SIXTH MEB
NAVHOSP CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC
COMCABEAST CHERRY PT NC
CG SECOND MAW
DRMO CP LEJEUNE NC

UNCLAS //N06240//
SECTION 01 OF 02 //N06240//

SUBJ: HAZARDOUS MATERIAL (HM) AND HAZARDOUS WASTE (HW) DISPOSAL PROGRAM

A. CMC WHITE LTR NO 2-89
B. BO 6240.5A
C. ASO 6280.1B

1. BACKGROUND. GEOGRAPHIC BOUNDARIES OF MARINE CORPS BASE, CAMP LEJEUNE, HAVE REMAINED UNCHANGED SINCE ITS ESTABLISHMENT IN 1941. CHANGES, HOWEVER, IN UNIT STRUCTURE, NEW TACTICS, FIREPOWER, AND MOBILITY HAVE INCREASED WEAR AND TEAR ON THE TERRAIN AND LOCAL NEED FOR ADDITIONAL TRAINING AREA. COINCIDENT WITH GROWING USE AND DEMAND FOR LAND TO SUPPORT OPERATIONAL TRAINING, THERE HAS BEEN AN INCREASE IN ENVIRONMENTAL LIMITATIONS THAT MAY REMOVE CURRENTLY AVAILABLE LAND FROM THE BASE'S PRESENT INVENTORY AND MAY PRECLUDE OTHER LAND FROM BEING ADDED TO THE INVENTORY. WE NEED THEN TO PROTECT WHAT WE HAVE AND NOT SUBJECT IT TO UNAVOIDABLE ABUSE. REF A UNDERSCORES THE DUTY OF COMMANDERS AND CIVILIAN MANAGERS TO KNOW LOCAL ENVIRONMENTAL LAWS AND LOCAL REGULATIONS ESTABLISHED TO COMPLY WITH THE LAWS. HAZARDOUS MATERIAL (HM) AND HAZARDOUS WASTE (HW) ARE OPERATIONAL TRAINING AND GARRISON

DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:DRMO CP LEJEUNE NC(4)...INFO
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

BLOG(1)...ORIG FOR CG MCB CAMP LEJEUNE(7) /13/
BFAC(1) NREA(1) BTMO(1) DRMO(1) BADJ(1) BCOS(1)

RTD:000-030/COPIES:0019

BY-PRODUCTS THAT IMPACT ON THE BASE ENVIRONMENT. THEIR PROPER DISPOSAL ENSURES THE BASE'S COMPLIANCE WITH EXISTING ENVIRONMENTAL LAWS. REF B CONTAINS REGULATIONS GOVERNING THIS DISPOSAL.

2. PURPOSE. REF B IS UNDER REVISION. THIS MSG PROVIDES INTERIM GUIDANCE/PROCEDURES FOR HM AND HW DISPOSAL ABOARD MCB, CAMP LEJEUNE, CO, MCAS, NR, PROVIDES SIMILAR GUIDANCE/PROCEDURES FOR HIS STATION IN ACCORDANCE WITH REF C.

3. INFORMATION

A. MCB, CAMP LEJEUNE, HAS MADE MAJOR CHANGES IN THE CONTROL AND SUPPORT OF THE SUBJECT PROGRAM. A RECENT CHANGE IS THE NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION (NREAD) REORGANIZATION AND STAFFING TO SUPPORT IMPROVED ENVIRONMENTAL MANAGEMENT AND PROTECTION PROGRAMS. EFFECTIVE 1 OCT 1989, NREAD BECAME THE ENVIRONMENTAL MANAGEMENT DEPARTMENT (EMD) AND A GENERAL STAFF OFFICE AS AC/S EMD.

B. THE HAZARDOUS WASTE AND POLLUTION CONTROL DIVISION (HWPCD) OF THE EMD WILL OVERSEE THE COLLECTION, STORAGE, TRANSPORTATION AND DISPOSAL OF HM AND HW. OTHER BASE ORGANIZATIONS AND THE DRMO, CAMP LEJEUNE, HAVE PREPARED TO SUPPORT THE HWPCD IN THIS EFFORT.

C. EFFECTIVE 11 SEP 1989, THE DRMO, CAMP LEJEUNE WAS DIRECTED TO DISCONTINUE ROUTINE ON-SITE INSPECTIONS OF HM AND COORDINATION OF HM TRANSPORTATION FROM GENERATION SITE TO THE DRMO STORAGE FACILITY. INSPECTIONS AND TRANSPORTATION WILL NOW HAVE TO BE COMPLETED BY THE GENERATING ORGANIZATION UNDER DIRECTION OF THE MAJOR COMMAND HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC) PER PARA 4B BELOW.

D. IN ADDITION, THE DRMO, CAMP LEJEUNE, WILL NO LONGER ROUTINELY INSPECT HW PRIOR TO TRANSFER TO DRMO STORAGE FACILITIES. INSPECTIONS AND TRANSPORTATION OF HW WILL BE ACCOMPLISHED PER PARA 4 BELOW. THIS CHANGE INCREASES THE IMPORTANCE OF ONSITE INSPECTIONS OF HW/HM BY HAZARDOUS MATERIAL DISPOSAL OFFICERS (HMDO) PER REF B DISCUSSED IN PARA 4B BELOW.

4. PROCEDURES. EFFECTIVE IMMEDIATELY, HM AND HW DISPOSAL WILL BE ACCOMPLISHED UNDER GENERAL COGNIZANCE OF THE HWPCD. HMDC'S, HMDO'S, AND SITE GENERATORS WILL FUNCTION UNDER THE HWPCD AS DESCRIBED PROCEDURALLY BELOW:

A. HMDC. THE HMDC CONTINUES TO FUNCTION IN ACCORDANCE WITH REF B AT THE MAJOR ORGANIZATIONAL LEVEL, I.E. BASE, GROUP, DIV. IN ADDITION, HE WILL NOW BECOME FOCAL POINT FOR DD FORM 1348-1 COLLECTION AND INTERACTION WITH HWPCD FOR TRANSPORTATION COORDINATION.

B. HMDO. THE HMDO SHALL HAND CARRY HW/HM TURN IN DOCUMENTS, DD FORM 1348-1, TO THE HMDC AFTER COMPLETION OF ON-SITE INSPECTION OF THE ITEMS PER SECTION 3, ENCLOSURE (1) OF REF B. THE DD FORM 1348-1 SHALL SERVE AS THE SHIPPING DOCUMENT FOR HM AND HW. THOSE HW BEING TRANSPORTED ON A PUBLIC HWY, BY AIR OR BY RAIL WILL STILL REQUIRE A UNIFORM HAZARDOUS WASTE MANIFEST FOR

TRANSPORTATION TO THE DRMO FACILITY. IN ORDER TO ACCOUNT FOR PROPER DISPOSAL OF HM AND HW, DD FORMS 1348-1 SHALL BE ASSIGNED CONSECUTIVE IDENTIFICATION NUMBERS BY MAJOR COMMAND. HW GENERATORS SHALL LEAVE BLOCK NO. 13 ON DD FORM 1348-1 BLANK. THE HMDC SHALL ENTER AN IDENTIFICATION NO. INTO BLOCK 13 USING A SERIES OF UNIQUE CONSECUTIVE NUMBERS PROVIDED BY THE HWPCD.

C. HWPCD. THE HWPCD OF EMD WILL FUNCTION AS THE COORDINATING ORGANIZATION FOR DISPOSAL OF HM, HW AND SPECIAL WASTES. HWPCD WILL PROVIDE TRAINING, ON-SITE INSPECTIONS, TECHNICAL ASSISTANCE, TRANSPORTATION SUPPORT AND RECORDKEEPING REQUIRED TO ACCOMPLISH TURN IN OF HW AND HM TO DRMO.

D. SPECIAL INSTRUCTIONS FOR DISPOSING OF HW, HM, AND SPECIAL WASTE

(1) HAZARDOUS WASTE (HW). HW DISPOSAL SPECIALISTS FROM THE HWPCD SHALL REVIEW THESE HW DOCUMENTS (DD FORM 1348-1) WITH THE HMDC ON A ROUTINE BASIS AND DETERMINE THE ACCEPTABILITY OF THE DOCUMENTS FOR TRANSPORTATION OF THE HW TO DRMO FACILITY.

(A) THE HMDC AND A HWPCD REPRESENTATIVE SHALL JOINTLY SCHEDULE A TRANSPORTATION DATE AND A TRANSPORTER FOR THE HW.

(B) THE FOLLOWING CRITERIA APPLIES FOR THE TRANSPORT OF HW:

(1) THE GENERATOR SHALL PROVIDE TRANSPORTATION OF USED LITHIUM BATTERIES, MERCURY BATTERIES, AND NICKEL CADMIUM BATTERIES TO THE DRMO FACILITY SO LONG AS TRANSPORTATION DOES NOT INVOLVE THE USE OF A PUBLIC HIGHWAY. PUBLIC HIGHWAYS AT CAMP LEJEUNE ARE NC 24, ROUTE 17, AND NC 172 AND 210 OUTSIDE THE BASE GATES AT SNEADS FERRY AND TRIANGLE OUTPOST. IF THIS SITUATION PERTAINS, THE HMDC WILL COORDINATE TRANSPORTATION REQUESTS WITH HWPCD WHO WILL ARRANGE FOR TRANSPORTATION WITH TMO AND ADVISE HMDC. THE GENERATOR WILL ONLY TRANSPORT THOSE ABOVE MENTIONED ITEMS WHICH CAN BE TRANSPORTED TO DRMO WITHOUT USING A PUBLIC HIGHWAY.

(2) THE TRAFFIC MANAGEMENT OFFICER (TMO), AC/S, LOGISTICS, MCB, CLNC SHALL TRANSPORT ALL HW REQUIRING USE OF A PUBLIC HIGHWAY.

(3) THE HWPCD, WITH EMERGENCY SUPPORT FROM TMO, SHALL PROVIDE TRANSPORTATION OF OTHER HW TO THE DRMO HW STORAGE FACILITY WHICH CAN BE ACCOMPLISHED WITHOUT USE OF A PUBLIC HIGHWAY.

BT

ROUTINE

R 132015Z OCT 89

FM CG MCB CAMP LEJEUNE NC//NREA//

TO CG II MEF
CG SECOND FSSG
SECOND SRI GROUP
NAVDENCLINIC CAMP LEJEUNE NC
CG SECOND MARDIV
CG SIXTH MEB
NAVHOSP CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC
COMCABEAST CHERRY PT NC
CG SECOND MAW
DRMO CP LEJEUNE NC

UNCLAS
FINAL SECTION OF 02 //N00240//

(2) HAZARDOUS MATERIAL (HM). A HWPCD REPRESENTATIVE WILL REVIEW THE HM DOCUMENTS WITH THE HMDC ON A ROUTINE BASIS AND DETERMINE THE ACCEPTABILITY OF THE DOCUMENTS FOR THE TRANSPORTATION OF THE HM TO THE DRMO FACILITY. UPON COMPLETION OF DOCUMENT REVIEW BY HWPCD AND HMDC, THE UNIT WILL BE DIRECTED TO TRANSPORT THE HM, THE UNIT IS RESPONSIBLE FOR TRANSPORTATION OF HM TO THE DRMO FACILITY.

(3) SPECIAL WASTE. SPECIAL WASTES ARE ITEMS NOT MEETING THE REGULATORY DEFINITION OF A HW, BUT WHICH ACTIVITIES MUST REIMBURSE DRMO FOR DISPOSAL COSTS. EXAMPLES ARE SPILL RESIDUES AND MAGNESIUM BATTERIES. A HWPCD REPRESENTATIVE WILL REVIEW THE SPECIAL WASTE DOCUMENTS WITH THE HMDC. DISPOSAL AND TRANSPORTATION REQUIREMENTS WILL BE DETERMINED ON A CASE BY CASE BASIS.

5. QUESTIONS REGARDING THESE PROCEDURES SHOULD BE DIRECTED TO HWP AND HMDC'S. POINTS OF CONTACT ARE MRS. SANDI LANE, BASE HMDC, EXTENSION 2471 AND MR. TOM BARBEE, HWPCD, EXTENSION 2083.

BT

DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:DRMO CP LEJEUNE NC(4)...INFO
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

BLOG(1)...ORIG FOR CG MCB CAMP LEJEUNE(7) /13/
BFAC(1) NREA(1) BTMO(1) DRMO(1) BADJ(1) BCOS(1)

RTD:000-330/COPIES:0019

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CSN:RXIA00077 CG MCB CAMP LE

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U U N C L A S S I F I E D
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FAC DEPT ROUTING	INFO	ACTION	COPY	INITIAL
AC/S FAC				
DAC/S FAC				
FAC MGT D				
CONST COORD				
ENVIR ENGR				
SPEC PROJ O				
FAC UTIL O				
MAINT O				
PWO				
FJO				
FSMH				
SECRETARY				

DATE: DEC 0 8 1987

DMINISTRATIVE MESSAGE

OUTINE

0216212 DEC 87 ZYB

M CG MCB CAMP LEJEUNE NC

O CG II MAF
G SECOND MARDIV
AVHOSP CAMP LEJEUNE NC
CG SIXTH MAB
CG SECOND FSSG
DRMO CAMP LEJEUNE NC

NFO MCAS NEW RIVER NC

NCLAS //N06240//

UBJ: MANDATORY TIME LIMITATIONS FOR HAZARDOUS WASTE STORAGE

. BO 6240.5A
. NCAC, 10F, NC HW MGT RULES

. THE PURPOSE OF THIS MSG IS TO ENSURE COMPLIANCE WITH THE SUBJ IMITATIONS IMPOSED BY STATE AND FEDERAL HAZARDOUS WASTE (HW) REGS PPLICABLE TO THE IMPLEMENTATION OF REF (A). THIS MSG DOES NOT APPLY O MCAS NEW RIVER.

. BACKGROUND.
A. EXCEPT AS PROVIDED IN PAR (B) OF SEC 262.34 OF RULE .0030 F REF (B), ADDRESSEES MAY NOT ACCUMULATE HW ON-SITE FOR OVER 90 DAYS NLESS A PERMIT OR INTERIM STATUS IS OBTAINED. THIS MEANS THAT HW EING COLLECTED AND/OR STORED PER REF (A) MUST BE PHYSICALLY TRANS-ERRED TO A PROPERLY PERMITTED HW TREATMENT, STORAGE OR DISPOSAL ACILITY (TSDF) WITHIN 90 DAYS OF THE DATE GENERATED. AS OF THIS ATE, THE ONLY TSDF ABOARD CAMP LEJEUNE AUTHORIZED FOR STORAGE OF HW FTER 90-DAY TIME LIMIT, IS THE DEFENSE REUTILIZATION AND MARKETING FFICE FACILITY (DRMO) AT THE TP-451/TP-463 COMPLEX.

LVR:CG SIXTH MAB(7)...ACT
LVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT
LVR:DRMO CAMP LEJEUNE NC(4)...ACT

EW(2)...ORIG FOR CG MCB CAMP LEJEUNE(13) /13/
[illegible]

...ACT FOR CG II MAF(...) [illegible]
CFU(1) S-3(1)

PTR:000-073/COPIES:0137

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U U N C L A S S I F I E D U

B. UNLESS SPECIFICALLY AUTHORIZED BY THE CG, MCB, IN WRITING, SHALL ONLY BE STORED IN CONTAINERS MEETING REQUIREMENTS SPECIFIED PAR 2P, ENCL (1) OF REF (A).

C. AS A MINIMUM, EACH CONTAINER SHALL BE MARKED WITH THE FOLLOW- G AT THE TIME USED FOR STORAGE OF HW:

(1) THE WORDS "HAZARDOUS WASTE";

(2) THE DATE ACCUMULATION OF HW BEGAN, I.E., "ACCUMULATION ART DATE";

(3) THE IDENTITY OF THE HW, I.E., CHEMICAL OR NOUN NAME, DOT IPPING NAME, AND IF AVAILABLE, THE NSN.

PROPERLY COMPLETED HW LABEL EQUIVALENT TO THOSE PREVIOUSLY PROVID- TO HAZARDOUS MATERIAL DISPOSAL COORDINATORS (HMDC) SATISFIES RE- IREMENTS OF THIS SECTION.

THE FOLLOWING STANDARDS ON TIME LIMITS FOR PREPARATION OF HW RN-IN DOCUMENT(S) AND PROCESSING HW TURN IN'S ARE EFFECTIVE IMME- ATELY.

A. FORM DD 1348-1 SHALL BE PREPARED AND SUBMITTED TO COGNIZANT ZARDOUS MATERIAL DISPOSAL OFFICER (HMDO) NLT THE EARLIEST OF THE LLOWING:

(1) TEN CALENDAR DAYS OF THE DATE CONTAINER IS FILLED OR;

(2) BY 45 DAYS AFTER THE "ACCUMULATION START DATE" EVEN IF NTAINER IS NOT FULL.

B. HMDO SHALL PROCESS FORM DD 1348-1 SUBMITTED PER PAR 3A ABOVE ACCORDANCE WITH ENCL (1) OF REF (A) AND HAND DELIVER TO DRMO WITH- FIVE CALENDER DAYS OF THE DATE RECEIVED BY HMDO.

C. DRMO SHALL PROCESS FORM DD 1348-1 AND EITHER ACCEPT ACCOUNT- ITY FOR THE HW, OR PROVIDE HMDO WITH A WRITTEN REJECTION SPECIFY- G DEFICIENCIES WITHIN 10 CALENDAR DAYS OF THE DATE FORM DD 1348-1 RECEIVED BY DRMO. DRMO SHALL PROVIDE COPY OF REJECTION NOTICE TO GNIZANT HMDC, AND DIRECTOR, NREAD.

D. DRMO SHALL REQUEST AC/S LOG TO PICK UP HW AND TRANSPORT TO -451/TP-463 COMPLEX. DRMO WILL SUBMIT REQUEST WITHIN FIVE CALENDAR YS AFTER DATE DRMO ACCEPTS ACCOUNTABILITY FOR THE HW BY SIGNING RM DD 1348-1.

E. AC/S LOGISTICS SHALL PICK UP AND TRANSPORT HW TO TP-451/TP- 3 COMPLEX WITHIN TEN CALENDAR DAYS OF DATE DRMO REQUESTS TRANSPOR- TION.

THE FOLLOWING REPORTS AND INTERNAL CONTROLS SHALL BE INITIATED MEDIATELY:

A. COMMANDERS HAVING PHYSICAL CUSTODY OF CONTAINERS OF HW, SHALL NITOR ALL HW STORAGE AREAS WEEKLY AND SHALL NOTIFY HMDC VIA CHAIN COMMAND IN WRITING OF ANY CONTAINERS ON HAND THAT:

(1) HAVE ACCUMULATION START DATES OVER 50 DAYS OLD AND A FORM 1348-1 HAS NOT BEEN SUBMITTED TO DRMO;

(2) HAVE ACCUMULATION START DATES OVER 60 DAYS OLD AND DRMO NOT ACCEPTED ACCOUNTABILITY; OR

(3) HAVE ACCUMULATION START DATES OVER 75 DAYS OLD.

B. COMMANDERS WITH PHYSICAL CUSTODY OF HW ARE RESPONSIBLE FOR

TTATING CORRECTIVE ACTION IN EACH INSTANCE WHERE DRMO HAS NOT ACCEPTED ACCOUNTABILITY WITHIN 60 DAYS AFTER ACCUMULATION START DATE.

C. HHDC, DRMO AND AC/S LOG REPS SHALL NOTIFY THE DIRECTOR, NREAD BY TELEPHONE, CONFIRMED IN WRITING TO CG MCB, ATTENTION AC/S F&C, IMMEDIATELY UPON DISCOVERY OF A CONTAINER WITH ACCUMULATION START DATE OVER 75 DAYS OLD WHICH HAS NOT BEEN PHYSICALLY TRANSPORTED TO THE TP-451/TP-463 COMPLEX.

5. POC WITH THIS MATTER IS MR. DANNY SHARPE, NREAD, EX 2083/1690 OR 2195.

AT

18

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

BBul 6240
NREAD/st
16 Jul 1987

BASE BULLETIN 6240

From: Commanding General
To: Distribution List

Subj: DISPOSAL OF USED OR EXCESS MAGNESIUM BATTERIES

Ref: (a) Solid and Hazardous Waste Management Branch ltr MLB/mj/6090/p2 of 9 Mar 87 (NOTAL)
(b) BO 6240.5A

1. Purpose. To publish guidance on disposal of magnesium batteries.

2. Background. Magnesium batteries are currently being disposed of as a solid waste into the Base Sanitary Landfill consistent with guidance from higher headquarters. Recently, the North Carolina Solid and Hazardous Waste Management Branch, Division of Health Services (DHS) made a determination that magnesium batteries were not suitable for disposal into sanitary landfills such as the one operated by this activity. The determination was transmitted by reference (a) in response to written inquiry by Marine Corps Air Station, Cherry Point.

3. Information. It should be noted that DHS did not declare the magnesium batteries to be a hazardous waste (HW). Rather, DHS found that toxic metals could leach out of batteries in quantities detrimental to ground water quality. Based on reference (a), the magnesium batteries should be collected and turned in to the Defense Reutilization and Marketing Office (DRMO) as a hazardous material (HM) per reference (b). Magnesium batteries are not subject to the HW labeling, inspection and other administrative requirements of reference (b) applicable to regulated HW. Used magnesium batteries should be handled and stored in accordance with the same fire, safety and health regulations applicable to new batteries.

4. Action. Effective immediately, disposal of magnesium batteries into the Base Sanitary Landfill and trash collection system is prohibited. Organizations with physical custody of magnesium batteries shall consolidate batteries requiring disposal. The batteries shall be stored by the generating organization until at least 24 batteries are on-hand. The batteries shall then be turned in to DRMO as a HM per reference (b). Individuals with questions regarding this matter shall contact their Hazardous Material Disposal Coordinator (HMDC) or Hazardous Material Disposal Officer (HMDO). The HMDC and HMDO are two collateral duty officers established by reference (b) to oversee the collection and disposal of HM and HW by organizations within their cognizance. HMDCs and HMDOs shall cooperate in minimizing the number of locations where magnesium batteries are stored awaiting disposal. Generating organizations may transport magnesium batteries, as required, for consolidation and disposal through DRMO.

5. Concurrence. This Bulletin has been coordinated and concurred in by the Commanding Generals, II Marine Amphibious Force; 2d Marine Division, FMF; 2d Force Service Support Group (Rein), FMF; 6th Marine Amphibious Bridgade, FMF; and Commanding Officers, Naval Hospital, Naval Dental Clinic and Marine Corps Air Station, New River.

6. Self-Cancellation. 31 December 1988.

M. C. HARRINGTON
Chief of Staff

DISTRIBUTION: A plus
NREAD (500)

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

IN REPLY REFER TO:
6240/3
NREAD

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: PROCEDURES FOR DISPOSAL/CONTAINERIZATION OF BATTERIES

Ref: (a) RCRA, part (b) permit, MCB, Camp Lejeune
(b) Code of Federal Regulations, title 49
(c) BO 6240.5A
(d) CG, MCB 0216212 Dec 87

Encl: (1) Mercury Batteries
(2) Nickel Cadmium Batteries
(3) Lithium Batteries

1. Enclosures (1), (2) and (3), establish procedures for containerizing and packaging several types of batteries which must be disposed of through the Defense Reutilization and Marketing Office (DRMO), as a hazardous waste, per references (a), (b), (c) and (d). These instructions do not address problems involving vented or damaged batteries which should be handled on a case by case basis per guidance of cognizant Hazardous Material Disposal Officer (HMDO) and Safety Officials.

2. Any method of packaging the subject batteries other than that shown in the enclosures, must have written approval from cognizant Hazardous Material Disposal Coordinator (HMDC), prior to packaging any depleted batteries. HMDC shall coordinate with DRMO and transportation officials.

3. Addresses are requested to provide the information contained in the enclosures to all units under their cognizance routinely generating the subject batteries.

4. Point of contact for this matter is Mr. Sammy Gwynn, Natural Resources and Environmental Affairs Divison, at extensions 2083/1690.

J. I. WOOTEN
By direction

Distribution:
HMDC, 2D MARDIV
HMDC, 2D FSSG
HMDC, II MAF
HMDC, 6TH MAB
HMDC, MCB
CO, MCAS, New River
AC/S, FAC

PROCEDURES FOR DISPOSAL/CONTAINERIZATION OF MERCURY BATTERIES

1. Effective immediately, the following process/procedures will be undertaken when preparing depleted batteries for transfer to DRMO:

a. Units will ensure turn in documents (DD 1348-1) are processed per reference (c) and time limitations imposed in reference (d).

b. Units will process a packaging and preservation work request (form MCBCL 4030), stating the number and nomenclature of batteries.

c. Units will receive the appropriate number and sized inner "DOT" approved fiberboard box and outer wood overpack.

d. Upon receipt of these boxes, units will ensure depleted mercury batteries are packaged as follows:

MATERIAL	HM/HW	EPA WASTE NUMBER	DOT SHIPPING NAME	HAZARD CLASS
Mercury Batteries	HW	D009	Hazardous Waste, solid, N.O.S.	ORM-E

*Caution: Depleted mercury batteries continue to vent hydrogen gas after use, "DO NOT" individually package batteries in plastic bags.

Packaging Requirements

- tape terminals, vents with electrical tape
- place batteries into the PP&P provided fiberboard box
- place fiberboard box into the PP&P provided wood overpack box
- TMO must transport

NOTE: all free space within the inner fiberboard box or between the inner fiberboard box and outer wood box should be taken up by using suitable non-combustible packaging material.

ENCLOSURE

PROCEDURES FOR DISPOSAL/CONTAINERIZATION OF NICKEL CADMIUM BATTERIES

1. Effective immediately, the following process/procedures will be undertaken when preparing depleted batteries for transfer to DRMO:

a. Units will ensure turn in documents (DD 1348-1) are processed per reference (c) and time limitations imposed in reference (d).

b. Units will process a packaging and preservation work request (form MCBCL 4030), stating the number and nomenclature of batteries.

c. Units will receive the appropriate number and sized inner "DOT" approved fiberboard box and outer wood overpack.

d. Upon receipt of these boxes, units will ensure depleted nickel cadmium batteries are packaged as follows:

MATERIAL	HM/HW	EPA WASTE NUMBER	DOT SHIPPING NAME	HAZARD CLASS
Nickel Cadmium Batteries	HW	D003/D006	Waste, nickel cadmium batteries for disposal	ORM-E

Packaging Requirements

- tape terminals, vents with electrical tape
- place individual batteries into non-porous plastic bag and tape shut with non-metallic tape
- place batteries into the PP&P provided fiberboard box
- place fiberboard box into the PP&P provided wood overpack box
- TMO must transport

NOTE: all free space within the inner fiberboard box or between the inner fiberboard box and outer wood box should be taken up by using suitable non-combustible packaging material.

ENCLOSURE (2

PROCEDURES FOR DISPOSAL/CONTAINERIZATION OF LITHIUM BATTERIES

1. Effective immediately, the following process/procedures will be undertaken when preparing depleted batteries for transfer to DRMO:

a. Units will ensure turn in documents (DD 1348-1) are processed per reference (c) and time limitations imposed in reference (d).

b. Units will process a packaging and preservation work request (form MCBCL 4030), stating the number and nomenclature of batteries.

c. Units will receive the appropriate number and sized inner "DOT" approved fiberboard box and outer wood overpack.

d. Upon receipt of these boxes, units will ensure depleted lithium batteries are packaged as follows:

MATERIAL	HM/HW	EPA WASTE NUMBER	DOT SHIPPING NAME	HAZARD CLASS
Lithium Sulfur Dioxide Batteries	HW	D003	Waste, lithium batteries for disposal	ORM-C

Packaging Requirements

- tape terminals, vents with electrical tape
- place individual batteries into non-porous plastic bag and tape shut with non-metallic tape
- place batteries into the PP&P provided fiberboard box
- place fiberboard box into the PP&P provided wood overpack box
- TMO must transport

NOTE: all free space within the inner fiberboard box or between the inner fiberboard box and outer wood box should be taken up by using suitable non-combustible packaging material.

GENERAL BATTERY SURVEY (HW Only)

BOX	BOX SIZE	NSN
(A)	10" x 8" x 6"	8115-00-183-9497
(B)	22 5/8" x 10" x 16"	8115-00-190-4865

TYPE	NOMENCLATURE	SIZE (INCHES)	SUGGESTED BOX
(MERCURY)	TR 164	1-1/4(L) x 1/2(W)	A
	BA 1372	2(L) x 1(W)	A
	MG 803	1/2(W) x 4 (L) x 3(H)	A
	BA 1100	1.5(W) x 4 (L) x 3(H)	A
	BA 1312	1.5(W) x 2.2(H) x 4(L)	A
	BA 1567	1(W) x .7(H) x 1/3(L)	A
	~~BA 1386~~ Magnesium	3.6(W) x 9.5(L) x 2 1/2(H)	A (up to 8 batteries
	BA 3553		A
	BA 1546	2.7(W) x 4.5(H)	A
	BA 1568	1.06(W) x 3(H)	A
	BA 1381	.64(W) x 1.04(H)	A
(LITHIUM)	BA 5590	4-1/4(L) x 2-3/4(W) x 5"(H)	A (more than 6 - use
	BA 5598	4.7(L) x 3.6(W) x 2.1(H)	A "
	BA 5588	3.5(L) x 1.2(W) x 5(H)	A (more than 8 - use
(NICKEL CADMIUM)	BB 590	4-1/4(L) x 2-3/4(W) x 5"(H)	A (more than 6 - use
	BB 516	1-1/8(W) x 1-1/8(W) x 3-5/8(H)	A (more than 10 - use

*POINTS OF REFERENCE

Box (B) will hold 46 to 48 - BA 4386, BA 5590, BA 5598, BB 590

** Normally all mercury batteries due to small size and low generation, can be placed into Box (A)

ROUTINE

R 111421Z MAR 87

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SIXTH MAB
NAVHOSP CAMP LEJEUNE NC
CG SECOND FSSG
CG II MAF
NAVDENCLINIC CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC

UNCLAS //N06280//

SUBJ: DISPOSAL OF USED WET CELL BATTERIES AND RELATED ELECTPOLYTE

A. BO 6240.5A

1. THE PURPOSE OF THIS MSG IS TO PROVIDE REVISED GUIDANCE FOR SUBJ DISPOSAL. EFFECTIVE IMMEDIATELY THE FOLLOWING ACTION WILL BE TAKEN TO ENSURE COMPLIANCE WITH STATE AND FEDERAL HW REGULATIONS.

A. USED ELECTROLYTE DRAINED FROM BATTERIES SHALL BE MANAGED AS HW IAW THE REF. THE ELECTROLYTE SHALL BE DISPOSED OF IAW THIS MSG WITHIN 90 DAYS OF THE DATE DRAINED FROM BATTERY.

B. DRAINAGE OF INTACT, NONLEAKING BATTERIES IS PROHIBITED WITHOUT THE SPECIFIC WRITTEN APPROVAL OF THE COGNIZANT HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC). LOCATIONS WHERE BATTERIES ARE DRAINED ARE HAZARDOUS WASTE GENERATION SITES. LOCATIONS WHERE USED ELECTROLYTE DRAINED FROM BATTERIES IS STORED ARE HW ACCUMULATION AREAS. BOTH TYPES OF LOCATIONS ARE SUBJECT TO PERSONNEL TRAINING REQUIREMENTS OF THE REF. ACCUMULATION AREAS ARE ALSO SUBJECT TO WEEKLY INSPECTION REQUIREMENTS OF THE REF. FACILITIES USED FOR STORAGE OF BATTERIES AWAITING DISPOSAL THROUGH THE DEFENSE REUTILIZATION AND MARKETING OFFICES (DRMO) ARE NOT REGULATED BY THE REF UNLESS ALSO USED FOR HANDLING OF OTHER TYPES OF HW.

C. BATTERIES SHALL BE STORED UPRIGHT AT ALL TIMES.

DLVR:CG SIXTH MAB(6)...ACT
DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

NREA(2)...ORIG FOR CG MCB CAMP LEJEUNE(109) /15/
BTMO(1) BFAC(1) BSJA(1) BCOS(1) BCED(1) DICB(1) SSTF(85) DRMO(1)
FMSS(1) BITS(1) MCES(1) MCSS(4) BRSU(1) RRDT(1) SPBN(4) HQBN(1)
CEOA(1)

RTD:000-000/COPIES:0123

D. FACILITIES WHERE BATTERIES ARE DRAINED AND WHERE CONTAINERS OF USED ELECTROLYTE ARE STORED ARE REQUIRED TO HAVE HW SPILL CONTINGENCY PLANS POSTED.

2. BATTERY DISPOSAL PROCEDURES:

A. CAREFULLY INSPECT ALL BATTERIES REQUIRING DISPOSAL AND SEGREGATED INTO "LEAKING" AND "NONLEAKING" LOTS.

B. NONLEAKING BATTERIES SHALL BE STACKED ONE LAYER HIGH ON PALLETS. WHEN PALLET IS FULL, THE BATTERIES WILL BE COVERED WITH A SHEET OF 3/4" PLYWOOD THE SIZE OF THE PALLET. PLYWOOD AND BATTERIES SHALL BE SECURED TO PALLETS WITH BANDING MATERIAL.

C. FULL PALLETS OF BATTERIES WILL BE TURNED IN TO THE DRMO PER THE REF AS A HAZARDOUS MATERIAL (HM). REFER ANY QUESTIONS REGARDING THESE PROCEDURES TO THE COGNIZANT HAZARDOUS MATERIAL DISPOSAL OFFICER (HMDO).

D. LEAKING BATTERIES WILL BE IMMEDIATELY DRAINED INTO DEPT OF TRANSPORTATION APPROVED CONTAINERS. DRAINED BATTERIES WILL BE STORED UPRIGHT, ONE LAYER HIGH ON PALLETS. BATTERIES WILL BE COVERED WITH A SHEET OF PLYWOOD TO PREVENT ACCUMULATION OF RAIN WATER. BATTERIES WILL BE INSPECTED WEEKLY TO ENSURE PROPER STORAGE. WHEN PALLET IS FULL, BIND PLYWOOD AND BATTERIES TO PALLET SECURELY WITH BANDING MATERIAL AND TURN IN TO DRMO AS A HM PER THE REF.

E. KEEP ELECTROLYTE STORAGE CONTAINERS TIGHTLY SEALED AT ALL TIMES WHEN NOT DRAINING THE BATTERIES. PLACE A PROPERLY COMPLETED HW LABEL ON THE CONTAINER IAW THE REF PRIOR TO COMMENCING FILLING. ENSURE THAT "CORROSIVE" LABELS ARE USED TO WARN OF HAZARD TO PERSONNEL SAFETY.

F. BE SURE THAT ACCUMULATION START DATE IS CLEARLY SHOWN ON EACH HW LABEL. NOTIFY COGNIZANT HMDO WEEKLY OF THE NUMBER OF CONTAINERS OF ELECTROLYTE ON HAND WHICH ARE FULL OR WHICH HAVE ACCUMULATION START DATES WHICH ARE 45 DAYS OLD OR OLDER.

G. INSPECT CONTAINERS ON A WEEKLY BASIS IAW THE REF. MAINTAIN A WRITTEN LOG WHICH PROVIDES DATE OF INSPECTION, THE PERSON CONDUCTING INSPECTION, PROBLEMS FOUND AND CORRECTIVE ACTION TAKEN. HMDO'S WILL FURNISH PROPER FORMS FOR MAINTAINING LOG.

H. BATTERY DRAINING ACTIVITIES AND RELATED INSPECTIONS WILL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF HW HANDLERS HAVING PROPERLY DOCUMENTED HW TRAINING IAW WITH THE REF. HMDO'S WILL MONITOR ADEQUACY OF HW TRAINING AND DOCUMENTATION CONTINUOUSLY.

I. HW SPILL CONTINGENCY PLANS WILL BE CONSPICUOUSLY POSTED AT EACH LOCATION USED FOR THE DRAINAGE OF USED BATTERIES OR FOR THE STORAGE OF USED ELECTROLYTE. HMDO'S WILL FURNISH GUIDANCE. PERSONNEL WILL BE EQUIPPED AND TRAINED TO RESPOND TO SPILLS OF ELECTROLYTE SAFELY.

J. TRANSPORTATION OF USED BATTERIES (DRAINED OR UNDRAINED) IS NOT REGULATED BY THE REF. YOU MAY TRANSPORT AS REQUIRED.

K. CONTAINERS OF USED ELECTROLYTE WILL BE TURNED IN TO DRMO AS A HAZARDOUS WASTE PER THE REFERENCE.

3. DISPOSAL BY DRMO CONTRACTOR WILL BE DONE UNTIL SUCH TIME AS

ADEQUATE PRETREATMENT AND DISPOSAL FACILITIES MEETING STATE AND FEDERAL REGULATORY AND PERMIT REQUIREMENTS CAN BE DESIGNED AND INSTALLED. DISPOSAL THROUGH SANITARY SEWER WILL BE USED ONLY IN THE EVENT OF EMERGENCY. DRMO, BMO AND NREAD WILL COOPERATE IN ENSURING ADEQUATE SERVICES ARE AVAILABLE TO ACCOMPLISH THE SUBJECT DISPOSAL.

4. ADDRESSES ARE REQUESTED TO TAKE IMMEDIATE ACTION TO LIMIT THE NUMBER OF LOCATIONS WITHIN THEIR COMMANDS WHERE BATTERIES ARE DRAINED AND ELECTROLYTE IS ACCUMULATED. TECHNICAL ASSISTANCE WITH THIS MATTER IS AVAILABLE FROM THE BASE SAFETY OFFICER; DIR, NREAD; BASE FIRE CHIEF AND THE PUBLIC WORKS OFFICER.

5. QUESTIONS REGARDING IMPLEMENTATION OF THIS MSG SHOULD BE REFERRED TO THE COGNIZANT HMDO FOR RESOLUTION. UNRESOLVED QUESTIONS AND ISSUES SHOULD BE REFERRED VIA COGNIZANT HMDC TO THE DIR, NREAD, EXTS 2083/2195. HMDC'S AND DIR, NREAD, WILL COOPERATE IN RESOLUTION OF SIGNIFICANT ISSUES. POC IS MR. DANNY SHARPE, NREAD, EXT 2083.

BT

UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

BBul 6240
NREAD/st
16 Jul 1987

BASE BULLETIN 6240

From: Commanding General
To: Distribution List

Subj: DISPOSAL OF USED OR EXCESS MAGNESIUM BATTERIES

Ref: (a) Solid and Hazardous Waste Management Branch ltr MLB/mj/6090/p2 of 9 Mar 87 (NOTAL)
(b) BO 6240.5A

1. Purpose. To publish guidance on disposal of magnesium batteries.

2. Background. Magnesium batteries are currently being disposed of as a solid waste into the Base Sanitary Landfill consistent with guidance from higher headquarters. Recently, the North Carolina Solid and Hazardous Waste Management Branch, Division of Health Services (DHS) made a determination that magnesium batteries were not suitable for disposal into sanitary landfills such as the one operated by this activity. The determination was transmitted by reference (a) in response to written inquiry by Marine Corps Air Station, Cherry Point.

3. Information. It should be noted that DHS did not declare the magnesium batteries to be a hazardous waste (HW). Rather, DHS found that toxic metals could leach out of batteries in quantities detrimental to ground water quality. Based on reference (a), the magnesium batteries should be collected and turned in to the Defense Reutilization and Marketing Office (DRMO) as a hazardous material (HM) per reference (b). Magnesium batteries are not subject to the HW labeling, inspection and other administrative requirements of reference (b) applicable to regulated HW. Used magnesium batteries should be handled and stored in accordance with the same fire, safety and health regulations applicable to new batteries.

4. Action. Effective immediately, disposal of magnesium batteries into the Base Sanitary Landfill and trash collection system is prohibited. Organizations with physical custody of magnesium batteries shall consolidate batteries requiring disposal. The batteries shall be stored by the generating organization until at least 24 batteries are on-hand. The batteries shall then be turned in to DRMO as a HM per reference (b). Individuals with questions regarding this matter shall contact their Hazardous Material Disposal Coordinator (HMDC) or Hazardous Material Disposal Officer (HMDO). The HMDC and HMDO are two collateral duty officers established by reference (b) to oversee the collection and disposal of HM and HW by organizations within their cognizance. HMDCs and HMDOs shall cooperate in minimizing the number of locations where magnesium batteries are stored awaiting disposal. Generating organizations may transport magnesium batteries, as required, for consolidation and disposal through DRMO.

5. Concurrence. This Bulletin has been coordinated and concurred in by the Commanding Generals, II Marine Amphibious Force; 2d Marine Division, FMF; 2d Force Service Support Group (Rein), FMF; 6th Marine Amphibious Bridgade, FMF; and Commanding Officers, Naval Hospital, Naval Dental Clinic and Marine Corps Air Station, New River.

6. Self-Cancellation. 31 December 1988.

M. C. HARRINGTON
Chief of Staff

DISTRIBUTION: A plus
NREAD (500)

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ADMINISTRATIVE MESSAGE

ROUTINE

R 031552Z APR 86 ZYB

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SECOND FSSG
NAVHOSP CAMP LEJEUNE NC
MCB CAMP LEJEUNE NC

CG SIXTH MAB
MCAS NEW RIVER NC
NAVDENCLINIC CAMP LEJEUNE NC

INFO HQ MUC II MAF

TWO TWO MAU

UNCLAS //N06280//

SUBJ: DISPOSAL OF EXCESS ANTIFREEZE/USED ANTIFREEZE

A. BU 6240.5

1. ANTIFREEZE (NEW OR USED) IS A HAZARDOUS MATERIAL (HM) THAT IS TOXIC TO WILDLIFE, PETS, ETC IF INGESTED. THIS HM SHOULD BE PROPERLY DISPOSED OF PER WHICHEVER OF THE FOLLOWING METHODS IS APPLICABLE:
A. NEW OR UNUSED ANTIFREEZE HAS POTENTIAL VALUE AND SHOULD BE TURNED IN TO THE LOCAL DEFENSE REUTILIZATION AND MARKETING OFFICE (DRMO) PER THE REF OR RETURNED TO COGNIZANT SUPPLY OFFICER FOR REISSUE. SMALL QUANTITIES (LESS THAN FIVE GALLONS) MAY BE DISPOSED OF PER PARAGRAPH 1B BELOW OF APPROVED BY COGNIZANT OIC.
B. USED ANTIFREEZE WILL BE DISPOSED OF BY FLUSHING INTO THE SANITARY SEWER. THE MOST PRACTICAL METHOD IS TO DRAIN THE MIXTURE OF ANTIFREEZE AND WATER FROM THE RADIATORS DIRECTLY ON TO A WASHPAD WHICH IS CONNECTED TO THE SANITARY SEWER. THE MATERIAL SHOULD BE THOROUGHLY FLUSHED WITH WATER INTO DRAINS TO SEWER.

2. OIC'S ARE RESPONSIBLE FOR DESIGNATING/APPROVING LOCATIONS WHERE

DLVR:CG SIXTH MAB(6)...ACT
DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:TWO TWO MAU(4)...INFO
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT
DLVR:HQ MUC II MAF(7)...INFO

NREA(2)...ORIG FOR CG MCB CAMP LEJEUNE(118) /13/
JFAC(1) GSTF(12) SSTF(85) OCUR(14) BCOS(1) BSDO(1) CENB(1)
UICS(1)

RTD:000-000/COPIES:0143

808052/C94 1 OF 2 MATA0104 094/03:31Z 031552Z APR 86
CSN:RXIA00014 CG MCB CAMP LE

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ANTIFREEZE MAY BE DISCHARGED TO THE SANITARY SEWER. GUIDANCE CAN BE OBTAINED BY CONTACTING DIRECTOR, NATURAL RESOURCES AND ENVIRONMENTAL AFFAIRS DIVISION AT 2083 OR 2195.

3. DISPOSAL OF ANTIFREEZE INTO USED OIL COLLECTION TANKS AND DRUMS IS PROHIBITED.

4. ADDRESSEES ARE REQUESTED TO MAKE WIDEST POSSIBLE DISTRIBUTION OF THIS MSG.

BT

ROUTINE

: 271403Z SEP 88

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SECOND FSSG
NAVHOSP CAMP LEJEUNE NC
CG SIXTH MEB
CG II MEF
NAVDENCLINIC CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC

UNCLAS //N04100//
SECTION 01 OF 02 //N04100//

SUBJ: RECYCLING OF SCRAP METAL

A. BO 6240.5A
B. BO 11090.1B
C. CG MCB R111421Z MAR 87
D. BO 11350.2A

1. MCO P11000.8B PROVIDES GUIDELINES FOR THE RESOURCE RECOVERY PROGRAM. A PROPOSED BASE ORDER 4100.8B HAS BEEN DRAFTED AND IS CURRENTLY BEING STAFFED FOR APPROVAL. IN THE INTERIM, THIS MSG IS TO PROVIDE INFORMATION, GUIDANCE AND ASSIGN RESPONSIBILITIES TO ENSURE THE RECYCLING PROGRAM OPERATES IN A SMOOTH AND ORDERLY MANNER.

2. SIGNIFICANT PROBLEMS WITH RECYCLING OF SCRAP METAL (IDENTIFIED BY CATEGORY, I.E. IRON, STEEL, BRASS, ALUMINUM) HAVE OCCURRED. DRMO, CAMP LEJEUNE, HAS ADVISED FORMALLY THAT THEIR AGENCY WILL NO LONGER ACCEPT SCRAP METAL ITEMS UNLESS THEY ARE PROPERLY SEPARATED. COMMENCING IMMEDIATELY, SOURCE SEPARATION OF SCRAP METAL IS REQUIRED. SOURCE SEPARATION IS THE SEPARATION OF RECYCLABLE MATERIALS AT THE POINT OF GENERATION BY THE GENERATOR. METAL GENERATED AT SPECIFIC SITES WILL BE SEPARATED AND PLACED IN PROPERLY MARKED (IDENTIFIED BY CATEGORY) BINS/HOPPERS. UNITS THAT TRANSPORT TRUCK-

DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

BTMO(1)...ORIG FOR CG MCB CAMP LEJEUNE(82)
BFAC(1) BSJA(1) BCOS(1) BCED(1) SSTF(68) DRMO(1) FMSS(1) BITS(1) /13/
MCES(1) MCSS(1) BPSU(1) BRTD(1) SPBN(1) HQBN(1)

RTD:000-000/COPIES:0090

LOADS OF SCRAP METAL TO DRMO, LOT 203, MUST BE SOURCE SEPARATED AND PREPARE A COMPLETED TURN IN DOCUMENT (1348-1). THE FOLLOWING ACCTG DATA MUST BE TYPED ON ALL TURN IN DOCUMENTS FOR SCRAP METAL UNDER THE REMARKS SECTION: "PROCEEDS FROM SALE OF RECYCLABLE PRODUCTS, FIN ACC NO.17F3875 27RM [illegible] 0 00027 3C 000000 006700198034." "ROPERLY MARKED 55 GALLON OPEN HEAD DRUMS MAY BE USED BY GENERATING UNITS IN SEGREGATING SMALLER QUANTITIES OF GENERATED SCRAP METAL, (I.E., COPPER, BRASS, AL MINUM ETC.). 55 GALLON DRUMS MAY BE PURCHASED OR DRAWN FROM DRMO.

3. SPENT BRASS CARTRIDGES WILL BE DISPOSED OF AT DRMO, BLDG 906. UNFIRED AMMUNITION (INCLUDING BLANKS) POSES AN EXTREME SAFETY HAZARD TO DISPOSAL HANDLERS AND IS NOT PERMITTED IN RECYCLING METAL BINS/HOPPERS. THE ACCTG DATA STATEMENT SHOWN IN PARA 2 ABOVE ALSO APPLIES TO THE TURN IN DOCUMENTS FOR MUNITIONS. ALL MUNITION ITEMS MUST BE INSPECTED BY GENERATING UNIT AND A SIGNED STATEMENT TYPED ON THE TURN IN DOCUMENT (1348-1) CERTIFING THE ITEM TO BE FREE OF LIVE AMMUNITION AND SHOULD READ AS FOLLOWS: "THIS MATERIAL HAS BEEN INSPECTED BY ME AND IT CONTAINS NO LIVE ROUNDS/LIVE BLANKS, UNFIRED PRIMERS, NO HW/HM OR OTHER DANGEROUS MATERIALS."

4. METAL ITEMS IN CATEGORIES LISTED IN A-L BELOW WHICH COULD POSSIBLY BE USED AGAIN FOR THEIR ORIGINAL PURPOSE OR FUNCTION WITHOUT ANY SPECIAL PROCESSING SHOULD BE TURNED IN ITEM BY ITEM WITH A SEPARATE TURN IN DOCUMENT (1348-1) AT DRMO, BLDG 906. THESE ITEMS SHOULD NOT BE PLACED IN THE "METAL ONLY" BINS/HOPPERS.

A. ALL MOTORS
B. MOTOR PARTS
C. COMPRESSORS
D. ENGINES
E. RADIATORS
F. CABLE
G. INFLATABLE TIRES WITH METAL RIMS
H. GENERATORS
I. VEHICLE PARTS
J. FURNITURE
K. FUEL TANKS (TRIPLE RINSE AND STENCILED ACCORDINGLY)
L. BRAKE SHOES (SERVICEABLE)

DRMO WILL BE RESPONSIBLE FOR DOWNGRADING THESE ITEMS TO SCRAP AT TIME OF TURN IN, IF CONDITION WARRANTS.

5. GARBAGE, TRASH, WOOD, PLASTICS, GLASS, PAPER AND OIL FILTERS, OIL CONTAMINATED RAGS AND PAPER TOWELS WILL BE DISPOSED OF PER REF (D).

6. CONTAMINATION OF RECYCLING BINS/HOPPERS WITH POLS, GARBAGE, TRASH, WASTE PAINT AND OTHER INAPPROPRIATE MATERIALS IS A SERIOUS PROBLEM. ITEMS FOUND IN BINS RECENTLY INDICATE SIGNIFICANT PROBLEMS WITH COMPLIANCE OF REQUIREMENTS STATED IN REFS (A) AND (B) AT SOME GENERATING SHOPS. PLEASE BE ADVISED THAT EFFECTIVE IMMEDIATELY, BASE ENVIRONMENTAL COMPLIANCE INSPECTORS SHALL BE CONDUCTING

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UNANNOUNCED SPOT CHECKS OF RECYCLING BINS. THESE INSPECTIONS WILL FOCUS ON THE FOLLOWING SPECIFIC REQUIREMENTS:
A. DISPOSAL OF HAZARDOUS MATERIALS OR HAZARDOUS WASTES HM/HW INTO RECYCLING BINS IS PROHIBITED.
B. DISPOSABLE OIL FILTERS WILL NOT BE DISCARDED INTO RECYCLING BINS.
C. CRANKCASE OILS AND OTHER USED POLS SHALL BE REMOVED FROM ANY ITEMS PLACED INTO RECYCLING BINS.
D. DISPOSAL OF GARBAGE AND NONMETALLIC TRASH AND REFUSE SUCH AS PLASTIC, GLASS, ETC INTO "METAL ONLY" BINS IS PROHIBITED.

7. EMPTY METAL CANS, DRUMS AND OTHER CONTAINERS WILL NOT BE PLACED IN RECYCLING BINS. THESE ITEMS WILL BE DISPOSED OF AS FOLLOWS:
A. ANY CONTAINER WHICH PREVIOUSLY HELD A HM/HW SHALL BE TRIPLE RINSED PRIOR TO DISPOSAL. RINSATE SHALL BE DISPOSED OF AS A HM/HW PER REF (A) UNLESS OTHERWISE APPROVED IN WRITING BY COGNIZANT HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC). APPROVAL SHALL BE IN THE FORM OF A PROPERLY COMPLETED (NAVSUP 5 DES) AND SIGNED WASTE IDENTIFICATION DOCUMENT (WID). APPENDIX A, ENCL (1) OF REF (A) PERTAINS.
B. CONTAINERS OF 5 GALLONS OR LESS CAPACITY WILL BE EMPTIED OF ALL CONTENTS, CRUSHED AND DISCARDED INTO TRASH RECEPTABLES OR SANITARY LANDFILL.
C. CONTAINERS WHICH ARE INTACT AND LARGER THAN 5 GALLONS IN CAPACITY WILL BE EMPTIED OF ALL CONTENTS, TRIPLE RINSED, STENCILED WITH WORDS "TRIPLE RINSED", CLOSED WITH PROPER BUNGS AND TURNED IN TO DRMO AT BLDG 906.
D. CONTAINERS LARGER THAN 5 GALLONS IN CAPACITY WHICH ARE BADLY DAMAGED OR WHICH CANNOT BE CLOSED USING BUNGS, WILL BE EMPTIED OF ALL CONTENTS, CRUSHED AND DISCARDED INTO TRASH RECEPTABLES OR SANITARY LANDFILL.

8. BE ADVISED THAT DISCREPANCIES IDENTIFIED INVOLVING 7A ABOVE WILL BE BROUGHT TO THE ATTENTION OF THE COGNIZANT MAJOR COMMAND HMDC VIA CHAIN OF COMMAND.

9. ADDRESSEES ARE REQUESTED TO TAKE IMMEDIATE ACTION TO LIMIT THE OLD DISPOSAL PRACTICES OF HANDLING SCRAP METAL AND ASSIST THE BASE IN IMPLEMENTING THESE NEW REQUIREMENTS.

10. THE SEGREGATION PROCESS WILL NOT ONLY ASSIST IN COMPLIANCE OF REFS (A), (B), (C) AND (D), BUT WILL INCREASE THE PROCEEDS OF THE RECYCLING PROGRAM. THE FUNDS RECEIVED THROUGH THIS PROGRAM SUPPORT THE FOLLOWING:
A. RECYCLING PROGRAM
B. MORALE, WELFARE AND RECREATION PROJECTS
C. ENERGY CONSEPVATION
D. SAFETY

BT

ROUTINE

R 271403Z SEP 88

FM CG MCB CAMP LEJEUNE NC

TO CG SECOND MARDIV
CG SECOND FSSG
NAVHOSP CAMP LEJEUNE NC
CG SIXTH MEB
CG II MEF
NAVDENCLINIC CAMP LEJEUNE NC

INFO MCAS NEW RIVER NC

UNCLAS
FINAL SECTION OF 02 //N04100//

E. ENVIRONMENTAL PROJECTS

11. ALL SCRAP METAL GENERATORS ARE REQUESTED TO PROVIDE A POINT OF CONTACT FOR YOUR UNIT TO SERVE AS A FOCAL POINT IN COMPLYING WITH THE RECYCLING REQUIREMENTS AND PROVIDE NAMES, UNITS AND PHONE NUMBERS TO THE CAMP LEJEUNE COMPLEX, RECYCLING COORDINATOR. SHOULD YOU DESIRE FURTHER INFORMATION, THE RECYCLING COORDINATOR MAY BE CONTACTED BY VISITING NREAD, PLDG 1103 OR BY TELEPHONING MS. TWYLAH HARDISON, NREAD, EXTENSIONS 1690/2083.

BT

DLVR:NAVDENCLINIC CAMP LEJEUNE NC(4)...ACT
DLVR:NAVHOSP CAMP LEJEUNE NC(4)...ACT

BTMD(1)...ORIG FOR CG MCB CAMP LEJEUNE(82) /13/
BFAC(1) BSJA(1) BTOS(1) BTFD(1) SSTF(68) DRMO(1) FMSS(1) BITS(1)
MCES(1) MCSS(1) BPSU(1) R D(1) SPBN(1) HQBN(1)

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4 OF 4 MATA0235 271/15:09Z

271403Z SEP 88
CG MCB CAMP LE

UNCLASSIFIED

MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

IN REPLY REFER TO:
6240
BEMD
5 JUL 1990 /C

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: OILY RAGS DISPOSAL

Ref: (a) MCO-6280.3
(b) BO 6240.5A

Encl: (1) Oily Rags Disposal/Recycle Cost Review

1. Reference (a) directs Marine Corps Base, Camp Lejeune, to reduce waste streams by various methods, including recycling. The use of a contract shop rag cleaning service would greatly reduce the oily rags waste stream. Manpower requirements associated with containerization, documentation and disposal of oily rags through DRMO would be significantly reduced.

2. Most individual units within this activity currently purchase rags for shop use from Self Service. Used rags are then accumulated in 55 gallon drums for disposal through DRMO as non-RCRA or special waste. A few units have contracted to have Rental Uniform Service, Wilson, NC, supply clean shop rags. Soiled shop rags are picked up by the service company and replaced with clean ones on a weekly basis.

3. Funding for activities utilizing shop towels will be the responsibility of the generating unit.

4. The enclosure compares the current disposal costs of disposing of oily rags through DRMO, to the costs of utilizing a contract service for shop rags.

5. It is requested that tenant command hazardous material disposal coordinators (HMDCs) and base hazardous material disposal officer (HMDO) appointed per reference (b) initiate appropriate action to procure contract services for shop rags where feasible. Please provide requisitions to the base Purchasing and Contracting Officer through established channels and procurement procedures.

6. Mr. Douglas Piner, Environmental Control Specialist, Environmental Management Department, extension 5093, is available to assist with this matter.

J. I. Wooten

J. I. WOOTEN
By direction

OILY RAGS DISPOSAL/RECYCLE

1. Current Disposal Cost Review (DRMO Disposal)

   a. Estimated volume/year = 80,000 (pounds)

   DRMO Disposal cost per pound = $ .60

   Subtotal $48,000

   b. Quantity of 55 gallon drums = 242 (required to retain item A.1)

   Cost per drum $65

   Subtotal $15,730

   c. Purchase price of rags = $ .08 (per pound)

   Estimated volume/year = 80,000

   Subtotal $ 6,400

   d. Cost for disposal of drums = $5808.00

   Total cost per year $75,938

2. Rag Cleaning Service Cost Review

   a. Estimated volume/year = 1,064,000 (rags)
   (Based on 13.3 rags per pound)

   Cost of cleaning service = $ .05 (per rag)

   Total $53,200

Notes:
- 18" x 18" ABSORBENT COTTON RAGS ARE SUPPLIED BY VENDOR
- VENDOR PICKS UP DIRTY RAGS FROM INDIVIDUAL UNITS ON WEEKLY BASIS AND REPLACES WITH CLEAN RAGS

EMD FLOW CHART FOR USE/DISPOSAL OF HAZARDOUS MATERIAL/HAZARDOUS WASTE (HM/HW)

Ref: (a) BO 6240.5A
(b) Message: 90 Day Time Limitations
(c) Waste Material Profile Sheet (WMPS)

STEP — PROCEDURES

1. MATERIALS/HAZARDOUS MATERIAL COME INTO SUPPLY SYSTEM

↓

2. HM RECEIVED BY UNIT; MATERIAL SAFETY DATA SHEET (MSDS) SHOULD BE RECEIVED AT THIS TIME

↓

3. UNIT REQUESTS WMPS, WHICH ALONG WITH THE MSDS, ARE GIVEN TO EMD, TO AUTHORIZE GENERATION OF HW

↓

4. WASTE/MATERIAL IS GENERATED AND WAITING FOR DISPOSAL

↓

5. DETERMINE IF SHELF LIFE CAN BE EXTENDED OR IF MATERIAL CAN BE RECYCLED FOR USE BY A UNIT OR FOR RESALE BY DRMO

↓

6A. IF NO = HW

6B. IF YES = (RECYCLE)

↓

MATERIAL OR HM

↓

SENT TO DRMO

7. PREPARE FOR DISPOSAL AS HW

A. GET PROPER TYPE/SIZE CONTAINER

↓

B. PUT HW LABEL ON CONTAINER;
ACCUMULATION START DATE;
DOT SHIPPING NAME;
EPA WASTE NUMBERS

↓

C. PUT STICKER ON CONTAINER
EX: CORROSIVITY, ORM-C

↓

D. START TO FILL CONTAINER

FIRST SHOT IF FILLED IMMEDIATELY

↓

ONLY 10 DAYS FROM ACCUMULATION START DATE TO FILL OUT DD1348-1 AND SEND TO EMD

↓

EMD HAS 45 DAYS TO INSPECT WASTE AND ARRANGE FOR PICKUP/ TRANSPORT TO DRMO

↓

HW MUST BE IN STORAGE AT DRMO/OR REMOVED BY CONTRACTOR WITHIN 90 DAYS

CONTAINER NOT FILLED UP AT START

↓

45 DAYS FROM ACCUMULATION START DATE TO FILL OUT DD1348-1 AND SEND TO EMD

↓

EMD HAS 15 DAYS TO INSPECT WASTE AND ARRANGE PICKUP TRANSPORT TO DRMO

↓

HW MUST BE IN STORAGE AT DRMO/OR REMOVED BY CONTRACTOR WITHIN 90 DAYS

EMD FLOW CHART FOR PROPER DISPOSAL PROCEDURES

SUBJ: DISPOSAL OF USED WET CELL BATTERIES AND RELATED ELECTROLYE (USED BATTERY ACID)

STEP PROCEDURES

10a. IF REGULAR ACCUMULATION: DISPOSE IN ACCORDANCE WITH 90 DAY STORAGE LIMITATIONS, REF B AND F

10b. IF LOW LEVEL ACCCUMULATION: LOOK TO CONSOLIDATION OF SITES OR OR APPLY TO EMD FOR A SATELLITE ACCUMULATION AREA, REF A

11. SPECIFIC BATTERY ACID DISPOSAL PROCEDURES:
A. USED BATTERY ACID MUST BE DRAINED IMMEDIATELY INTO A PROPER SIZE DOT CONTAINER WHICH HAS BEEN PROPERLY LABELED BEFORE BEING FILLED
B. CONTAINER MUST BE KEPT TIGHTLY CLOSED AT ALL TIMES WHEN NOT IN USE
C. HAZARDOUS WASTE LABELING
ACCUMULATION START DATE:
DOT SHIPPING NAME: WASTE BATTERY FLUID ACID
EPA WASTE NUMBER: D002/D008
HAZARD CLASS: CORROSIVE
UN/UA NUMBER: UN 2796
[redacted]

12. CONSULT REF. B and C FOR ADDITIONAL INFORMATION ON 90 DAY LIMITATIONS, AND STORAGE REQUIREMENTS. CONSULT REF. D AND E FOR COMPLETION OF PAPERWORK.

13. DISPOSAL OF BATTERY CASINGS

13a. DISPOSAL OF "LEAKERS"

13b. DISPOSAL OF "NONLEAKERS"

a. BATTERIES SHALL BE STORED UPRIGHT AT ALL TIMES.
b. BATTERIES SHALL BE SEGREGATED ON SEPARATE PALLETS FOR "LEAKERS" AND "NONLEAKERS"
c. BATTERIES WILL BE STACKED ONE LAYER HIGH AND COVERED WITH 1/2 INCH THICK (7/16 FINISHED) PLYWOOD. SAME DIMENSIONS AS PALLET
d. BATTERIES WILL BE STRAPPED TO THE PALLET WHEN FULL
e. BATTERIES WILL TURNED IN TO DRMO FOR RESALE/RECYCLING AS HAZARDOUS MATERIAL (HM)
f. BATTERIES WILL BE INSPECTED WEEKLY UNTIL TRANSPORTED TO DRMO

14. FOR ANY QUESTIONS, PROBLEMS WITH PROCEDURES, CONSULT WITH THE UNIT'S HMDO. FOR PERMIT INFORMATION, THE HMDO WILL CONTACT EMD.

EMD FLOW CHART FOR PROPER DISPOSAL PROCEDURES

SUBJ: DISPOSAL OF USED WET CELL BATTERIES AND RELATED ELECTROLYE (USED BATTERY ACID)

Ref:
(a) BO 6240.5
(b) Message: 90 Day Time Limitations
(c) EMD Flow Chart for Use/Disposal of Hazardous Material/ Hazardous Waste (HM/HW)
(d) Waste Material Profile Sheet (WMPS) for Used Electrolyte
(e) DD1348-1 for Used Electrolyte
(f) Video: EMD #1, Acid Batttery Disposal Procedures

STEP — PROCEDURES

1. WET CELL (LEAD ACID) BATTERY BECOMES NON-FUNCTIONAL; DETERMINE IF BATTERY IS CRACKED OR DEPLETED

2a. BATTERY CRACKED OR "LEAKING"; BATTERY CANNOT BE RECHARGED

2b. BATTERY DEPLETED: WILL NOT HOLD A CHARGE BUT STILL IS INTACT. "NONLEAKING"

3a. ELECTROLYTE MUST BE DRAINED FROM CRACKED BATTERY AND DISPOSED AS A HW

3b. INTACT BATTERY MUST BE DISPOSED AS A HM FOR RECYCLING

4. ANY SPILLED ACID ON TOP OF BATTERY MUST BE NEUTRALIZED WITH SODIUM BICARBONATE BEFORE HANDLING THE BATTERY

5. PROTECTIVE EQUIPMENT MUST BE WORN WHILE HANDLING AND REMOVING BATTERY FROM THE VEHICLE

6. PROTECTIVE EQUIPMENT REQUIRED: FACE MASK, RUBBER APRON, RUBBER GLOVES

7. PROTECTIVE EQUIPMENT REQUIRED IN BATTERY SHOP: EYE WASH, EMERGENCY SHOWER (MUST BE INSPECTED WEEKLY, AS PART OF A SAFETY CHECK)

8. SPILL CONTINGENCY PLANS MUST BE POSTED ANYWHERE BATTERIES ARE DRAINED/STORED

9. ESTIMATE THE VOLUME OF BATTERY ACID ACCUMULATED OVER A 90 DAY PERIOD AND DETERMINE IF THERE IS A NEED FOR A SATELLITE ACCUMULATION AREA TO HANDLE LOW LEVEL GENERATION RATES

MATERIAL FOR DISPOSAL

Item	Material/HM/HW	Disposal Me
Hydraulic fluid		
Brake fluid		
Waste oil		
Antifreeze		
Battery acid/electrolyte (used)		
Wet cell batteries (empty)		
Filters (oil/fuel)		
Contaminated fuels (mogas/Kero/diesel)		
Degreasers		
Dry Sweep (contaminated)		
Paint waste (oil based)		
Paint waste (oil based - with thinner)		
Paint waste (dried)		
Paint waste (water based)		
Paint waste (C.A.R.C.)		

TAB PLACEMENT HERE

DESCRIPTION:

III Waste ID

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Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

III WASTE ID

ENVIRONMENTAL MANAGEMENT DEPARTMENT
GLOSSARY OF TERMINOLOGY IN BO 6240.5-

1. HAZARDOUS WASTE - (Sect 240.101) means waste or combination of wastes which pose a substantial present or potential hazard to human health or living organisms because such wastes are non-degradable or persistent in nature or because they can be biologically magnified, or because they can be lethal, or because they may otherwise cause or tend to cause detrimental cumulative effect and whose disposal is regulated by RCRA.

2. GENERATION SITE - Physical location within a Unit where Hazardous Waste is generated.

3. GENERATOR - The organization commander responsible for the function which generated the Hazardous Waste.

4. 90 DAY STORAGE SITE - A site authorized by the CG, MCB, for the temporary storage of hazardous waste for not more than 90 days. All containers in this area will have Hazardous Waste labels with Start Accumulation Dates.

5. LONG TERM STORAGE FACILITY - DRMO maintains the only long term storage facility at TP-451/TP-463 complex.

6. SATELLITE ACCUMULATION AREA - An area authorized by the CG, MCB, for the accumulation of hazardous waste over the standard permitted 90 days. A special permit granted by EMD must be displayed prominently, and only one type of waste storage is authorized per individual SSA. The waste container must have a hazardous waste label, but no Start Accumulation Date will be placed on the label at this time. No larger than a 55 gallon drum is is permitted in this area. The area must be separated from 90 day storage areas, and must be cordonned off, and the permit prominently displayed. When the container is filled, a date must be placed on the HW label, and the drum removed to the 90 day storage area within 72 hours.

7. RECYCLED - A material is recycled if it is used, reused, or reclaimed.

8. WASTE OIL - Any used oil or related petroleum compound which has any contaminants or constituents which could render it a hazardous waste, ie. solvents. In North Carolina, waste oil is not considered a hazardous waste, but a special waste.

9. USED OIL - A spent or depleted oil or petroleum compound which is capable of being recycled. It does not contain any hazardous wastes.

12. LAND BAN (LAND DISPOSAL RESTRICTIONS) - 40 CFR 268 -
RCRA LAND BANS - Prohibitions of specific toxic materials from disposal in landfills under RCRA. In 1986, the first set of land disposal restriction regulations, including treatment standards based on Best Available Technology went into effect.

13. MINIMIZATION (HAZMIN PROGRAM) - The process by which the total volume of hazardous waste is reduced. The requirement is in BO 6280.8 to minimize the volume and toxicity of hazardous waste through avoidance of generation by best management procedures, etc., and the reuse or treatment of the hazardous waste that is generated to reduce it to a nonhazardous state.

DOT = FLAMMABLE/COMBUSTIBLE LIQUI

CLASSIFICATION

(NFPA)

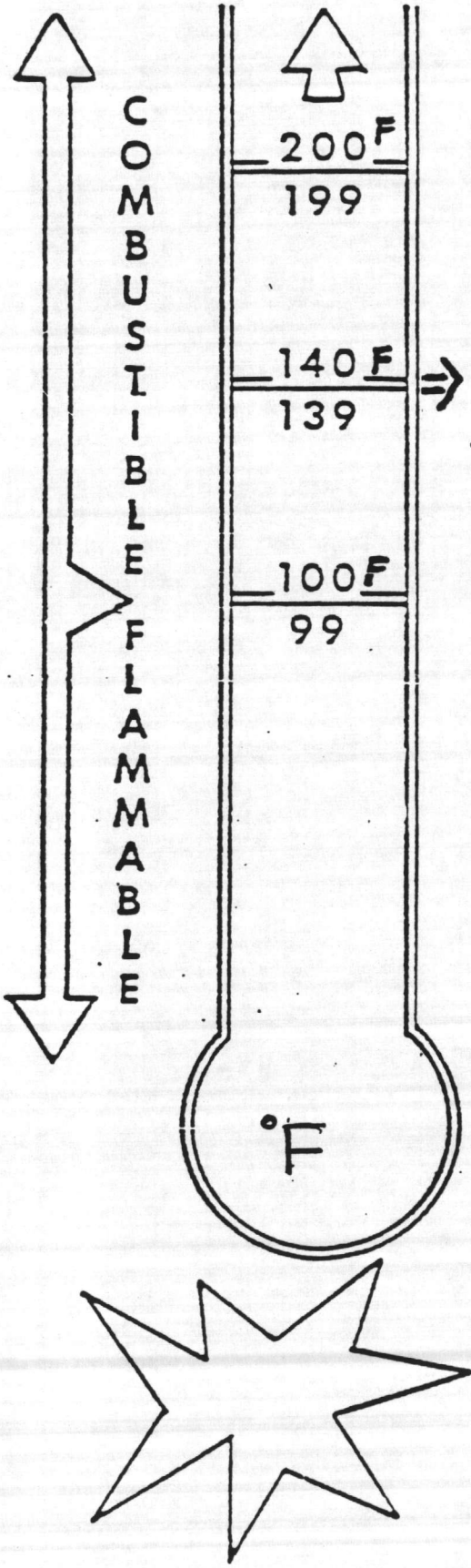
DOT =

BELOW 100°F

= FLAMMABLE

100 - 200°F

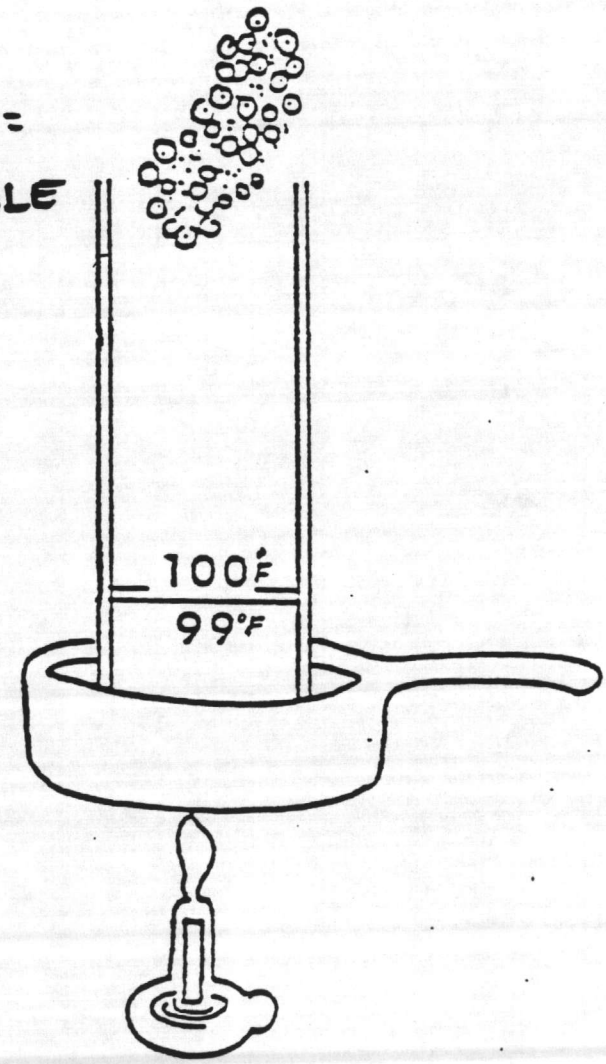
= COMBUSTIBL



⇒ EPA =

BELOW 140°F =

IGNITABLE



BOILING POINT

FLASH POINT

TERMINOLOGY

1. LISTED WASTE - IF YOUR WASTE APPEARS ON ANY ONE OF 4 LIST CONTAINED IN RCRA REGULATIONS

U, K, P, F

   a. THEY HAVE BEEN LISTED BECAUSE THEY CONTAIN TOXIC CONSTITUENTS THAT HAVE BEEN SHOWN TO BE HARMFUL TO HEALTH OR ENVIRONMENT.

   ex. F001 → F005 SOLVENTS

2. CHARACTERISTIC WASTE - EVEN IF A WASTE DOES NOT APPEAR ON ONE OF THE EPA "HIT" LIST, IT IS CONSIDERED HAZARDOUS IF IT HAS ONE OR MORE OF THE FOLLOWING CHARACTERISTICS:

D

   a. IGNITABLE - IS EASILY COMBUSTIBLE OR FLAMMABLE = D001

   b. CORROSIVE - DISSOLVES METALS, MATERIALS, BURNS SKIN = D002

   c. REACTIVE - IS UNSTABLE OR UNDERGOES RAPID OR VIOLENT CHEMICAL REACTION WITH WATER OR OTHER MATERIALS = D003

   d. [redacted] - WASTE IS TESTED, CONTAINS HEAVY METALS / - TCLP = D004 → D043

EPA HAZARDOUS WASTE CLASSES

APPENDIX B

Toxicity Characteristic Leachate Potential

* denotes new parameter

EPA HW Number		Contaminant	Regulatory Level (mg/L)
D004		Arsenic	5.0
D005		Barium	100.0
D018	*	Benzene	0.5
D006		Cadmium	1.0
D019	*	Carbon tetrachloride	0.5
D020	*	Chlordane	0.03
D021	*	Chlorobenzene	100.0
D022	*	Chloroform	6.0
D007		Chromium	5.0
D023	*	o-Cresol	200.0
D024	*	m-Cresol	200.0
D025	*	p-Cresol	200.0
D026		Cresol	200.0
D016		2,4-D	10.0
D027	*	1,4-Dichlorobenzene	7.5
D028	*	1,2-Dichloroethane	0.5
D029	*	1,1-Dichloroethylene	0.7
D030	*	2,4-Dinitrotoluene	0.13
D012		Endrin	0.02
D031	*	Heptachlor (and its hydroxide)	0.008
D032	*	Hexachlorobenzene	0.13
D033	*	Hexachloro-1,3-butadiene	0.5
D034	*	Hexachloroethane	3.0
D008		Lead	5.0
D013		Lindane	0.4
D009		Mercury	0.2
D014		Methoxychlor	10.0
D035	*	Methyl ethyl ketone	200.0
D036	*	Nitrobenzene	2.0
D037	*	Pentachlorophenol	100.0
D038	*	Pyridine	5.0
D010		Selenium	1.0
D011		Silver	5.0
D039	*	Tetrachloroethylene	0.7
D015		Toxaphene	0.5
D040	*	Trichloroethylene	0.5
D041	*	2,4,5-Trichlorophenol	400.0
D042	*	2,4,6-Trichlorophenol	2.0
D017		2,4,5-TP (Silvex)	1.0
D043	*	Vinyl chloride	0.2

CONVERSION TABLE

PARTS PER	LITERS	MILLILITERS	MICROLITERS	KILOGRAMS	GRAMS
THOUSAND	g/l	mg/ml	ug/ul	g/kg	mg/g
MILLION	mg/l	ug/ml	ng/ul	mg/kg	ug/g
BILLION	ug/l	ng/ml	pg/ml	ug/kg	ng/g
TRILLION	ng/l	pg/ml	-	ng/kg	pg/g

g=gram 1 oz = 28.349 g
l=liter 1 gal = 3.785 l

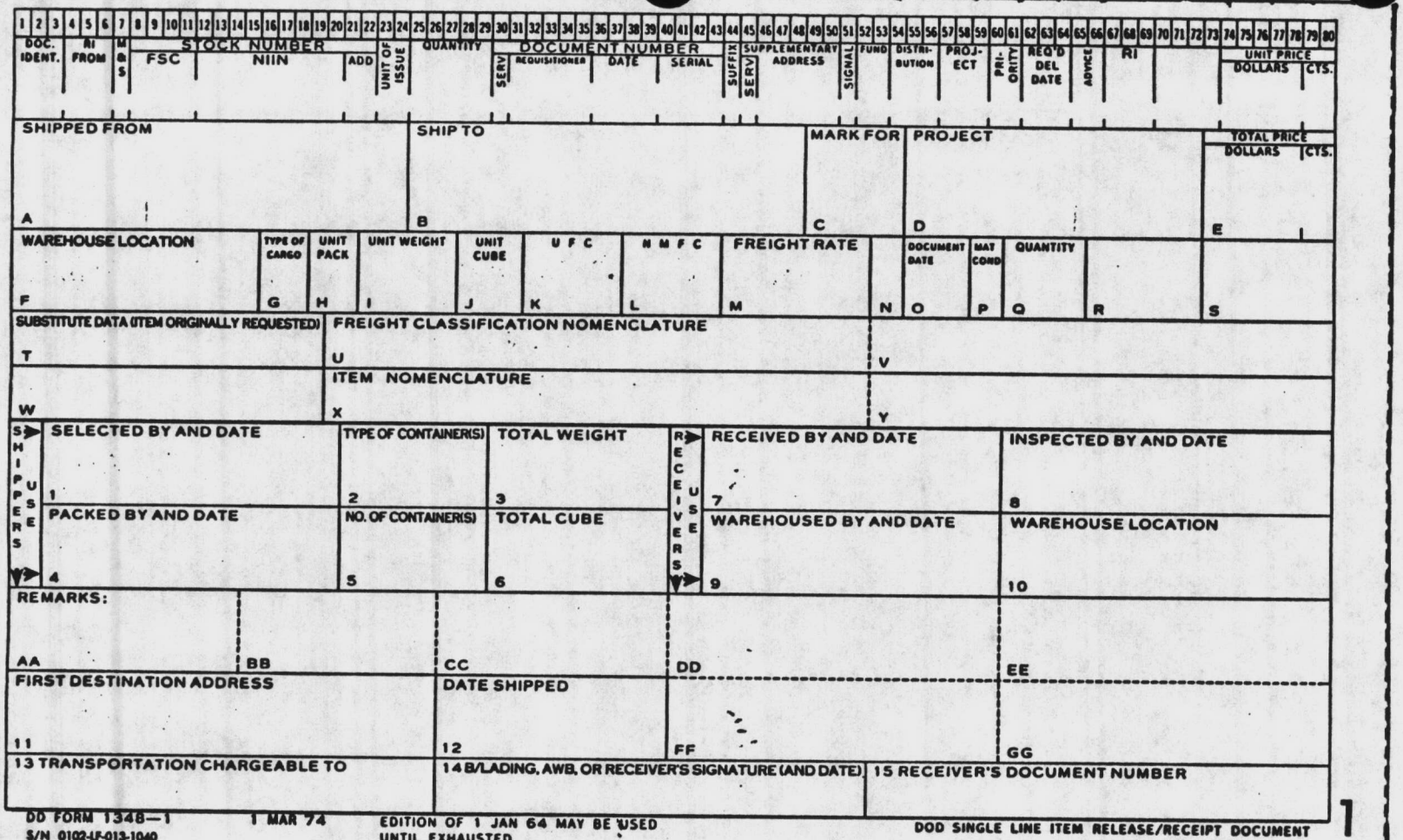
1% = 10,000ppm
1ppm = 0.0001%
1ppm = 1000ppb

TABLE 1

The following constituents are now regulated under the Toxicity Characteristic rule. Waste generators must determine the levels present in their waste sample extract or leachate, based either on their knowledge of their processes or by application of the TCLP.

New Constituents/Regulatory levels	Waste Codes	Old EP Constituents/Regulatory levels	Waste Codes
Benzene . . . 0.50 mg/l	D018	Arsenic . . . 5.0 mg/l	D004
Carbon tetrachloride . . . 0.50 mg/l	D019	Barium . . . 100.0 mg/l	D005
Chlordane . . . 0.03 mg/l	D020	Cadmium . . . 1.0 mg/l	D006
Chlorobenzene . . . 100.0 mg/l	D021	Chromium . . . 5.0 mg/l	D007
Chloroform . . . 6.0 mg/l	D022	Lead . . . 5.0 mg/l	D008
o-Cresol . . . 200.0 mg/l*	D023	Mercury . . . 0.2 mg/l	D009
m-Cresol . . . 200.0 mg/l	D024	Selenium . . . 1.0 mg/l	D010
p-Cresol . . . 200.0 mg/l	D025	Silver . . . 5.0 mg/l*	D011
Total Cresol . . . 200.0 mg/l	D026	Endrin . . . 0.02 mg/l	D012
1,4-Dichlorobenzene . . . 7.5 mg/l	D027	Lindane . . . 0.4 mg/l	D013
1,2-Dichloroethane . . . 0.50 mg/l	D028	Methoxychlor . . . 10.0 mg/l	D014
1,1-Dichloroethylene . . . 0.70 mg/l	D029	Toxaphene . . . 0.5 mg/l	D015
2,4-Dinitrotoluene . . . 0.13 mg/l**	D030	2,4-Dichlorophenoxyacetic acid . . . 10.0 mg/l	D016
Heptachlor (and its hydroxide) 0.008 mg/l	D031	2,4,5-Trichlorophenoxypropionic acid . . . 1.0 mg/l	D017
Hexachloro-1,3-butadiene . . . 0.5 mg/l	D032		
Hexachlorobenzene . . . 0.13 mg/l**	D033		
Hexachloroethane . . . 3.0 mg/l	D034		
Methyl ethyl ketone . . . 200.0 mg/l	D035		
Nitrobenzene . . . 2.0 mg/l	D036		
Pentachlorophenol . . . 100.0 mg/l***	D037		
Pyridine . . . 5.0 mg/l**	D038		
Tetrachloroethylene . . . 0.7 mg/l	D039		
Trichloroethylene . . . 0.5 mg/l	D040		
2,4,5-Trichlorophenol . . . 400.0 mg/l	D041		
2,4,6-Trichlorophenol . . . 2.0 mg/l	D042		
Vinyl chloride . . . 0.20 mg/l	D043		

* o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200.0 mg/l.



DD FORM 1348—1 1 MAR 74 EDITION OF 1 JAN 64 MAY BE USED UNTIL EXHAUSTED

S/N 0102-LF-013-1040

DOD SINGLE LINE ITEM RELEASE/RECEIPT DOCUMENT

1

☆U.S. GOVERNMENT PRINTING OFFICE: 1988—202-233/60040

Attachment 1

SATELLITE ACCUMULATION AREA (SAA)
HAZARDOUS WASTE AND POLLUTION CONTROL DIVISION
STORAGE PERMIT

BUILDING #:_____

SAA LOCATION DESCRIPTION:_____

DESIGNATED HAZARDOUS WASTE STORAGE SITE:_____

_____

NAME OF WASTE STREAM**:_____

RESPONSIBLE UNIT: _____

APPROVED BY: _____ DATE:_____
(HMDO)

APPROVED BY:_____ DATE:_____
(HMDC)

APPROVED BY:_____ DATE:_____
(HWPCD)

INSTRUCTIONS

1. The SAA storage container must be properly labeled with a hazardous waste label. Leave Accumulation Start Date blank.

2. The maximum permitted gallons is_____ gallons.

3. This permit is to be displayed at the container storage location within SAA so as to be visible to personnel placing wastes in the container.

4. When container reaches maximum permitted gallons:

a. Seal the container and enter Accumulation Start Date on Hazardous Waste Label. Ensure that the container is properly labeled and placarded.

b. Remove the filled container to designated hazardous waste storage site within 72 hours.

c. Initiate a DD Form 1348-1 and submit for processing.

ACKNOWLEDGMENT:_____ DATE:_____
(SITE MANAGER)

** A PROPERLY COMPLETED WPS MUST BE ON FILE WITH EMD FOR ANY HAZARDOUS WASTE STREAM GENERATED AT MCB, CL.

WORKSHEET FOR HAZARDOUS WASTE LABEL

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T.
SHIPPING NAME_____ UN OR NA#_____

GENERATOR INFORMATION:

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

EPA
ID NO._____

EPA
WASTE NO._____

ACCUMULATION
START DATE_____

MANIFEST
DOCUMENT NO._____

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

STYLE WM-6

WORKSHEET FOR
HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No 2050-0039 Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1 Generator's US EPA ID No	Manifest Document No	2 Page 1 of	Information in the shaded areas is not required by Federal law

3 Generator's Name and Mailing Address	A State Manifest Document Number
	B State Generator's ID
4 Generator's Phone ( )	
5 Transporter 1 Company Name / 6 US EPA ID Number	C State Transporter's ID
	D Transporter's Phone
7 Transporter 2 Company Name / 8 US EPA ID Number	E State Transporter's ID
	F Transporter's Phone
9 Designated Facility Name and Site Address / 10 US EPA ID Number	G State Facility's ID
	H Facility's Phone

11 US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12 Containers No	Type	13 Total Quantity	14 Unit Wt/Vol	I Waste No
a					
b					
c					
d					

J Additional Descriptions for Materials Listed Above	K Handling Codes for Wastes Listed Above

15 Special Handling Instructions and Additional Information

GENERATOR

16 **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day Year

TRANSPORTER

17 Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

18 Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

Discrepancy Indication Space

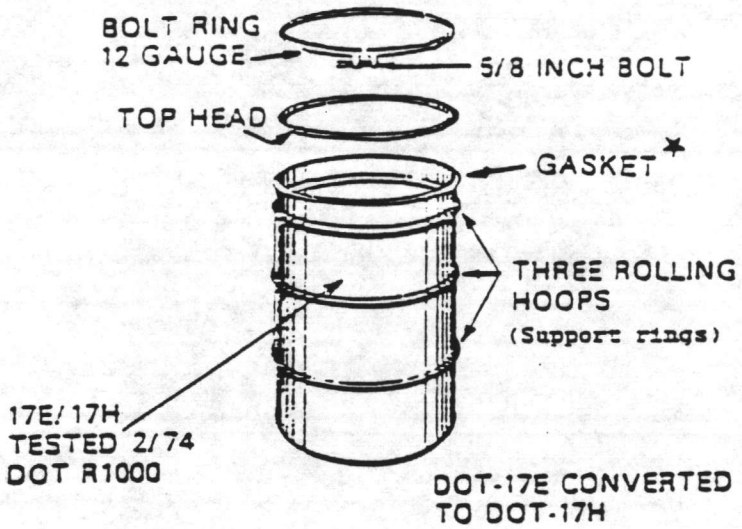
FACILITY

20 Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name	Signature	Month Day Year

EPA Form 8700-22 (Rev. 9-86) Previous editions are obsolete

SELECTION/PARTS OF DOT CONTAINERS

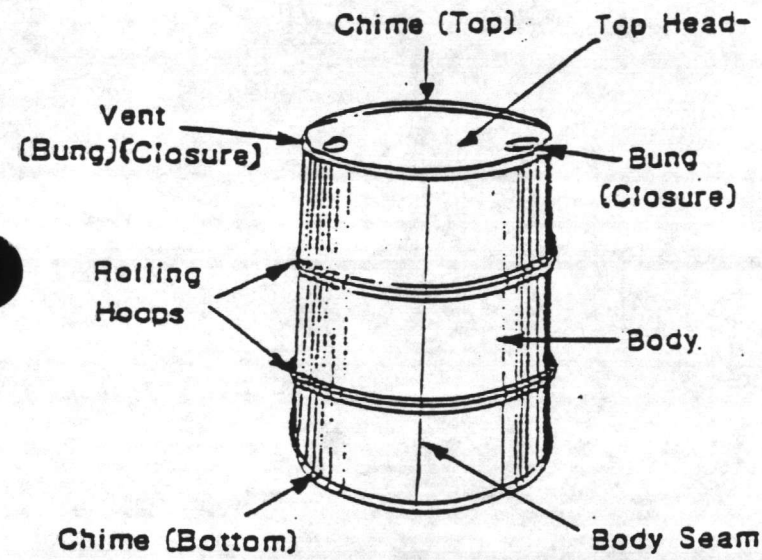


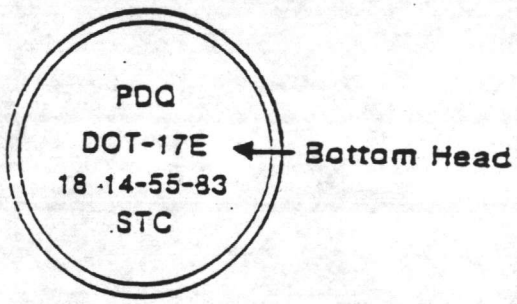
DOT 17H:

- **Solids and Lab Packs**
  (Overpack)
- **Capacity - 57 gallons**
  90% full

* Not required by DOT

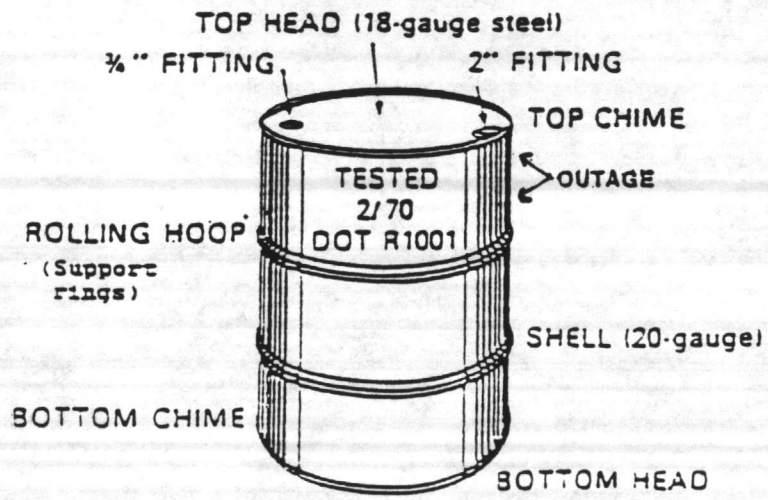
Specification 17E:
Steel Drum, Single Trip Container





Explanation of Markings
PDQ—Symbol of Manufacturer
DOT 17E—Specification Number
18—Gauge Body and Bottom Head
14—Gauge Removable Head
55—Capacity in Gallons
83—Year of Manufacture
STC—Single Trip Container

Tight-head 20/18-gauge 55-gal. drum



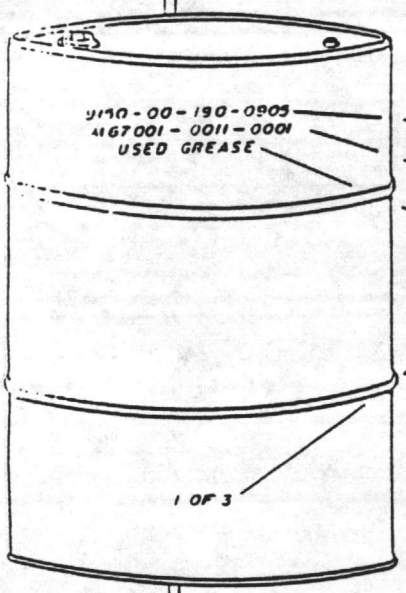
DOT 17E:

- **Liquids**
- **Capacity - 57 gallons**
  2" for outage

(Note: Working capacity of 57 gallon drum is 55 gallons.)

OUTAGE = SPACE LEFT BETWEEN THE TOP OF THE CONTAINER AND THE LIQUID

PROCEDURES FOR MARKING DRUMS OF HAZARDOUS MATERIALS



A. 1st LINE- NATIONAL STOCK NUMBER
EX. 9150-00-190-0905

B. 2nd LINE- DOCUMENT NUMBER
EX. M67001-0011-0001

C. 3rd LINE- CONTENTS (STANDARD NAME)
EX. USED GREASE

D. 4th LINE TP OF DRUMS
EX. 1 OF

E. PACKING SLIP WILL BE PLACED ON DRUM TP 1

EXAMPLE: DOT APPROVED 17E 55 GAL. DRUM

PROCEDURES FOR MARKING DRUMS OF HAZARDOUS WASTE

12 GAUGE BOLT RING

5/8" NUT & BOLT

LID

PACKING SLIP WITH #4 COPY OF 1348-1

A. National Stock Number
B. Document Number
C. DOT Shipping Name
D. UN/NA#

Hazardous Waste Label

DOT Sticker

NUM. OF CONTAINERS

EXAMPLE: DOT APPROVED 17H 55 GAL. OVER

INSPECTION CHECKLIST
FOR
DRUMS AND CANS OF HAZARDOUS WASTE

1. Insure all seams (sides, tops and bottoms) on drums and cans are not damaged in any way nor can they be extremely rusty.

2. Insure there are no bulged tops on containers of hazardous waste.

3. Insure gaskets on the bungs are serviceable and the bungs are tightened in order to prevent seepage.

4. Insure your containers are DOT approved for the different types of hazardous waste you generate.

5. Insure containers are filled no more than 4 inches from the top, this allows for the expansion of the contents.

6. Do not put liquid in an overpack drum. The liquid goes into a container first and then in an overpack drum. further, insure the drum inside the overpack is properly packed with absorbent to prevent damage to containers as well as absorb any possible leaks.

7. Insure tops of drums and cans are covered to prevent rust in inclement weather. Insure cover can be removed in order for EMD personnel to inspect.

8. Have drums or cans on pallet, unbanded, when EMD personnel inspects and signs for the waste, then they are to be banded to the pallet for TMO to transport.

9. Insure the pallets are standard size (40" X 48") and in serviceable condition.

10. When banding to a pallet, insure the band is not tight enough to damage the containers. Banding is transporters option. It is not required by DRMO.

11. Insure battery acid as well as all corrosives are stored in plastic containers and that metal bungs are not used.

12. Insure cleaning solvents are not stored in plastic containers.

13. Insure you have the right hazardous waste label on the containers (i.e. Flammable, Corrosive, etc) and completely filled out.

14. Insure you have the correct NSN, Document number and waste name on the container.

15. Lithium batteries should be stored inside. If they are stored outside DRMO personnel will sign for them in place only. The turn-in document should contain a statement "These batteries are balanced or unbalanced" and be signed by generator.

PROTECTING THE ENVIRONMENT AND OUR FUTURE

TAB PLACEMENT HERE

DESCRIPTION:

IV WMPS MSDS

☐ Tab page did not contain hand written information

☐ Tab page contained hand written information
*Scanned as next image

Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

IV WMPS
MSPS

WASTE MATERIAL PROFILE SHEET

PART I

A. GENERAL INFORMATION — **WASTE PROFILE NO.** 020-

Marine Corps Base, Camp Lejeune

1. GENERATOR NAME

Bldg BA 130

2. FACILITY ADDRESS 2nd Force Recon, Motor T

2 MarDiv

North Carolina — **5. ZIP CODE** 28542

3. GENERATOR USEPA ID NC6170022580

4. GENERATOR STATE ID Same

6. TECHNICAL CONTACT Lt Brown

7. TITLE HMDO — **PHONE** (919) 451-7293

B. 1. NAME OF WASTE DS-2 Decontaminating Agent

2. USEPA/or/STATE I.D. NO.(S) D002

3. PROCESS GENERATING WASTE Decontamination Agent

4. PROJECTED ANNUAL VOLUME/UNITS 200 / lbs — **5. MODE OF COLLECTION** drum

6. IS THIS WASTE A DIOXIN LISTED WASTE AS DEFINED IN 40 CFR 261.31 (e.g., F020, F021, F022, F023, F026, F027, OR F028)? ☐ YES ☒ NO

7. IS THIS WASTE RESTRICTED FROM LAND DISPOSAL (40 CFR 268)? ☐ YES ☐ NO

- HAS AN EXEMPTION BEEN GRANTED? ☐ YES ☒ NO

DOES THE WASTE MEET APPLICABLE TREATMENT STANDARDS? ☐ YES ☒ NO

PART II

1. MATERIAL CHARACTERIZATION

PHYSICAL STATE: ☐ SOLID ☒ LIQUID ☐ SEMI-SOLID ☐ OTHER

ODOR: ☐ NONE ☒ HIGH ☐ STRONG

DESCRIPTION moldy

COLOR cloudy

DENSITY 8.5-1.0 **BTU/LB** 4000-3000

FLASH POINT (F) ~~141~~ 200 **ASH CONTENT** ~~<1%~~ < 1%

TOTAL SOLIDS ~~<1%~~ < 1% **pH** > 12.5

LAYERING: ☐ MULTILAYERED ☐ BILAYERED ☒ SINGLE PHASE

2. CHEMICAL COMPOSITION

HEAVY METALS ☐ TOTAL (ppm) ☒ EXTRACTION (mg/L)

ARSENIC	< 5.0	MERCURY	< 0.2	ZINC	< 10
BARIUM	< 100	SELENIUM	< 1.0	CHROMIUM-HEX	NA
CADMIUM	< 5.0	SILVER	< 5.0	(OTHER)	
CHROMIUM	< 5.0	COPPER	< 10		
LEAD	< 5.0	NICKEL	< 10		
(OTHER)		(OTHER)			

OTHER COMPONENTS (PPM)

CYANIDES	NA	VOLATILE ORGANICS	NA
SULFIDES	NA	TOTAL HALOGENS	NA
PCBS	NA	PHENOLICS	NA
(OTHER)			

3. HAZARDOUS CHARACTERISTICS

☐ REACTIVE ☐ PYROPHORIC ☐ SHOCK SENSITIVE
☐ EXPLOSIVE ☐ WATER REACTIVE ☐ RADIOACTIVE
☐ ETIOLOGICAL ☒ NONE OF THE ABOVE
☐ TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)
☐ OTHER

NOTE: EXPLOSIVES, SHOCK SENSITIVE, PYROPHORIC, RADIOACTIVE, AND ETIOLOGICAL WASTE NORMALLY ARE NOT ACCEPTED BY THE DRMO.

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Diethylenetriamine		50-70%
sodium hydroxide		2-5%
ethylene glycol monomethyl ether		25-30%
TOTAL	100	100%

5. SHIPPING INFORMATION

DOT HAZARDOUS MATERIAL? ☒ YES ☐ NO liquid

PROPER SHIPPING NAME waste corrosive ~~liq~~ NOS (Diethylene triamine and ethyleneglycol monomethyl ether)

HAZARD CLASS corrosive material — **U.N. or N.A. NO** Un1760

ADDITIONAL DESCRIPTION

METHOD OF SHIPMENT ☐ BULK ☒ DRUM ☐ OTHER:

CERCLA REPORTABLE QUANTITY (RQ) 100 lbs

EMERGENCY RESPONSE GUIDE PAGE

DOT PUBLICATION 5800.4 **PAGE NO.** 60 **EDITION (YR)** 19

SPECIAL HANDLING INFORMATION

6. GENERATOR CERTIFICATION

I, Bob Wassmann, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS COMPLETE AND ACCURATE. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE Bob Wassmann — **DATE** 11/5/90

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
☐ ARSENIC	D004		☐ HEXACHLOROBUTADIENE	D033	
☐ BARIUM	D005		☐ HEXACHLOROETHANE	D034	
☐ BENZENE	D018		☐ LEAD	D008	
☐ CADMIUM			☐ LINDANE	D013	
☐ CARBON TETRACHLORIDE	D019		☐ MERCURY	D009	
☐ CHLORDANE	D020		☐ METHOXYCHLOR	D014	
☐ CHLOROBENZENE	D021		☐ METHYL ETHYL KETONE	D035	
☐ CHLOROFORM	D022		☐ NITROBENZENE	D036	
☐ CHROMIUM			☐ PENTRACHLOROPHENOL	D037	
☐ O-CRESOL	D023		☐ PYRIDINE	D038	
☐ M-CRESOL	D024		☐ SELENIUM	D010	
☐ CRESOL	D026		☐ SILVER	D011	
☐ 2,4-D	D016		☐ TETRACHLOROETHYLENE	D039	
☐ 1,4-DICHLOROBENZENE	D027		☐ TOXOPHENE	D015	
☐ 1,2-DICHLOROETHENE	D028		☐ TRICHLOROETHYLENE	D040	
☐ 1,1-DICHLOROETHYLENE	D029		☐ 2,4,5-TRICHLOROPHENOL	D041	
☐ 2,4-DINITROTOLUENE	D030		☐ 2,4,6-TRICHLOROPHENOL	D042	
☐ ENDRIN	D012		☐ 2,4,5-TP (SILVEX)	D017	
☐ HEPTACHLOR (AND ITS HYDROXIDE)	D031		☐ VINYL CHLORIDE	D043	
☐ HEXACHLOROBENZENE	D032				

PART IV

1. HANDLING/SAFETY INSTRUCTIONS: will cause skin irritaition. Refer to MSDS. Handle in accordance with current safety guidelines. Contact unit safety officer for additional information.

2. CONTAINER AND LABELING REQUIREMENT: Corrosive material

a. DOT/DOD CONTAINER TYPE:

b. DOT PROPER SHIPPING NAME: Waste Corrosive Liquid N.O.S. (contains diethylene triamine and ~~ethylene~~ glycol

c. DOT HAZARD CLASS: Corrosive material

d. UN/NA NUMBER: UN 1760

e. ADDITIONAL REQUIREMENTS:

PART V

DRMO VERIFICATION

1. DATE VERIFIED _____ BY _____

WASTE MATERIAL PROFILE SHEET

PART I

A. GENERAL INFORMATION

WASTE PROFILE NO. 005-M12001

[redacted] Marine Corps Base, Camp Lejeune

GENERATOR NAME

Bldg HP- 104

2. FACILITY ADDRESS: Motor Transport, 8th Marine

2d MarDiv

North Carolina | 5. ZIP CODE 28542

3. GENERATOR USEPA ID: NC6170022580

4. GENERATOR STATE ID: Same

6. TECHNICAL CONTACT: MSgt Goldin | 7. TITLE: HMDO | PHONE: (919) 451-3460

B. 1. NAME OF WASTE: lithium batteries

2. USEPA/or/STATE I.D. NO.(S): D003

3. PROCESS GENERATING WASTE: spent batteries from military communications equipment

4. PROJECTED ANNUAL VOLUME/UNITS: 1700 / lbs 5. MODE OF COLLECTION: box or drum

6. IS THIS WASTE A DIOXIN LISTED WASTE AS DEFINED IN 40 CFR 261.31 (e.g., F020, F021, F022, F023, F0226, F027, OR F028)? ☐ YES ☒ NO

7. IS THIS WASTE RESTRICTED FROM LAND DISPOSAL (40 CFR 268)? ☒ YES ☐ NO

- HAS AN EXEMPTION BEEN GRANTED? ☐ YES ☒ NO

DOES THE WASTE MEET APPLICABLE TREATMENT STANDARDS? ☐ YES ☒ NO

PART II

1. MATERIAL CHARACTERIZATION

PHYSICAL STATE: ☒ SOLID ☐ LIQUID ☐ SEMI-SOLID ☐ OTHER

ODOR: ☒ NONE ☐ HIGH ☐ STRONG

DESCRIPTION: sealed batteries, plastic casing

COLOR: green casing

[redacted] >2 BTU/LB <5000

[redacted] POINT (F) >200 ASH CONTENT 70-80%

TOTAL SOLIDS 60-70% pH NA

LAYERING: ☐ MULTILAYERED ☐ BILAYERED ☒ SINGLE PHASE

2. CHEMICAL COMPOSITION

HEAVY METALS ☐ TOTAL (ppm) ☐ EXTRACTION (mg/L)

ARSENIC <5.0	MERCURY ≤0.2	ZINC <100
BARIUM <100	SELENIUM <1.0	CHROMIUM-HEX NA
CADMIUM < 1.0	SILVER < 5.0	(OTHER)
CHROMIUM <5.0	COPPER <100	
LEAD < 5.0	NICKEL <100	
(OTHER)	(OTHER)	

OTHER COMPONENTS (PPM)

CYANIDES	NA	VOLATILE ORGANICS	NA
SULFIDES	30% as sulfi dioxide	TOTAL HALOGENS	NA
PCBS	NA	PHENOLICS	NA

(OTHER)

3. HAZARDOUS CHARACTERISTICS

☐ REACTIVE ☐ PYROPHORIC ☐ SHOCK SENSITIVE

☐ EXPLOSIVE ☒ WATER REACTIVE ☐ RADIOACTIVE

☐ ETIOLOGICAL ☐ NONE OF THE ABOVE

☐ TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)

☐ OTHER

[redacted] EXPLOSIVES, SHOCK SENSITIVE, PYROPHORIC, RADIOACTIVE, AND ETIOLOGICAL WASTE NORMALLY ARE NOT ACCEPTED BY THE DRMO.

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
plastic casing		60-70%
sulfur dioxide		25-35%
acetonitrite		~~10-15%~~
Lithium		2-8%
TOTAL 100	100%	

5. SHIPPING INFORMATION

DOT HAZARDOUS MATERIAL? ☒ YES ☐ NO

PROPER SHIPPING NAME: waste Lithium batteries for disposal

HAZARD CLASS: ORM-E U.N. or N.A. NO.: None

ADDITIONAL DESCRIPTION

METHOD OF SHIPMENT ☐ BULK ☒ DRUM ☐ OTHER:

CERCLA REPORTABLE QUANTITY (RQ): 100

EMERGENCY RESPONSE GUIDE PAGE

DOT PUBLICATION 5800.4 PAGE NO. 40 EDITION (YR) 1987

SPECIAL HANDLING INFORMATION: ~~Dangerous when wet~~

6. GENERATOR CERTIFICATION

I, Bob Wassmann, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS COMPLETE AND ACCURATE. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE: Bob Wassmann DATE: 11/5/90

PART III

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
☐ ARSENIC	D004		☐ HEXACHLOROBUTADIENE	D033	
☐ BARIUM	D005		☐ HEXACHLOROETHANE	D034	
☐ BENZENE	D018		☐ LEAD	D008	
☐ CADMIUM			☐ LINDANE	D013	
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☐ CHROMIUM			☐ PENTRACHLOROPHENOL	D037	
☐ O-CRESOL	D023		☐ PYRIDINE	D038	
☐ M-CRESOL	D024		☐ SELENIUM	D010	
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☐ 2,4-DINITROTOLUENE	D030		☐ 2,4,6-TRICHLOROPHENOL	D042	
☐ ENDRIN	D012		☐ 2,4,5-TP (SILVEX)	D017	
☐ HEPTACHLOR (AND ITS HYDROXIDE)	D031		☐ VINYL CHLORIDE	D043	
☐ HEXACHLOROBENZENE	D032				

PART IV

1. HANDLING/SAFETY INSTRUCTIONS:

Refer to MSDS. Handle in accordance with current safety guidelines. Contact unit Safe[illegible] for additional information.

2. CONTAINER AND LABELING REQUIREMENT:

No labels required.

a. DOT/DOD CONTAINER TYPE:

b. DOT PROPER SHIPPING NAME: Waste lithium batteries for disposal

c. DOT HAZARD CLASS: ORM-C

d. UN/NA NUMBER: NA

e. ADDITIONAL REQUIREMENTS:

PART V

DRMO VERIFICATION

1. DATE VERIFIED _____ BY _____

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

(183)

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 must be marked to indicate that.
PVC Cement Clear Regular	

Section I

Manufacturer's Name	Emergency Telephone Number
Hercules Chemical Company Inc.	1-212-869-4330
Address (Number, Street, City, State, and ZIP Code)	**Telephone Number for Information**
29 W. 38th Street	1-212-869-4330
New York, N. Y. 10018-1777	**Date Prepared** June 18, 1986
	Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Tetrahydrofuran (CAS 109-99-9)	200 PPM	200 PPM		
Methyl Ethyl Ketone (CAS 78-93-3)	200 PPM	200 PPM		
Cyclohexanone (CAS 108-94-1)	50 PPM	25 PPM		

Section III — Physical/Chemical Characteristics

Boiling Point	151	Specific Gravity (H_2O = 1)	.910
Vapor Pressure (mm Hg.)	20	Melting Point	N/A
Vapor Density (AIR = 1)	3.5	Evaporation Rate (Butyl Acetate = 1)	7

Solubility in Water: 65%

Appearance and Odor: Clear viscous liquid, Ethereal & Acetone like odor.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
6.0°F (TCC)		2%	11.8%

Extinguishing Media: Foam/Dry Chemical/Carbon Dioxide

Special Fire Fighting Procedures: Treat as Flammable Liquid, wear self-contained Breathing Apparatus & Chemical Goggles. Water may be effective but should be used to keep fire exposed containers cool.

Unusual Fire and Explosion Hazards: Vapor is heavier than air and travels considerable distance to source of ignition and flasback. On long standing may form peroxides which may cause violent reaction especially upon evaporation to dryness.

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid: Keep in closed containers away from sparks & open flame.
	Stable	X	

Incompatibility (*Materials to Avoid*): Strong oxidizing materials, Lithium Aluminum Hydride, Sodium Aluminum Hydroxide, & Sodium & Potassium Hydroxides.

Hazardous Decomposition or Byproducts: Carbon Dioxide & Carbon Monoxide are formed. Irritating Peroxide Fumes formed when heated to Decomposition.

Hazardous Polymerization	May Occur		Conditions to Avoid: Avoid excessive exposure to air and
	Will Not Occur	X	catonic initiators like Lewis Acids.

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? YES/Primary Skin? YES/Primary Ingestion? YES/Secondary

Health Hazards (*Acute and Chronic*): Corrosive to eyes & skin irritant. Severe over exposure can cause headache, dizziness & narcosis. May cause Dermatoses & Dermatities with prolonged repeated contact.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
Not listed as carcinogen by NTP, IARC, OSHA or ACGIH

Signs and Symptoms of Exposure: See attached sheet

Medical Conditions Generally Aggravated by Exposure: No data found

Emergency and First Aid Procedures: See attached sheet

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled: Elminate sourses of ignition. Absorb with sand or inert absorbing material and dispose of with solid waste according to Federal, State and Local regulations. Flush spill area with water, avoid flushing into confined areas.

Waste Disposal Method: Incinerate in accordance with the Federal, State and Local Regulations.

Precautions to Be Taken in Handling and Storing: Store in cool place, well-ventilated area. Keep away from open flame and sources of ignition.

Other Precautions: Use normal good personal Hygiene.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*): Self contained breathing apparatus. Positive pressure airline mash, air pack or organic canister.

Ventilation	Local Exhaust: As required	Special
	Mechanical (General)	Other
Protective Gloves: PVA gloves	Eye Protection: Chemical safety goggles	

Other Protective Clothing or Equipment: Apron, boots, eye bath, safety shower.

Work/Hygenic Practices: Wash throughly after handling.

JCT: PVC CEMENT CLEAR REGULAR

ECTION VI-HEALTH HAZARD DATA

ns & Symptoms of Exposure

1) Symptoms of Ingestion:
No effects of exposure expected

2) Symptoms of Inhalation:
Will cause irritation of mucous membranes, nose, eyes, & throat coughing, difficulty of breathing.
Exposure to high vapor concentration may cause headache, dizziness, nausea, narcosis.

3) Symptoms of Skin Contact:
Prolonged contact causes common solvent defatting effect.

4) Symptoms of Eye Contact:
Vapors slightly uncomfortable, splashes irritating. Will cause painful burning or stinging of eyes and lids.
Watering of eyes and inflammation of Conjunctiva.

Emergency First Aid Procedures:

1) First Aid for Ingestion:
Do not induce vomiting. If conscious, dilute by giving two glasses of water. Call a physician immediately.

2) First Aid for Inhalation:
Remove to fresh air, if not breathing; give artificial respiration preferably mouth to mouth. If breathing is difficult give oxygen. Call a physican.

3) First Aid for Skin Contact:

Wash effected skin area with soapy water. Remove contaminated clothing.

4) First Aid for Eye Contact:
Immediately flush eyes with plenty of water for 15 minutes. Consult a physician.

(183)

aterial Safety Data Sheet
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Hazard Communication Standard,
1910.1200. Standard must be
d for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

88 MAR 16 PM 1 46

IDENTITY (As Used on Label and List)
PVC Cement Clear Regular

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

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Clear viscous liquid, Ethereal & Acetone like odor.

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6.0°F (TCC)		2%	11.8%

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Foam/Dry Chemical/Carbon Dioxide

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ie as Flammable Liquid, wear self-contained Breathing Apparatus & ical Goggles. Water may be effective but should be used to keep fire posed containers cool.

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produce locally)

tion V — Reactivity Data

ity			
	Unstable		Conditions to Avoid: Keep in closed containers away from sparks & open
	Stable	X	flame.

compatibility (*Materials to Avoid*): Strong oxidizing materials, Lithium Aluminum Hydride, odium Aluminum Hydroxide, & Sodium & Potassium Hydroxides.

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ealth Hazards (*Acute and Chronic*): Corrosive to eyes & skin irritant. Severe over exposure an cause headache, dizziness & narcosis. May cause Dermatoses & Dermatities ith prolonged repeated contact.

rcinogenicity: NTP? Not listed as carcinogen by NTP, IARC, OSHA or ACGIH IARC Monographs? OSHA Regulated?

ns and Symptoms of Exposure: See attached sheet

dical Conditions nerally Aggravated by Exposure: No data found

nd First Aid Procedures: See attached sheet

ction VII — Precautions for Safe Handling and Use

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tilation		
	Local Exhaust: As required	Special
	Mechanical (*General*)	Other

ective Gloves: PVA gloves

Eye Protection: Chemical safety goggles

er Protective Clothing or Equipment: Apron, boots, eye bath, safety shower.

k/Hygienic Practices: Wash throughly after handling.

• USGPO 1988-691-529/45773

JCT: PVC CEMENT CLEAR REGULAR

ECTION VI-HEALTH HAZARD DATA

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4) Symptoms of Eye Contact:
Vapors slightly uncomfortable, splashes irritating. Will cause painful burning or stinging of eyes and lids.
Watering of eyes and inflammation of Conjunctiva.

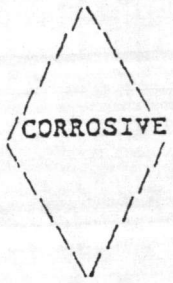
Emergency First Aid Procedures:

1) First Aid for Ingestion:
Do not induce vomiting. If conscious, dilute by giving two glasses of water. Call a physician immediately.

2) First Aid for Inhalation:
Remove to fresh air, if not breathing; give artificial respiration preferably mouth to mouth. If breathing is difficult give oxygen. Call a physican.

3) First Aid for Skin Contact:
Wash effected skin area with soapy water. Remove contaminated clothing.

4) First Aid for Eye Contact:
Immediately flush eyes with plenty of water for 15 minutes. Consult a physician.



DATE: 4 April 1990
HCSDS NO: 20059A

U.S. ARMY CHEMICAL
RESEARCH, DEVELOPMENT
AND ENGINEERING CENTER

Emergency Telephone #s:
CRDEC Safety Office
301-671-4411 0800-1630
EST After normal duty
hours: 301-278-5201
Ask for CRDEC Staff
Duty Officer

DS2 MATERIAL SAFETY DATA SHEET

SECTION I - GENERAL INFORMATION

CAS Registry No: 111-40-0 (Diethylenetriamine)
1310-73-2 (Sodium Hydroxide)
109-86-4 (Ethylene Glycol Monomethyl Ether)

MANUFACTURER'S ADDRESS: U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
CHEMICAL RESEARCH DEVELOPMENT AND ENGINEERING CENTER
ATTN: SMCCR-SFS, Headquarters Building E5101
ABERDEEN PROVING GROUND, MD 21010-5423

CHEMICAL NAME AND SYNONYMS:

MIXTURE OF:	SYNONYMS:
Diethylenetriamine (70%)	Bis (2-Aminoethyl) amine DETA
Sodium Hydroxide (2%)	Caustic soda
Ethylene Glycol Monomethyl Ether (28%)	Methyl Cellosolve 2-Methoxyethanol EGME

TRADE NAME AND SYNONYMS:

Decontaminating Agent, DS2
DS2
Decon Agent DS2

CHEMICAL FAMILY: Mixture

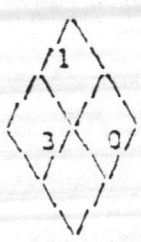
FORMULA/CHEMICAL STRUCTURE:

Diethylenetriamine - $NH_2 (CH_2)_2 NH (CH_2)_2 NH_2$
Sodium Hydroxide - $NaOH$
Ethylene Glycol Monomethyl Ether - $CH_3 OCH_2 CH_2 OH$

NATIONAL STOCK NUMBER (NSN):

Decontaminating Agent DS2, 1-1/3 quart can, NSN: 6850-00-753-4827
Decontaminating Agent DS2, 5 gallon pail, NSN: 6850-00-753-4870
Decontaminating Apparatus, Portable, 14 liter, M13, NSN: 4230-01-133-4124
Container, Fluid Filled, NSN: 4230-01-136-8888

NFPA 704 SIGNAL: Health - 3
Flammability - 1
Reactivity - 0



SECTION II - HAZARDOUS INGREDIENTS

Diethylenctriamine - 69-71%	TLV: 4 mg/m3 (1 ppm) (skin)
Sodium Hydroxide - 1.9-2.1%	TLV: 2 mg/m3 (ceiling)
Ethylene Glycol Monomethyl Ether - 26.9-29.1%	TLV: 16 mg/m3 (5 ppm) (skin)

SECTION III - PHYSICAL DATA

BOILING POINT DEG F (DEG C): 380 (193.3)

SPECIFIC GRAVITY (H2O = 1): 0.97 - 0.98

APPEARANCE AND ODOR: Clear amber solution with ammonia-like odor.

VISCOSITY (centistokes): 9.9 @ 20 DEG C

SECTION IV - FIRE AND EXPLOSION DATA

FLASHPOINT: (Method Used): The flashpoint of the mixture has been determined to be 175 DEG F (80 DEG C) by the closed cup method. The lowest flashing component of the mixture (ethylene glycol monomethyl ether) has a flashpoint of 115 DEG F (46 DEG C) by the closed cup method.

EXTINGUISHING MEDIA: Carbon dioxide, alcohol foam, water

UNUSUAL FIRE AND EXPLOSION HAZARDS: Never mix or store acids, oxidizing agents, STB (Supertropical Bleach) or HTH (High Test Hypochlorite) together with DS2; fire or explosion may result.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: DS2 is made of two major components (EGME & DETA) with different toxicities and physical properties. The TLV of the mixture (calculated) is 5.2 mg/m3 as an 8 hour time weighted average (TWA). To date the Occupational Safety and Health Administration (OSHA) has not promulgated a permissible exposure limit for DS2 per se nor has the value proposed been officially adopted as a part of a special occupational safety and health standard for DS2 in accordance with DOD 6055.1.

EFFECTS OF OVEREXPOSURE: No toxicity data are available on DS2 per se; however, the toxicity of each of the components has been partially determined.

(1) DS2 is an alkali and with direct contact will corrode tissue, e.g., skin, eye, respiratory mucosa or gastric mucosa. The effects exhibited depend on route of exposure, amount of substance present, and duration of exposure. Health effects can range from mild burns and primary irritation to corneal opacification, severe burns and esophageal structure.

(2) Sufficient exposure to EGME, a major component of DS2, may cause central nervous system depression and liver damage. Although not definitely established in humans, reproductive effects (including teratogenisis) are also a major concern with this substance. The National Institute for Occupational Safety and Health (NIOSH) recommends that EGME be regarded in the workplace as having the potential to cause adverse reproductive effects in male and female workers. Appropriate controls should be instituted in minimize worker exposure to EGME.

(3) Exposure to high vapor concentrations of DS2 can cause nausea, vomiting, and respiratory irritation as acute effects.

(4) Repeated skin and respiratory exposures to DETA can cause skin sensitization and asthma.

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove to fresh air. If breathing has stopped, give artifical respiration. If breathing is difficult, give oxygen. Seek medical attention immediately. Additional supportive measures may be required.

EYE CONTACT: Immediately flush the eyes with copious amounts of water for at least 15 minutes. Seek medical attention immediately.

SKIN CONTACT: Flush away the DS2 from the skin with water until "soapiness" is not longer present. Seek medical attention immediately.

INGESTION: If the patient is conscious, give as much milk or water as possible. Do not induce vomiting. Seek medical attention immediately. Supportive measures may be required.

SECTION VI - REACTIVITY DATA

INCOMPATIBILITY: DS2 is a corrosive material and because of its content, it is incompatible to some metals (i.e., aluminum, cadmium, tin and zinc), to some plastics (i.e., Lexan, cellulose acetate, polyvinyl chloride, Mylar, and acrylic) to paint, wool, leather, oxidizing materials (i.e., Supertropical Bleach or High Test Hypochlorite) and to acids.

REACTIVITY: DS2 will deteriorate in air. Exposure of 48 hours or more to open air will result in the formation of gelatin-like bodies on the surface of DS2.

SECTION VII- SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Spills on porous surfaces (concrete, wood, etc.) should be cleaned and neutralized immediately. Otherwise, it will be absorbed and become an indefinite hazard. All spills must be contained, e.g., by covering with dry sodium bisulfate to neutralize and then absorbing it on vermiculite, clay or diatomaceous earth. Scoop up all this material and any contaminated soil or substrate and place in an epoxycoated drum with a fully removable head, and label as corrosive IAW EPA and DOT requirements. During spills provide adequate ventilation and remove any ignition source. During clean up, personnel should wear a full face respirator with an organic vapor cartridge effective against Diethylenetriamine and methyl cellosolve, rubber gloves long enough to protect hands and arms, and a full length rubber apron. Contaminated clothing and shoes should be removed immediately and washed thoroughly with water before reuse. Avoid contact with leaking liquid or vapor. All wash water should be pH tested. All material with a pH of less than 2.0 or greater than 12.5 is hazardous waste with an EPA number D002.

WASTE DISPOSAL METHOD: DS2 has been tested and is a hazardous waste with an EPA waste number of D002. Disposal methods for waste DS2 and accumulated spill cleanup residues must comply with RCRA, state, and local hazardous waste regulations and procedures. If the wastes are corrosive they have the EPA Hazardous Waste Number of D002. This number should be used when the waste is manifested, to permit the use of off-site hazardous waste disposal facilities. For disposal of excess stocks of DS2, coordinate with Defense Reutilization and Marketing Officer (DRMO). Disposal methods at overseas military installations must use facilities that operate within the laws of the host country.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Concentration (mg/m3) 8 hour TWA	Respiratory Protection

Less then 5.2 (as mixture i.e., 3.7 mg/m3 DETA and 1.5 mg/m3 EGME)	Escape type respirators shall be available when necessary. o any NIOSH approved full facepiece respirator with an organic vapor canistar. (i.e. gas mask) o any NIOSH approved excape type SCBA
Greater then 5.2 or unknown concentrations	o any NIOSH approved full facepiece pressure demand SCBA o any NIOSH approved full-face piece positive pressure, supplied-air respirator with auxiliary SCBA

NOTE: For military personnel engaged in training scenarios the M9 or M17 series mask is acceptable. Filter elements and canisters should be changed after each use with DS2.

VENTILATION: Local exhaust - Necessary if TLV (TWA) exceeded.

PROTECTIVE GLOVES: Butyl Rubber

EYE PROTECTION: Splashproof chemical goggles. When there is potential for severe exposure, chemical goggles and face shield are recommended.

OTHER PROTECTIVE EQUIPMENT: Hooded chemical-resistant clothing (i.e., overalls & long sleeve jacket, or one- or two-piece chemical splash suit) and chemical resistant boots. Military personnel will use standard issue equipment during training operations.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid extreme temperatures (i.e. 160 Deg F) during storage.

SECTION X - TRANSPORTATION DATA

PROPER SHIPPING NAME: Alkaline Liquid, n.o.s. (Diethylenetriamine, Ethylene Glycol Monomethyl Ether, Sodium Hydroxide) NA 1719 (Caustic alkali liquids, n.o.s. UN 1719)

DOT HAZARD CLASSIFICATION: Corrosive Material

DOT LABEL: Corrosive

DOT MARKING: Alkaline Corrosive Liquid, n.o.s., NA 1719.

DOT PLACARD: Corrosive

EMERGENCY ACCIDENT PRECAUTIONS & PROCEDURES: See Sections IV, VII, and VIII.

PRECAUTIONS TO BE TAKEN IN TRANSPORTATION: Shipping "on-deck" or "under-deck" is permitted in cargo and passenger vessels subject to the requirements of 49 CFR 176.63 (b) and (c). DS2 is limited to 5 gallons per package when shipped by cargo aircraft. Shipment on passenger carrying aircraft or railcar is permitted in 1 quart packages. DS2 will be packed and shipped in accordance with 49 CFR 173.249. Packaging exceptions can be found in 49 CFR 173.244.

While the Chemical Research Development and Engineering Center, Department of the Army believes that the data contained herein are factual and the opinions expressed are those of qualified experts

regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which the Department of the Army or Chemical Research Development and Engineering Center assumes legal responsibility. They are offered solely for your consideration, investigation, and verification. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.

UMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM8
3 DoD Hazardous Materials Information System 3
3 DoD 6050.5-LR 3
3 AS OF SEPT 11, 1989 3
3 For U.S. Government Use Only 3
TMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM>

Stock Number: 011013984
FSC: 4230
Manufacturers CAGE: 40912
Part No. Indicator: B
Part Number/Trade Name: DECONTAMINATION KIT, PERSONAL, M258A1, DECON 2
Safety Focal Point: D
Record No. for this Safety Entry: 002
Total Safety Entries, This No.: 002
Date MSDS Prepared: 28JUL87
Safety Data Review Date: 31MAR88
Supply Item Manager: BF
Item Name: DECONTAMINATING KIT, SKIN
Manufacturer Name: MINE SAFETY APPLIANCES CO
Street: 201 N BRADDOCK AVENUE
P.O. Box: 430
City: PITTSBURG
State: PA
Country: US
Zip Code: 15230
Emergency Phone No.: 412-733-9100

Information Phone No.: 412-538-3510
MSDS Preparers Name: N/K
Dist./Vendor No.1: N/R
MSDS Serial Number: BGLVZ
Specification Number: MIL-D-51468
Spec. Type, Grade, Class: N/K
Hazard Characteristic Code: F2
Unit of Issue: KT
Type of Container: KIT
NRC/State License Number: N/R
Net Propellent Weight-Ammo: N/R
Proprietary: NONO
NO
NO
Ingredient Action Code: AA
A
A
Ingredient Focal Point: DD
D
D
Ingredient Sequence Number: 0102
03
04
NIOSH (RTECS) No.: 9999999ZZKQ6300000
ZH1400000
1003987CA
CAS NO.: N/R64-17-5
7646-85-7
127-52-6
Ingredient: DECON 2 FOIL PACKET CONTAINS SEALED

	GLASS AMPOULES FILLED WITH DECON 2 SOLN & A PAD IMPREGNATED WITH CHLORAMINE B.2,3,4ETHYL ALCOHOL ZINC CHLORIDE CHLORAMINE B (N-CHLORO-N-SODIOBENZENESULFONAMIDE)
Percent:	N/R45.0 5.0 N/K
OSHA PEL:	N/R1000 PPM 1MG/CUM N/K
ACGIH TLV:	N/R1000 PPM 1MG/CUM N/K
Other Recommended Limit:	N/RN/R N/R N/K
Appearance and Odor:	COLORLESS LIQUID WITH MILD ALCOHOL ODOR
Boiling Point:	172F/78C
Melting Point:	N/K
Vapor Pressure(MM Hg/70 F):	N/K
Vapor Density (Air=1):	N/K
Specific Gravity:	0.962
Decomposition Temperature:	N/K
Evap. Rate & Reference:	N/K
Solubility in Water:	COMPLETE
% Volatiles by Volume:	N/K
pH:	N/K
Corrosion Rate (IPY):	N/K
Autoignition Temperature:	N/K
Flash Point:	75F/23.9C
Flash Point Method:	T.C.C
Lower Explosive Limit:	N/K
Upper Explosive Limit:	N/K
Extinguishing Media:	USE CO*2,FOAM,DRY CHEMICALS
Special Fire Fgting Proc:	USE NIOSH/MSHA APPROVED SCBA IN AN ENCLOSED AREA.
Unusual Fire & Expl. Hzrds:	SMOKE FROM FIRE WILL BE IRRITATING. TOXIC ZNCL*2 FUMES.
Stability:	YES
Cond. to Avoid(Stability):	EXTREME HEAT
Materials to Avoid:	OXIDIZERS
Hazardous Decomp. Products:	TOXIC VAPORS/FUMES ZNCL*2,CO AND ORCO*2,WHEN DECOMPOSED.
Hazardous Poly. Occur:	NO
Conditions to Avoid(Poly):	N/K
LD50-LC50 - Mixture:	N/K
Route of Entry-Inhalation:	YES
Route of Entry - Skin:	YES
Route of Entry - Ingestion:	YES
Health Hzrds-Acute&Chronic:	ACUTE:EYES INJURY,IRRITATION; SKIN IRRITATION OR BURNS;DUST MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION. CHRONIC: IRRITATION,CORROSIVE ACTION.
Carcinogenity - NTP:	N/K

Carcinogenity - IARC:	N/K
Carcinogenity - OSHA:	N/K
Expl. of Carcinogenity:	N/K
Sgns and Sym of Oexposure:	IRRITATION/INJURY OF EYES,SKIN, RESPIRATORY TRACT OR G.I. TRACT IRRITATION;SEE HEALTH HAZARDS DUE TO EACH COMPONENTS OF DECON-2.
Med. Conds. Aggr. by Exp:	PRE-EXISTING CONDITIONS MAY BE WORSEN.
Emerg. and FirstAid Procs:	EYES:FLUSH EYES WITH PLENTY OF WATER;CALL A PHYSICIAN. SKIN: WASH THOROUGHLY WITH WATER;CALL FOR MEDICAL HELP. INHALATION: REMOVE TO FRESH AIR.GIVE OXYGEN, CALL A PHYSICIAN. INGESTION:GIVE WATER IF CONSCIOUS,CALL A PHYSICIAN AT ONCE.
if Matl. Relsd or Sped:	USE PROPER PERSONAL PROTECTION; REMOVE ALL IGNITION SOURCES;USE SUITABLE INERT ABSORBENT MATERIAL AND RECOVER FOR PROPER DISPOSAL.
Neutralizing Agent:	N/R
Waste Disposal Method:	DISPOSE OF COLLECTED MATERIAL IN ACCORDANCE WITH LOCAL,STATE AND FEDERAL REGULATIONS.
Handg and Strg Precautions:	STORE IN COOL,DRY AND WELL VENTILATED AREA.KEEP AWAY FROM HEAT,SPARKS,FLAMES & OXIDIZERS; DO NOT STORE AT TEMPERATURE ABOVE 110F/43.3C.
Respiratory Protection:	NONE REQUIRED WHEN THERE IS ADEQUATE VENTILATION OR WHEN USED AS INSTRUCTED.
Ventilation:	LOCAL/GENERAL TO MAINTAIN ADEQUATE VENTILATION.
Protective Gloves:	NEOPRENE
Eye Protection:	CHEMICAL GOGGLES
Other Protective Equipment:	EYE WASH,SAFETY SHOWER;FULL EYES AND SKIN PROTECTION.
Work Hygienic Practices:	AVOID CONTACT WITH EYES & SKIN; DO NOT BREATHE VAPORS/MIST;DO NOT TAKE INTERNALLY.
Sup. Safe and Health Data:	MSDS RECEIVED BY DGSC-SLM:MARCH 1,1988.ITEM IS A KIT,CONTAINING DECON-1 AND DECON-2;THIS IS DECON-2.KEY1:F4.
Transportation Focal Point:	D
Trans. Data Rev. Date:	88091
DOT PSN Code:	GIX
DOT Proper Shipping Name:	FLAMMABLE LIQUID, N.O.S.
DOT Class:	FLAMMABLE LIQUID
DOT Label:	FLAMMABLE LIQUID
Identification Number:	UN1993
IMO PSN Code:	HIM
IMO Proper Shipping Name:	FLAMMABLE LIQUIDS,N.O.S.
IMO Regulations Page No.:	3036-1

UN Number:	1993
UN Class:	3.1
IATA PSN Code:	MBV
IATA UN ID Number:	1993
IATA Proper Shipping Name:	FLAMMABLE LIQUIDS,N.O.S.
IATA UN Class:	3
IATA Label:	FLAMMABLE LIQUID
AFR 71-4 PSN Code:	ELB
AFR 71-4 Proper Ship. Name:	FLAMMABLE LIQUID,N.O.S.
AFR 71-4 Class:	FLAMMABLE LIQUID
AFR 71-4 Label:	FLAMMABLE LIQUID
AFR 71-4 ID Number:	UN1993
Tech. Entry N.O.S. Ship Nm:	CONTAINS 45% ETHYL ALCOHOL.
Additional Trans. Data:	ITEM IS A KIT CONTAINING DECON 1 AND 2 PACKETS;THIS IS DECON 2, DECON 2 FOIL PACKET CONTAINS SEALED GLASS AMPOULES FILLED WITH DECON 2 SOLUTION AND A PAD IMPREGNATED WITH CHLORAMINE B.

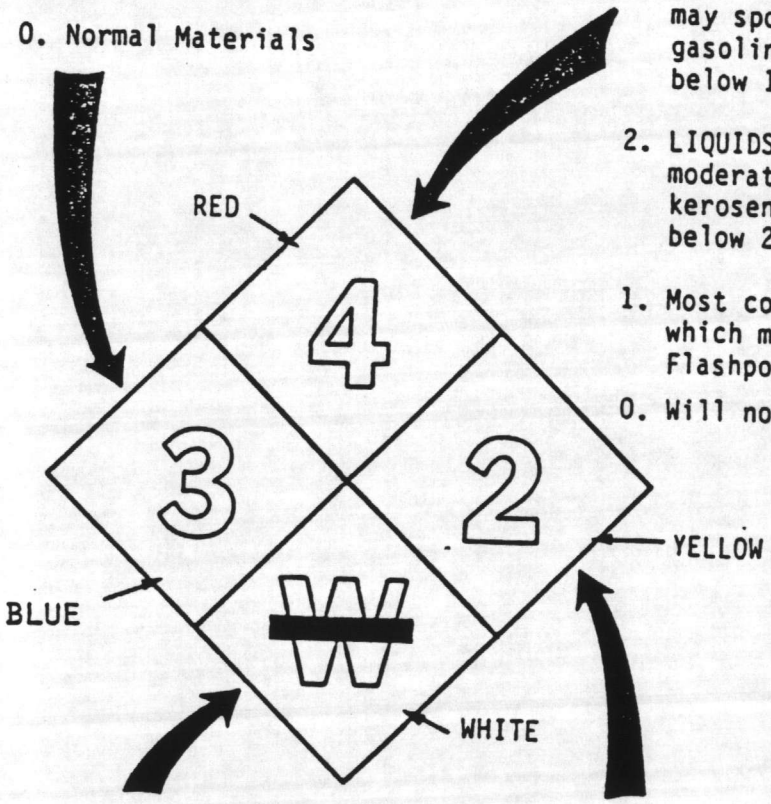
NFPA 23 LABELING SYSTEM

HEALTH HAZARD

4. Deadly
3. Extreme Danger
2. Hazardous
1. Slightly Hazardous
0. Normal Materials

FIRE HAZARD

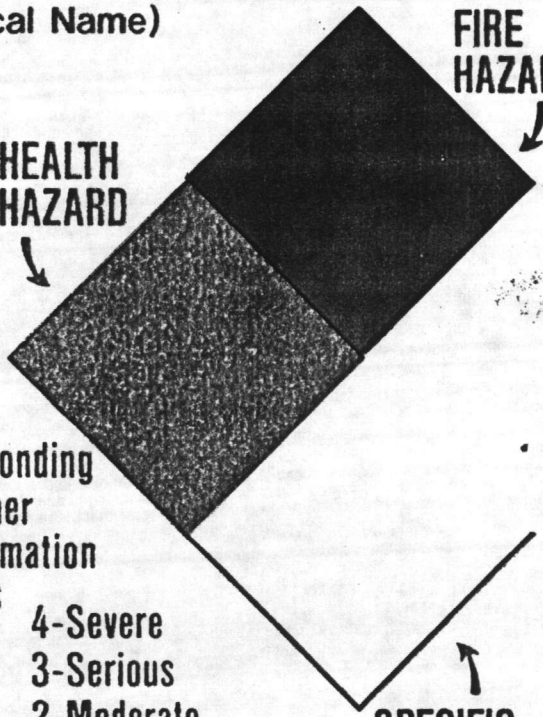
4. VERY FLAMMABLE - gases, dusts or mists .. Flashpoint below 73°F ether class
3. READILY IGNITED LIQUIDS - under normal temperature conditions. Shredded or fibrous solids which may spontaneously ignite.. gasoline-alchol class. Flashpoint below 100°F
2. LIQUIDS OR SOLIDS which must be moderately heated before ignition.. kerosene - JP-4 class. Flashpoint below 200°F
1. Most combustible solids. Materials which must be preheated to burn. Flashpoint above 200°F
0. Will not burn..



OXIDIZER	OXY
ACID	ACID
ALKALI	ALK
CORROSIVE	COR
USE NO WATER	~~W~~

4. May detonate
3. Shock and heat may detonate
2. Violent chemical change
1. Unstable if heated
0. Stable

(Fill in Chemical Name)



Consult Corresponding MSDS for Further Hazardous Information and Instructions

4-Severe
3-Serious
2-Moderate
1-Slight
0-Minimal

ACID-Acid
ALK-Alkali
COR-Corrosive
OXY-Oxidizer
P-Polymerization (Self-reacting with water)
☢-Radioactive
W-Use No Water

Personal Protection

(✓Mark Appropriate Protection Required)

☐ Safety Glasses	☐ Apron	☐ Respirator
☐ Face Shield	☐ Boots	☐ Self Contained Air Respirator
☐ Gloves	☐ Splash Goggles	☐ Full Protection Suit
☐ OTHER	☐ OTHER	☐ OTHER

EMED Co., Inc.
Box 369
Elmont, NY 11040

Identification of Health Hazard Color Code: BLUE		Identification of Flammability Color Code: RED		Identification of Reactivity (Stability) Color Code: YELLOW	
	Type of Possible Injury		Susceptibility of Materials to Burning		Susceptibility to Release of Energy
Signal		Signal		Signal	
4	Materials which on very short exposure could cause death or major residual injury even though prompt medical treatment were given.	4	Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or which are readily dispersed in air and which will burn readily.	4	Materials which in themselves are readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.
3	Materials which on short exposure could cause serious temporary or residual injury even though prompt medical treatment were given.	3	Liquids and solids that can be ignited under almost all ambient temperature conditions.	3	Materials which in themselves are capable of detonation or explosive reaction but require a strong initiating source or which must be heated under confinement before initiation or which react explosively with water.
2	Materials which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given.	2	Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.	2	Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Also materials which may react violently with water or which may form potentially explosive mixtures with water.
1	Materials which on exposure would cause irritation but only minor residual injury even if no treatment is given.	1	Materials that must be preheated before ignition can occur.	1	Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
0	Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.	0	Materials that will not burn.	0	Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

Appendix B

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

The information contained within Appendix B is derived from introductory explanatory material on the 704 system contained within NFPA 49, *Hazardous Chemicals Data*; and NFPA 325M, *Fire Hazard Properties of Flammable Liquids, Gases and Volatile Solids*. The following paragraphs summarize the meanings of the numbers in each hazard category and explain what a number should tell fire fighting personnel about protecting themselves and how to fight fires where the hazard exists.

Health.

In general, health hazard in fire fighting is that of a single exposure which may vary from a few seconds up to an hour. The physical exertion demanded in fire fighting or other emergency conditions may be expected to intensify the effects of any exposure. Only hazards arising out of an inherent property of the material are considered. The following explanation is based upon protective equipment normally used by fire fighters.

4 Materials too dangerous to health to expose fire fighters. A few whiffs of the vapor could cause death or the vapor or liquid could be fatal on penetrating the fire fighter's normal full protective clothing. The normal full protective clothing and breathing apparatus available to the average fire department will not provide adequate protection against inhalation or skin contact with these materials.

3 Materials extremely hazardous to health but areas may be entered with extreme care. Full protective clothing, including self-contained breathing apparatus, coat, pants, gloves, boots, and bands around legs, arms and waist should be provided. No skin surface should be exposed.

2 Materials hazardous to health, but areas may be entered freely with full-faced mask self-contained breathing apparatus which provides eye protection.

1 Materials only slightly hazardous to health. It may be desirable to wear self-contained breathing apparatus.

0 Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.

Flammability.

Susceptibility to burning is the basis for assigning degrees within this category. The method of attacking the fire is influenced by this susceptibility factor.

Guidelines for Safe Practices and Procedures In CARC Painting Operations

I. Introduction.

A. The Marine Corps has been changing their painting operations to include the use of CARC (Chemical Agent Resistant Coating) paints, primers, and epoxy enamels. Use of these coatings is expected to reduce operating costs over the life of a vehicle due to less touch-up painting and not having to repaint vehicles after decontamination procedures.

B. The purpose of this report is to explain the health hazards associated with the use of CARC and to provide recommendations on the proper procedures to follow and personal protective equipment to use.

II. Chemical Components. Hazardous constituents of CARC change depending on whether a primer, epoxy enamel, or polyurethane paint is in use. This section will explain the different chemical compositions of these products and the health hazards involved.

A. Cellosolve Acetate - A solvent which has been linked as a suspected teratogen. A teratogen is a chemical which may cause birth defects in children of exposed parents. The main route of entry is through the skin, so solvent resistent gloves and barrier creams are important for use. The vapors are also an eye irritant and present an unpleasant odor. This chemical is found in some paints and thinners.

B. Hexamethylene Diisocyanate - Isocyanates irritate the respiratory tract and can act as a sensitizer causing a similar reaction to asthma. The sensitization may cause coughing, wheezing, tightness in the chest, and shortness of breath. Repeat exposures may cause chronic impairment of pulmonary function. Once an individual has been sensitized, the asthmatic condition can occur after very short repeat exposures. This chemical is found in component B of the polyurethane paint (PUP).

C. Solvents - There are different types of solvents contained in CARC coatings. These include: Methyl Ethyl Ketone (MEK), toluene, methyl amyl ketone, butyl alcohol, methyl isobutyl ketone, isopropanol, and xylene. These solvents may cause headaches, dizziness, nausea, drying of the skin, and eye/respiratory irritation.

III. Operations. There are numerous requirements for conducting CARC painting operations. These requirements involve the safe application and removal of CARC, use of personal protective equipment, training, and medical surveillance.

A. References state that units authorized as an organizational maintenance capability, may conduct touch-up painting operations with a paint brush only. Second Marine Division is not authorized to conduct any spray painting.

B. Painting with CARC for cosmetic purposes is not authorized.

C. Personnel should receive training in the health hazards associated with the use of CARC paint. Training should be provided at initial entry into the job and annually thereafter.

D. Touch-up painting should be conducted outdoors in a well-ventilated area.

E. Personal protective equipment to be worn during painting includes the following:

(1) Coveralls (preferably disposable type made of polylaminated tyvek).

(2) Solvent resistent gloves made of silicone rubber.

(3) Barrier creams for use under the gloves to afford total skin protection.

(4) Goggles.

(5) Safety boots.

Note: Contact lenses will not be worn during painting operations.

F. Material Safety Data Sheets (MSDS) for all types of CARC paint should be acquired from the respective paint manufacturers. All MSDSs' shall be available to employees at their worksite. Training shall be provided on the content and use of MSDSs'.

G. Welding and Cutting: Before welding or cutting, all CARC painted surfaces should be removed to bare metal 4 inches on either side of spot to be welded. Welding and cutting on CARC material may cause significant quantities of isocyanates to be released along with other toxic substances such as carbon monoxide and carbon dioxide. Do not weld or cut on CARC painted surfaces.

H. Grinding and Sanding: During grinding and sanding operations, dust containing lead, zinc, copper, tin, or chromium VI may be produced. Personnel will wear safety goggles or a full faceshield to prevent paint chips and dust from getting into the eyes.

I. CARC paint will not be applied to manifolds, exhaust pipes, turbo chargers, mufflers, and any other area where temperatures may reach 400 F or above.

J. Painting: Personnel painting with CARC shall conduct brush touch-up only and will use only one (1) quart per person per day. Painting will be conducted outdoors.

K. If no record exists of previous CARC coating, use the field method for coating testing. This is accomplished by rubbing the coated surface briskly with a cloth saturated with acetone, methyl ethyl ketone, or fingernail polish remover for 20 seconds. If coating rubs off, it is not CARC.

L. Mixing: During mixing of CARC paint, personnel must wear safety glasses or face shield and protective clothing to provide full skin coverage including gloves.

M. Storage: CARC paint should be stored separately from other paints so personnel will not mistake it for paint which can be used for general purpose painting such as embark boxes. The storage area should be labeled as CARC, controls should be set up as to who will have access to the storage area, and personnel should be instructed to read the labels to be assured of which paint they are using and the proper handling procedures.

IV. Evaluation. In order to establish employee exposure levels to the chemical constituents in CARC and to evaluate the recommendations for personal protective equipment, it is essential that the Industrial Hygiene office conduct air sampling during actual painting operations. Industrial Hygiene should be contacted prior to beginning CARC painting to schedule this sampling. When adequate employee/area data has been collected, the recommendations for personal protective equipment use may be able to be modified.

V. Assistance. If further assistance is required on this subject and to schedule air sampling, contact the Industrial Hygiene Office, Occupational Health and Preventive Medicine Service at extension 2707.

Work Practice Procedures for the Handling of Asbestos Containing Brakes and Clutches

I. Prior to Beginning Work:

1. Isolate the asbestos brake/clutch work area.

2. Allow only authorized personnel into the work area.

3. Designate a specific work space with minimum traffic flow for asbestos brake or clutch work.

4. Ensure only personnel with a job-related need are allowed in the shop area.

II. INSPECTION AND REMOVAL OF BRAKES/CLUTCHES:

1. Provide for the collection of residual asbestos waste and dust.

a. Position disposable drop cloth under the wheel assembly or clutch housing prior to removal to catch dust.

b. If present, use a high efficiency particulate air (HEPA) filter vacuum source with a brake enclosure or chamber.

c. Use a low pressure wet method to first dampen then clean off loose brake dust.

III. LOW PRESSURE WET METHOD:

1. Is recommended by OSH for controlling airborne asbestos/brake dust generation.

2. Use a water mist to minimize asbestos fiber release from brake dust (EPA recommends a concentration of one ounce polyoxyethylene ester per 5 gallons of water. Brakekleen may also be used).

3. Keep brake assembly as damp as possible throughout the work period to ensure that any brake dust is wet, and remains wet, until final disposal.

4. Wetted rags and spray bottle can be used. The liquid spray must be kept at a vew low pressure to avoid scattering the brake dust.

IV. USE OF PERSONAL PROTECTIVE EQUIPMENT:

1. If wet method or HEPA vacuum is used, respirators are not required.

2. DISPOSABLE DUST RESPIRATORS (i.e., 3M 8710 or 9920) ARE NOT AUTHORIZED FOR USE DURING ANY ASBESTOS OPERATION. Disposable respirators do not provide adequate protection against asbestos fibers.

3. A half-face air purifying respirator equipped with HEPA cartridges is authorized for protection against asbestos when engineering controls are not available and wet method is not used.

4. If personnel use respirators, they must be in the unit respiratory protection program.

5. To bypass all respirator costs and program requirements, utilize wet methods or the HEPA brake vacuum system.

6. Personnel should wear safety glasses or face shields when required to protect against falling or flying debris.

V. CLEANUP/HOUSEKEEPING

1. Debris which falls from the drum or clutch onto the floor must be removed. Cleanup is to be performed after each job. Use a plastic sheet to catch all debris.

2. Personnel should not eat, smoke, drink or use tobacco products around brake or clutch work, or around asbestos containing storage areas.

3. Personnel who work or handle asbestos or asbestos containing material should wash their hands prior to eating, drinking or smoking.

VI. DISPOSAL - Asbestos Labelled Bags Disposed According to Approved Methods (i.e. as asbestos waste)

VII. PROHIBITED METHODS

1. Dry sweeping.

2. Dry brushing to clean brakes.

3. Using compressed air to clean brakes.

VIII. WORKER EXPOSURE MONITORING

1. Sampling of all areas where repetitious asbestos work is performed shall be conducted by the Industrial Hygiene Department annually.

2. In those areas where exposures exceed the action limit of 0.1 fibers per cubic centimeter (f/cc), exposure monitoring will be conducted every 6 months and other requirements of 29 CFR 1910.1001 including medical surveillance, respirator use, and other procedures will be observed.

IX. EMPLOYEE NOTIFICATION

1. Within 15 working days after receipt, the unit shall notify affected workers of the results of any personnel monitoring in writing, either individually or by posting results in an appropriate location accessible by all personnel.

2. The unit shall maintain all records of air monitoring for at least 30 years.

X. TRAINING. The unit shall provide annual training for personnel who are performing job operations which offer the potential for exposure to airborne concentrations of asbestos. Assistance in training is provided by the Industrial Hygiene Department. Please contact either E. M. Holland or ENS Gieseke at extension 2707.

"Footer"

COMPATIBILITY OF HAZARDOUS WASTE CATEGORIES

	Acid	Caustic	Organics	Oxidizers	Reactive	General
Acid	--	NC	NC	NC	NC	NC
Caustic	NC	--	NC	C	NC	NC
Organics	NC	NC	--	NC	NC	NC
Oxidizers	NC	C	NC	--	NC	C
Reactive	NC	NC	NC	NC	--	NC
General	NC	NC	NC	C	NC	--

C - Compatible, NC - Not Compatible

Note: Even though wastes may be compatible by generic type as stated above, specific wastes may <u>not</u> be compatible within that type. Wastes should always be reviewed individually for compatibility and, if incompatible, should not be stored together.

HAZARDOUS W[illegible]E COMPATIBILITY CHART

EPA-600/2-80-07[illegible] 1980
A METHOD FOR DETERMINING THE COMPATIBILITY OF HAZARDOUS WASTES

Municipal Environmental Laboratory
Office of Research and Development
U. S. Environmental Protection Agency,
Cincinnati, Ohio 45268

CAUTION!!

This chart is intended as an indication of some of the hazards that can be expected by mixing chemical wastes. Because of the differing activities of the thousands of compounds that may be encountered, it is not possible to make any chart definitive and all inclusive. It cannot be assumed to ensure compatibility of wastes because wastes are not classified as hazardous on the chart, nor do problems necessarily mean that the mixture cannot result in a hazard occurring. Detailed instructions as to hazards involved in handling and disposing of any given waste should be obtained from the originator of the waste.

Reactivity Code	Consequences
H	Heat generation
F	Fire
G	Innocuous and non-flammable gas generation
GT	Toxic gas generation
GF	Flammable gas generation
E	Explosion
P	Violent polymerization
S	Solubilization of toxic substances
U	May be hazardous but unknown

Example:

H F GT	Heat generation, fire, and toxic gas generation

NO.	REACTIVITY GROUP NAME
1	Acids, Mineral, Non-oxidizing
2	Acids, Mineral, Oxidizing
3	Acids, Organic
4	Alcohols and Glycols
5	Aldehydes
6	Amides
7	Amines, Aliphatic and Aromatic
8	Azo Compounds, Diazo Compounds and Hydrazines
9	Carbamates
10	Caustics
11	Cyanides
12	Dithiocarbamates
13	Esters
14	Ethers
15	Fluorides, Inorganic
16	Hydrocarbons, Aromatic
17	Halogenated Organics
18	Isocyanates
19	Ketones
20	Mercaptans and Other Organic Sulfides
21	Metals, Alkali and Alkaline Earth, Elemental
22	Metals, Other Elemental & Alloys as Powders, Vapors, or Sponges
23	Metals, Other Elemental & Alloys as Sheets, Rods, Drops, etc.
24	Metals and Metal Compounds, Toxic
25	Nitrides
26	Nitriles
27	Nitro Compounds, Organic
28	Hydrocarbons, Aliphatic, Unsaturated
29	Hydrocarbons, Aliphatic, Saturated
30	Peroxides and Hydroperoxides, Organic
31	Phenols and Cresols
32	Organophosphates, Phosphothioates, Phosphodithioates
33	Sulfides, Inorganic
34	Epoxides
101	Combustible and Flammable Materials, Miscellaneous
102	Explosives
103	Polymerizable Compounds
104	Oxidizing Agents, Strong
105	Reducing Agents, Strong
106	Water and Mixtures Containing Water

EXTREMELY REACTIVE! ← DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL → EXTREMELY REACTIVE!

APPENDIX A

LIST OF REACTIVITY GROUP NUMBERS (RGNs) FOR CHEMICAL SUBSTANCES

This appendix lists the chemical substances that may be found in hazardous wastestreams. The list is not inclusive but represents the data compiled through a literature survey and examination of hazardous waste management practices.

The list consists of three columns. The first column lists the chemical or trade names in alphabetical order. The trade names are denoted by asterisks (*). The second column list the synonyms or common names of the chemical substances when available. The third column lists the reactivity group numbers (RGN) assigned to the substances as derived in Appendix 2. A compound may be assigned more than one RGN.

This appendix is used to obtain the RGN of waste constituents when known specifically. The RGN is used to determine the compatibility of the combinations of wastes according to the compatibility method in Section 4.

The chemical substances listed were compiled from several sources. The list of Hazardous Wastes and Hazardous Materials and List of Extremely Hazardous Wastes and Extremely Hazardous Materials in California's Industrial Waste Law of 1972 (Ref. 44) served as the starting reference. The primary sources of information consisted of published reports (Ref. 1, 7, 12, 13, 14, 32, and 52) identifying the hazardous chemical substances in industrial wastestreams. Additional chemical entries were abstracted from the California Waste Haulers Record files (Ref. 10), California Extremely Hazardous Waste Disposal Permit files (Ref. 8), and the TRW Systems' report on recommended methods of reduction, neutralization, recovery, and disposal of hazardous wastes (Ref. 77).

RGN	Names	Synonyms
32	Abate*	
16	Acenaphthene	
6	Acetamide	
5	Acetaldehyde	
3	Acetic acid	
107	Acetic anhydride	
19	Acetone	Dimethyl ketone
4, 26	Acetone cyanohydrin	Hydroxyisobutyronitrile
26	Acetonitrile	Methyl cyanide
19	Acetophenone	
13	Acetoxybutane	Butyl acetate
13	Acetoxypentane	Amyl acetate
19	Acetyl acetone	
102	Acetyl azide	
30	Acetyl benzoyl peroxide	
17, 107	Acetyl bromide	
17, 107	Acetyl chloride	
28	Acetylene	
27, 102	Acetyl nitrate	
30	Acetyl peroxide	
5, 103	Acrolein	Aqualin
3, 103	Acrylic acid	
26, 103	Acrylonitrile	
3	Adipic acid	
26	Adiponitrile	
24	Agallol	Methoxyethylmercuric chloride
24	Agaloxetan	Methoxymethylmercuric chloride
9, 20	Aldicarb	Temik*
17	Aldrin	
107	Alkyl aluminum chloride	
101	Alkyl resins	
28	Allene	
4	Allyl alcohol	2-Propen-1-ol
17	Allyl bromide	Bromopropene
17	Allyl chloride	Chloropropene
13, 17	Allyl chlorocarbonate	Allyl chloroformate
13, 17	Allyl chloroformate	Allyl chlorocarbonate
107	Allyl trichlorosilane	
22, 23	Aluminum	
107	Aluminum aminoborohydride	
103, 107	Aluminum borohydride	
107	Aluminum bromide	
103	Aluminum carbide	
107	Aluminum chloride	
103, 107	Aluminum diethyl monochloride	Diethylaluminum chloride
15, 107	Aluminum fluoride	
105	Aluminum hydride	
107	Aluminum hypophosphide	
107	Aluminum phosphide	
8	Aluminum tetraazidoborate	
7	Aminobenzene	Aniline
7	Aminobutane	Butylamine
7, 17	Aminochlorotoluene	Chlorotoluidine
7	Aminodiphenyl	
7	Aminoethane	Ethylamine
4, 7	Aminoethanol	
7	Aminoethanolamine	
7	Aminohexane	Hexylamine
7	Aminomethane	Methylamine
7	Aminopentane	Amylamine
7, 31	Aminophenol	

RGN	Names	Synonyms
7	Aminopropane	Isopropyl amine
7, 26	Amino propionitrile	
7, 8	Aminothiazole	
7	Aminotoluene	Toluidine
10	Ammonia	
24	Ammonium arsenate	
102	Ammonium azide	
15	Ammonium bifluoride	
102, 104	Ammonium chlorate	
24, 102	Ammonium dichromate	
15	Ammonium fluoride	
24, 102	Ammonium hexanitrocobaltate	
10	Ammonium hydroxide	
105	Ammonium hypophosphide	
24	Ammonium molybdate	
102	Ammonium nitrate	
24, 104	Ammonium nitridoosmate	
102	Ammonium nitrite	
104	Ammonium perchlorate	
102, 104	Ammonium periodate	
24, 102, 104	Ammonium permanganate	
104	Ammonium persulfate	
102	Ammonium picrate	
33, 105	Ammonium sulfide	
24, 104	Ammonium tetrachromate	
24, 102, 104	Ammonium tetraperoxychromate	
24, 104	Ammonium trichromate	
13	Amyl acetate	Acetoxy pentane
4	Amyl alcohol	
17	Amyl chloride	Chloropentane
26	Amyl cyanide	
7	Amylamine	Aminopentane
28	Amylene	Pentene
20	Amyl mercaptan	Pentanethiol
7	Aniline	
20	Animert® V-101	Tetrasul
14	Anisole	
107	Anisole chloride	
16	Anthracene	
23, 24	Antimony	
24, 107	Antimony chloride	Antimony trichloride
24, 107	Antimony fluoride	Antimony trifluoride
24, 25	Antimony nitride	
24	Antimony oxychloride	
24	Antimony oxide	Antimony trioxide
24	Antimony pentachloride	
24	Antimony pentafluoride	
24, 33, 105	Antimony pentasulfide	
24, 104	Antimony perchlorate	
24	Antimony potassium tartrate	

RGN	Names	Synonyms
24	Antimony sulfate	Antimony trisulfate
24, 33, 105	Antimony sulfide	Antimony trisulfide
24, 107	Antimony tribromide	
24, 107	Antimony trichloride	Antimony chloride
24, 107	Antimony trifluoride	Antimony fluoride
24, 107	Antimony triiodide	
24	Antimony trioxide	Antimony oxide
24	Antimony trisulfate	Antimony sulfate
24, 33	Antimony trisulfide	Antimony sulfide
24, 107	Antimony trivinyl	
5, 103	Aqualin	Acrolein
106	Aqueous solutions & mixtures	
	Aretan®	Methoxyethylmercuric chloride
24		
17	Arochlor®	Polychlorinated biphenyl
24	Arsenic	
24, 107	Arsenic bromide	Arsenic tribromide
24, 107	Arsenic chloride	Arsenic trichloride
24, 33, 105	Arsenic disulfide	Arsenic sulfide
24, 107	Arsenic iodide	Arsenic triiodide
24	Arsenic oxide	Arsenic pentoxide
24	Arsenic pentaselenide	
24, 33	Arsenic pentasulfide	
24	Arsenic pentoxide	Arsenic oxide
24, 33, 105	Arsenic sulfide	Arsenic disulfide
24, 107	Arsenic tribromide	Arsenic bromide
24, 107	Arsenic trichloride	Arsenic chloride
24	Arsenic trifluoride	
24, 107	Arsenic triiodide	Arsenic iodide
24, 33, 105	Arsenic trisulfide	
24, 105	Arsine	
17	Askarel	Polychlorinated biphenyl
101	Asphalt	
8, 102	Azidocarbonyl guanidine	
8	Azido-s-triazole	
32	Azinphos ethyl	
7, 103	Aziridine	Ethyleneimine
8, 26	a,a'-Azodiisobutyronitrile	
32	Azodrin®	Monocrotophos
101	Bakelite®	
9	Banol	Carbanolate
21, 24, 107	Barium	
24, 102	Barium azide	
24, 104	Barium bromate	
24, 105, 107	Barium carbide	
24, 104	Barium chlorate	
24	Barium chloride	
24, 104	Barium chromate	
15, 24	Barium fluoride	
24	Barium fluosilicate	

RGN	Names	Synonyms
24, 105	Barium hydride	
10, 24	Barium hydroxide	
24, 105	Barium hypophosphide	
24, 104	Barium iodate	
24	Barium iodide	
10, 24, 107	Barium monoxide	Barium oxide
24, 104	Barium nitrate	
10, 24, 107	Barium oxide	Barium monoxide
24, 104	Barium perchlorate	
24, 104	Barium permanganate	
24, 104	Barium peroxide	
24	Barium phosphate	
24	Barium stearate	
24, 33, 105, 107	Barium sulfide	
24	Barium sulfite	
9	Bassa®	BPMC
32	Bayer 25141	Fensulfothion
9	Baygon®	
6	Benzadox	Topcide®
17	Benzal bromide	
17	Benzal chloride	
5	Benzaldehyde	
16	Benz-a-pyrene	
16	Benzene	
8, 102	Benzene diazonium chloride	
107	Benzene phosphorus dichloride	
7	Benzidine	
3	Benzoic acid	
26	Benzonitrile	
19	Benzophenone	
19	Benzoquinone	Quinone
8, 102	Benzotriazole	
17	Benzotribromide	
17	Benzotrichloride	
17	Benzotrifluoride	Trifluoromethylbenzene
107	Benzoyl chloride	
30, 102	Benzoyl peroxide	Dibenzoyl peroxide
4	Benzyl alcohol	
7	Benzylamine	
16	Benzyl benzene	Diphenylmethane
17	Benzyl bromide	Bromotoluene
17	Benzyl chloride	Chlorotoluene
17	Benzyl chlorocarbonate	Benzyl chloroformate
17	Benzyl chloroformate	Benzyl chlorocarbonate
105, 107	Benzyl silane	
105	Benzyl sodium	
24	Beryllium	
24	Beryllium copper alloy	
15, 24	Beryllium fluoride	
24, 105, 107	Beryllium hydride	
10, 24	Beryllium hydroxide	
24	Beryllium oxide	
33, 105	Beryllium sulfide	
24, 105, 107	Beryllium tetrahydroborate	
32	Bidrin®	
22, 23, 24	Bismuth	
24	Bismuth chromate	
24	Bismuthic acid	
24, 25, 102	Bismuth nitride	
24, 107	Bismuth pentafluoride	
24	Bismuth pentaoxide	
24, 33, 105	Bismuth sulfide	
24	Bismuth tribromide	
24	Bismuth trichloride	
24	Bismuth triiodide	
24	Bismuth trioxide	
24, 33, 105	Bismuth trisulfide	
32	Blada-fum®	Sulfotepp
24	Blue vitriol	Copper sulfate
32	Bomyl	
24, 107	Borane	
24	Bordeaux arsenites	
1	Boric acid	
24, 105	Boron arsenotribromide	
24, 107	Boron bromodiiodide	
24, 107	Boron dibromoiodide	
24, 25	Boron nitride	
24, 107	Boron phosphide	
24, 102	Boron triazide	
24, 107	Boron tribromide	
24, 107	Boron trichloride	
24, 107	Boron trifluoride	
24, 107	Boron triiodide	
24, 33, 105	Boron trisulfide	
9	BPMC	Bassa®
23	Brass	
2	Bromic acid	
104	Bromine	
102	Bromine azide	
11	Bromine cyanide	Cyanogen bromide
104, 107	Bromine monofluoride	
104, 107	Bromine pentafluoride	
104, 107	Bromine trifluoride	
17	Bromoacetylene	
6, 19	Bromobenzoyl acetanilide	
17	Bromobenzyl trifluoride	
105	Bromodiborane	
107	Bromodiethylaluminum	
14	Bromodimethoxyaniline	
17	Bromoform	Tribromomethane

RGN	Names	Synonyms
17	Bromomethane	Methyl bromide
17, 31	Bromophenol	
17	Bromopropene	Allyl bromide
17	Bromopropyne	
105	Bromosilane	
17	Bromotoluene	Benzyl bromide
17	Bromotrichloromethane	
17	Bromotrifluomethane	
	Bromoxynil	3,5-Dibromo-4-hydroxy benzonitrile
17, 26, 31		
23	Bronze	
101	Buna-N*	
101	Bunker fuel oil	
9	Butacarb	
28, 103	Butadiene	
28	Butadiyne	Diacetylene
5	Butanal	Butyraldehyde
29	Butane	
4	Butanediol	
20	Butanethiol	Butyl mercaptan
102	Butanetriol trinitrate	
4	Butanol	Butyl alcohol
19	Butanone	Methyl ethyl ketone
5	Butenal	Crotonaldehyde
28	Butene	
19	Butene-2-one	Methyl vinyl ketone
13	Butyl acetate	Acetoxybutane
13, 103	n-Butyl acrylate	
7	Butylamine	Aminobutane
4	Butyl alcohol	Butanol
8	t-Butyl azidoformate	
16	Butyl benzene	Phenylbutane
13	Butyl benzyl phthalate	
4	Butyl cellusolve*	
105	Butyl dichloroborane	
14	Butyl ether	Dibutyl ether
13	Butly formate	
17	Butyl fluoride	
34	Butyl glycidyl ether	
30	Butyl hydroperoxide	
102, 104	t-Butyl hypochlorite	
105, 107	n-Butyl lithium	
20	Butyl mercaptan	Butanethiol
30	Butyl peroxide	
30	Butyl peroxyacetate	t-Butyl perbenzoate
30	Butyl peroxybenzoate	
30	Butyl peroxypivalate	
30	t-Butyl perbenzoate	Butyl peroxyacetate
34	t-Butyl-3-phenyl oxazirane	
107	Butyl trichlorosilane	

RGN	Names	Synonyms
6	Butyramide	
5	Butyraldehyde	Butanol
3	Butyric acid	
26	Butyronitrile	
9	Bux*	
24	Cacodylic acid	Dimethylarsenic acid
23, 24	Cadmium	
24, 105, 107	Cadmium acetylide	
24, 10, 107	Cadmium amide	
24, 102	Cadmium azide	
24	Cadmium bromide	
24, 104	Cadmium chlorate	
24	Cadmium chloride	
11, 24	Cadmium cyanide	
15, 24	Cadmium fluoride	
24, 102	Cadmium hexamine chlorate	
24, 102	Cadmium hexamine perchlorate	
24	Cadmium iodide	
24, 102, 104	Cadmium nitrate	
24, 25, 102	Cadmium nitride	
24	Cadmium oxide	
24	Cadmium phosphate	
24, 33, 105	Cadmium sulfide	
24, 102	Cadmium trihydrazine chlorate	
24, 102	Cadmium trihydrazine perchlorate	
24, 102	Calcium	
24	Calcium arsenate	
24	Calcium arsenite	
104	Calcium bromate	
105, 107	Calcium carbide	
104	Calcium chlorate	
104	Calcium chlorite	
15	Calcium fluoride	
105	Calcium hexammoniate	
105, 107	Calcium hydride	
10	Calcium hydroxide	Hydrated lime
104	Calcium hypochlorite	Calcium oxychloride
105	Calcium hypophosphide	
104	Calcium iodate	
23	Calcium-manganese-silicon alloy	
104	Calcium nitrate	Lime nitrate, nitrocalcite
10, 107	Calcium oxide	Slaked lime
104	Calcium oxychloride	Calcium hypochlorite
104	Calcium perchromate	
104	Calcium permanganate	
104	Calcium peroxide	
107	Calcium phosphide	
33, 105	Calcium sulfide	
101	Camphor oil	
3	Capric acid	

RGN	Names	Synonyms
3	Caproic acid	Hexanoic acid
3	Caprylic acid	
30	Caprylyl peroxide	Octyl peroxide
31	Carbacrol	
9	Carbaryl	
6	Carbetamide	
9	Carbanolate	Banol
9	Carbofuran	Furadan®
31	Carbolic acid	Phenol
31	Carbolic oil	
101	Carbon, activated, spent	
20	Carbon bisulfide	Carbon disulfide
20	Carbon disulfide	Carbon bisulfide
17	Carbon tetrachloride	Tetrachloromethane
17	Carbon tetrafluoride	
17	Carbon tetraiodide	
7	Castrix	Crimidine
31	Catechol	
10	Caustic potash	Potassium hydroxide
10	Caustic soda	Sodium hydroxide
12	CDEC	
101	Cellulose	
27, 102	Cellulose nitrate	Nitro cellulose
22	Cerium	
105	Cerium hydride	
33, 105	Cerium trisulfide	
105	Cerous phosphide	
21	Cesium	
107	Cesium amide	
102	Cesium azide	
105	Cesium carbide	
15	Cesium fluoride	
105	Cesium hexahydroaluminate	
105, 107	Cesium hydride	
107	Cesium phosphide	
33, 105	Cesium sulfide	
5	Chloral hydrate	Trichloroacetaldehyde
17	Chlordane	
17	Chlorestol	Polychlorinated biphenyl
32	Chlorfenvinphos	
2, 104	Chloric acid	
104	Chlorine	
102	Chlorine azide	
102, 104, 107	Chlorine dioxide	
102, 104	Chlorine fluoroxide	
104, 107	Chlorine monofluoride	
104	Chlorine monoxide	
104, 107	Chlorine pentafluoride	
104, 107	Chlorine trifluoride	
102, 104	Chlorine trioxide	

RGN	Names	Synonyms
5, 17	Chloroacetaldehyde	
3, 17	Chloroacetic acid	Monochloroacetic acid
17, 19	Chloroacetone	Monochloroacetone
17, 19	Chloroacetophenone	Phenyl chloromethyl ketone
107	Chloroacetyl chloride	
102	Chloroacetylene	
17, 26	Chloroacrylonitrile	
8, 17	Chloroazodin	
17	Chlorobenzene	
8, 17	Chlorobenzotriazole	
17, 30	Chlorobenzoyl peroxide	
17, 26	Chlorobenzylidene malononitrile	
17, 26	Chlorobutyronitrile	
24, 104, 107	Chloro chromic anhydride	Chromyl chloride
17, 31	Chlorocreosol	
105	Chlorodiborane	
105, 107	Chlorodiisobutyl aluminum	
105	Chlorodimethylamine diborane	
17, 27	Chlorodinitrobenzene	Dinitrochlorobenzene
17, 27	Chloro dinitrotoluene	
105	Chlorodipropyl borane	
17	Chloroethane	Ethyl chloride
4, 7	Chloroethanol	
17	Chloroethylenimine	
17	Chloroform	Trichloromethane
17	Chlorohydrin	
17	Chloromethane	Methyl chloride
17	Chloromethyl methyl ether	
3, 17	Chloromethyl phenoxyacetic acid	
17, 27	Chloronitroaniline	
17, 27	Chloronitrobenzene	Nitrochlorobenzene
17	Chloropentane	Amyl chloride
31	Chlorophenol	
17, 18, 107	Chlorophenyl isocyanate	
	Chloropicrin	Chlorpicrin, Trichloronitromethane
17, 27, 102		
17	Chloropropane	Isopropyl chloride
17	Chloropropene	Allyl chloride
17, 34	Chloropropylene oxide	Epichlorohydrin
105	Chlorosilane	
1	Chlorosulfonic acid	
17, 32	Chlorothion®	
17	Chlorotoluene	Benzyl chloride
7, 17	Chlorotoluidine	
17, 27, 102	Chlorotrinitrobenzene	Picryl chloride
24	β-Chlorovinyldichloroarsine	Lewisite
17, 27, 102	Chlorpicrin	Trichloronitromethane
	Chromic acid	Chromic anhydride, Chromium trioxide
2, 24, 104		

RGN	Names	Synonyms
	Chromic anyhdride	Chromium trioxide, Chromic acid
2, 24, 104	Chromic chloride	Chromium trichloride
24	Chromic fluoride	Chromium trifluoride
15, 24	Chromic oxide	
24	Chromic sulfate	Chromium sulfate
24	Chromium	
23, 24	Chromium sulfate	Chromic sulfate
24	Chromic sulfide	
24, 33, 105	Chromium trichloride	Chromic chloride
24	Chromium trifluoride	Chromic fluoride
15, 24	Chromium trioxide	Chromic acid, Chromic anhydride
2, 24, 104	Chromyl chloride	Chloro chromic anhydride
24, 104, 107	Chrysene	
16	CMME	Methyl chloromethyl ether
14, 17	Coal oil	
101	Coal tar	
31	Cobalt	
22, 23, 24	Cobalt bromide	Cobaltous bromide
24	Cobalt chloride	Cobaltous chloride
24	Cobalt nitrate	Cobaltous nitrate
24, 104	Cobaltous bromide	Cobalt bromide
24	Cobaltous chloride	Cobalt chloride
24	Cobaltous nitrate	Cobalt nitrate
24, 104	Cobaltous resinate	Cobalt resinate
24	Cobaltous sulfate	Cobalt sulfate
24	Cobalt resinate	Cobaltous resinate
24	Cobalt sulfate	Cobaltous sulfate
24	Collodion	Pyroxylin
27	Copper	
23, 24	Copper acetoarsenite	Paris Green
24	Copper acetylide	
24, 102, 105, 107	Copper arsenate	Cupric arsenate
24	Copper arsenite	Cupric arsenite
24	Copper chloride	Cupric chloride
24	Copper chlorotetrazole	
24	Copper cyanide	Cupric cyanide
11, 24	Copper nitrate	Cupric nitrate
24, 104	Copper nitride	
24, 25	Copper sulfate	Cupric sulfate, Blue vitriol
24	Copper sulfide	
24, 33, 105	Compound 1836	Diethyl chlorvinyl phosphate
17, 32	Coroxon®	
32	Coumafuryl	Fumarin
19	Coumatetralyl	
19	Cresol	
31	Cresol glydicyl ether	
34	Cresote	
31	Crimidine	Castrix
7		

RGN	Names	Synonyms
5	Crotonaldehyde	Butenal
4	Crotyl alcohol	
17	Crotyl bromide	
17	Crotyl chloride	
16	Cumene	Isopropyl benzene
30	Cumene hydroperoxide	Dimethylbenzyl hydroperoxi
24	Cupric arsenate	Copper arsenate
24	Cupric arsenite	Copper arsenite
24	Cupric chloride	Copper chloride
24	Cupric cyanide	Copper cyanide
11, 24	Cupric nitrate	Copper nitrate
24, 104	Cupric sulfate	Copper sulfate
24	Cuprietylenediamine	
7, 24	Cyanoacetic acid	Malonic nitrile
3, 26	Cyanochloropentane	
17, 26	Cyanogen	
26	Cyanogen bromide	Bromine cyanide
11	Cyanophenphos	Surecide®
26, 32	Cyanuric triazide	
102	Cycloheptane	
29	Cyclohexane	
29	Cyclohexanol	
4	Cyclohexanone	
19	Cyclohexanone peroxide	
30	Cyclohexylamine	
7	Cyclohexenyl trichlorosilane	
107	Cyclohexyl phenol	
31	Cyclohexyl trichlorosilane	
107	Cyclopentane	
29	Cyclopentanol	
4	Cyclopentene	
28	Cyclopropane	
29	Cyclotrimethylene trinitraamine	RDX
27, 102	Cymene	
16	Cyolan®	Phospholan
20, 32	2,4-D	Dichlorophenoxyacetic ac
3, 17	Dasanit®	Fensulfothion
32	DBCP	Dibromochloropropane
17	DCB	Dichlorobenzene
17	DDD	
17	DDNP	Diazodinitrophenol
8, 27, 102	DDT	
17	DDVP	Dichlorovos, Vapona®
17, 32	DEAC	Diethylaluminum chloride
105, 107	Decaborane	
107	Decahydronaphthalene	Decalin
29	Decalin	Decahydronaphthalene
29	Decane	
29	Decanol	
4	Decene	
28		

RGN	Names	Synonyms
16	Decyl benzene	
32	Delnav®	Dioxathion
32	Demeton-s-methyl sulfoxid	Metasystox R®
4, 19	Diacetone alcohol	
19	Diacetyl	
28	Diacetylene	Butadiyne
8, 105	Diamine	Hydrazine
7	Diaminobenzene	Phenylene diamine
7	Diaminohexane	Hexamethylenediamine
8, 102	Diazidoethane	
32	Diazinon®	
27, 102	Diazodinitrophenol	DDNP
30, 102	Dibenzoyl peroxide	Benzoyl peroxide
105, 107	Diborane	Diboron hexahydride
105, 107	Diboron hexahydride	Diborane
14	Dibutyl ether	Butyl ether
13	Dibutyl phthalate	
17, 26, 31	3,5-Dibromo-4-hydroxybenzonitrile	Bromoxynil
17	Dibromochloropropane	DBCP, Fumazone®, Nemagon®
17	Dibromoethane	Ethylene dibromide
17, 19	Dichloroacetone	
104	Dichloroamine	
17	Dichlororobenzene	DCB
7, 17	Dichlorobenzidine	
107	Dichlorodimethylsilane	Dimethyl dichlorosilane
17	Dichloroethane	Ethylene dichloride
17	Dichloroethene	Dichloroethylene
14, 17	Dichloroether	Dichloroethyl ether
24, 107	Dichloroethylarsine	
107	Ethyl dichlorosilane	
14, 17	Ethyl ether	Dichloroether
104	Dichloroisocyanuric acid	Dichloro-s-triazine-2,4,5-trione
17	Dichloromethane	Methylene chloride
17	Dichlorophene	
17, 31	Dichlorophenol	
3, 17	Dichlorophenoxyacetic acid	2,4-D
17	Dichloropropane	Propylene dichloride
4, 17	Dichloropropanol	
17	Dichloropropene	Dichloropropylene
17	Dichloropropylene	Dichloropropene
104	Dichloro-s-triazine-2,4,5-trione	Dichloroisocyanuric acid
17, 32	Dichlorovos	DDVP
30	Dicumyl peroxide	
28	Dicyclopentadiene	
17	Dieldrin	
4, 7	Diethanolamine	
105, 107	Diethyl aluminum chloride	Aluminum diethylmonochloride, DEAL
7	Diethylamine	
16	Diethyl benzene	

RGN	Names	Synonyms
17, 32	Diethyl chlorovinyl phosphate	Compound 1836
107	Diethyl dichlorosilane	
14	Diethylene dioxide	Dioxane
27, 102	Diethylene glycol dinitrate	
13	Diethylene glycol monobutyl ether acetate	
7	Diethylene triamine	
14	Diethyl ether	
19	Diethyl ketone	
6	Diethyltoluamide	
24, 105, 107	Diethyl zinc	Zinc ethyl
101	Diesel oil	
1	Difluorophosphoric acid	
34	Diglycidyl ether	Bis(2,3-epoxypropyl)
28	Diisobutylene	
19	Diisobutyl ketone	
4, 17	Diisopropanolamine	
30	Diisopropylbenzene hydroperoxide	
24, 104, 107	Diisopropyl beryllium	
14	Diisopropyl ether	Isopropyl ether
30	Diisopropyl peroxydicarbonate	Isopropyl percarbon
32	Dimecron®	Phosphamidon
6, 32	Dimefox	Hanane®
28	Dimethyl acetylene	
7	Dimethyl amine	
7, 8	Dimethylamino azobenzene	Methyl yellow
24	Dimethyl arsenic acid	Cacodylic acid
30	Dimethylbenzyl hydroperoxide	Cumene hydropero
29	Dimethyl butane	Neohexane
28	Dimethyl butyne	
107	Dimethyl dichlorosilane	Dichlorodimethylsil
32	Dimethyldithiophosphoric acid	
14	Dimethyl ether	
19	Dimethyl formal	
6	Dimethyl formamide	
30	Dimethylhexane dihydroperoxide	
8	Dimethyl hydrazine	UDMH
19	Dimethyl ketone	Acetone
105, 107	Dimethyl magnesium	
27	Dimethylnitrobenzene	Nitroxylene
7, 27	Dimethylnitrosoamine	N-Nitrosodimethyl
20	Dimethyl sulfide	Methyl sulfide
32	Dimeton	
27	Dinitrobenzene	
17, 27	Dinitrochlorobenzene	Chlorodinitrobenze
27, 31	2,4-Dinitro-6-sec-butyl phenol	Dinoseb
27, 31	Dinitrocresol	DNOC, Elgetol 30
27, 31	Dinitrophenol	
8, 27	Dinitrophenyl hydrazine	
27	Dinitrotoluene	

RGN	Names	Synonyms
27, 31	Dinoseb	2,4-Dinitro-6-sec-butylphenol
9	Dioxacarb	
14	Dioxane	Diethylene dioxide
32	Dioxathion	Delnav®
27, 102	Dipentaerythritol hexanitrate	
28	Dipentene	
6	Diphenamide	
16	Diphenyl	Phenylbenzene
16	Diphenyl acetylene	
7	Diphenylamine	
7, 24	Diphenylamine chloroarsine	Phenarsazine chloride
16	Diphenyl ethane	
16	Diphenyl ethylene	Stilbene
16	Diphenyl methane	Benzylbenzene
18, 107	Diphenylmethane diisocyanate	
14	Diphenyl oxide	
7, 27, 102	Dipicryl amine	Hexanitrodiphenylamine
7	Dipropyl amine	
32	Disulfoton	Disyston®
1	Disulfuric acid	
25, 102	Disulfur dinitride	
107	Disulfuryl chloride	
32	Disyston®	Disulfoton
12	Dithane® M-45	
32	Dithione®	Sulfotepp
27, 31	DNOC	Dinitrocresol
28	Dodecene	
16	Dodecyl benzene	
107	Dodecyl trichlorosilane	
9	Dowco-139®	Mexacarbate
31	Dowicide I	o-Phenyl phenol
16	Dowtherm	
16	Durene	
32	Dyfonate®	Fonofos
101	Dynes Thinner	
27, 31	Elgetol 30	Dinitrocresol
17, 20	Endolsulfan	Thiodan®
3	Endothall	
32	Endothion	Exothion
17	Endrin	
32	EPN	
17, 34	Epichlorohydrin	Chloropropylene oxide
34	Epoxybutane	
34	Epoxybutene	
34, 103	Epoxyethane	Ethylene oxide
34	Epoxyethylbenzene	
34	Bis(2-3-Epoxypropyl) ether	Diglycidyl ether
29	Ethane	
20	Ethanethiol	Ethyl mercaptan
4	Ethanol	Ethyl alcohol

RGN	Names	Synonyms
32	Ethion®	Nialate
4, 14	Ethoxyethanol	
13	Ethyl acetate	
28	Ethyl acetylene	
13, 103	Ethylacrylate	
4	Ethyl alcohol	Ethanol
7	Ethylamine	Aminoethane
16	Ethyl benzene	Phenylethane
13	Ethyl butanoate	Ethyl butyrate
13	Ethyl butyrate	Ethyl butanoate
17	Ethyl chloride	Chloroethane
13, 17	Ethyl chloroformate	
24, 107	Ethyl dichloroarsine	Dichloroethylarsine
107	Ethyl dichlorosilane	
14	Ethyl ether	Diethyl ether
28	Ethylene	
24, 104	Ethylene chromic oxide	
4, 17	Ethylene chlorohydrin	
4, 26	Ethylene cyanohydrin	Hydroxypropionitril
7	Ethylene diamine	
17	Ethylene dibromide	Dibromoethane
17	Ethylene dichloride	Dichloroethane
4	Ethylene glycol	
27, 102	Ethylene glycol dinitrate	Glycol dinitrate
4, 14, 17	Ethylene glycol monomethyl ether	
7, 103	Ethyleneimine	Aziridine
34, 103	Ethylene oxide	Epoxyethane
13	Ethyl formate	
13, 103	2-Ethylhexyl acrylate	
20	Ethyl mercaptan	Ethanethiol
27, 102	Ethyl nitrate	
27, 102	Ethyl nitrite	
13	Ethyl propionate	
107	Ethyl trichlorosilane	
32	Exothion	Endothion
31	Eugenol	
32	Fensulfothion	Bayer 25141, Das
12	Ferbam	
24	Ferric arsenate	
33	Ferric sulfide	
24	Ferrous arsenate	Iron arsenate
33, 103	Ferrous sulfide	
16	Fluoranthrene	
16	Fluorene	
104, 107	Fluorine	
102	Fluorine azide	
104, 107	Fluorine monoxide	Oxygen difluoride
6, 17	Fluoroacetanilide	
3	Fluoroacetic acid	
1, 15	Fluoroboric acid	

RGN	Names	Synonyms
1, 107	Fluorosulfonic acid	Fluosulfonic acid
1, 107	Fluosulfonic acid	Fluorosulfonic acid
1, 15	Fluosilicic acid	
32	Fonofos®	Dyfonate®
5	Formaldehyde	Methanal
6	Formamide	
6	Formetanate hydrochloride	
3	Formic acid	Methanoic acid
32	Fostion®	Prothoate
17	Freon®	
3	Fumaric acid	
19	Fumarin	Coumafuryl
17	Fumazone®	Dibromochloropropane
9	Furadan®	Carbofuran
14	Furan	Furfuran
5	Furfural	
14	Furfuran	
101	Gas oil, cracked	
101	Gasoline	
33, 105	Germanium sulfide	
5	Glutaraldehyde	
4	Glycerin	
34	Glycidol	
13	Glycol diacetate	
27, 102	Glycol dinitrate	Ethylene glycol dinitrate
14	Glycol ether	
3	Glycolic acid	
27, 102	Glycol monolactate trinitrate	
26	Glycolonitrile	
105, 107	Gold acetylide	
102	Gold cyanate	Gold fulminate
102	Gold fulminate	Gold cyanate
33, 105	Gold sulfide	
101	Grease	
31	Guaiacol	
8, 102	Guanyl nitrosaminoguanylidene hydrazine	
27, 104	Guanidine nitrate	
27, 102	Gun cotton	Nitrocellulose
32	Guthion®	
22	Hafnium	
6, 32	Hanane®	Dimefox
16	Hemimellitene	
17	Heptachlor	
29	Heptane	
5	Heptanal	
4	Heptanol	
19	Heptanone	
28	Heptene	
105	Hexaborane	
17	Hexachlorobenzene	

RGN	Names	Synonyms
107	Hexadecyl trichorosilane	
32	Hexaethyl tetraphosphate	
1, 15	Hexafluorophosphoric acid	
105, 107	Hexahydride diborane	Diborane
16	Hexamethyl benzene	
7	Hexamethylenediamine	Diaminohexane
7	Hexamethylenetetraamine	
5	Hexanal	
7, 27, 102	Hexanitrodiphenylamine	Dipicrylamine
4	Hexanol	
3	Hexanoic acid	Caproic acid
28	Hexene	
7	Hexylamine	Aminohexane
107	Hexyl trichlorosilane	
28	Hexyne	
102	HMX	
9	Hopcide®	
10	Hydrated lime	Calcium hydroxide
8, 105	Hydrazine	Diamine
8, 102	Hydrazine azide	
102	Hydrazoic acid	Hydrogen azide
1	Hydriodic acid	Hydrogen iodide
1, 107	Hydrobromic acid	Hydrogen bromide
1	Hydrochloric acid	Muriatic acid
1, 11	Hydrocyanic acid	Hydrogen cyanide
1, 15	Hydrofluoric acid	Hydrogen fluoride
102	Hydrogen azide	Hydrazoic acid
1, 107	Hydrogen bromide	Hydrobromic acid
1, 11	Hydrogen cyanide	Hydrocyanic acid
1, 15	Hydrogen fluoride	Hydrofluoric acid
1	Hydrogen iodide	Hydroiodic acid
104	Hydrogen peroxide	
105	Hydrogen phosphide	Phosphine
24, 105	Hydrogen selenide	
33, 105	Hydrogen sulfide	
31	Hydroquinone	
19, 31	Hydroxyacetophenone	
3, 17	Hydroxydibromobenzoic acid	
31	Hydroxydiphenol	
31	Hydroxyhydroquinone	
19, 31	Hydroxyacetophenone	
4, 26	Hydroxyisobutyronitrile	Acetone cyanohydrin
105	Hydroxyl amine	
4, 26	Hydroxypropionitrile	Ethylene cyanohydrin
2	Hypochlorous acid	
16	Indene	
22, 23, 24	Indium	
17	Inerteen	Polychlorinated biphenyl
107	Iodine monochloride	
104	Iodine pentoxide	

RGN	Names	Synonyms
23	Iron	
24	Iron arsenate	Ferrous arsenate
29	Isobutane	
4	Isobutanol	
13	Isobutyl acetate	
13, 103	Isobutyl acrylate	
28	Isobutylene	
13	Isodecyl acrylate	
16	Isodurene	
31	Isoeugenol	
29	Isohexane	
29	Isooctane	Trimethylpentane
28	Isooctene	
29	Isopentane	Methylbutane
19	Isophorone	
28, 103	Isoprene	Methyl butadiene
4	Isopropanol	
13	Isopropyl acetate	
28	Isopropyl acetylene	
7	Isopropylamine	Aminopropane
16	Isopropyl benzene	Cumene
17	Isopropyl chloride	Chloropropane
14	Isopropyl ether	Diisopropyl ether
20	Isopropyl mercaptan	
9	N-Isopropylmethylcarbamate	
17, 32	α-Isopropyl methylphosphoryl fluoride	
30	Isopropyl percarbonate	Diisopropyl peroxydicarbonate
101	Isotactic propylene	
101	J-100	
101	Jet oil	
101	Kerosene	
101	Lacquer thinner	
9	Landrin®	
9, 20	Lannate®	Methomyl
30	Lauroyl peroxide	
23, 24	Lead	
24	Lead acetate	
24	Lead arsenate	Lead orthoarsenate
24	Lead arsenite	
24, 102	Lead azide	
24	Lead carbonate	
24, 104	Lead chlorite	
11, 24	Lead cyanide	
24, 27, 102	Lead dinitroresorcinate	
24, 27, 102	Lead mononitroresorcinate	
24, 104	Lead nitrate	
24	Lead orthoarsenate	Lead arsenate
24	Lead oxide	
24, 27, 102	Lead styphnate	Lead trinitroresorcinate
24, 33, 104	Lead sulfide	
24, 27, 102	Lead trinitroresorcinate	Lead styphnate
24	Lewisite	β-Chlorovinyldichlor
104	Lime nitrate	Calcium nitrate
17	Lindane	
21, 107	Lithium	
105, 107	Lithium aluminum hydride	
10, 107	Lithium amide	
107	Lithium ferrosilicon	
105, 107	Lithium hydride	
10	Lithium hydroxide	
104	Lithium hypochlorite	
25	Lithium nitride	
104, 107	Lithium peroxide	
107	Lithium silicon	
33, 105	Lithium sulfide	
24	London purple	
10	Lye	Sodium hydroxide
21, 22	Magnesium	
24	Magnesium arsenate	
24	Magnesium arsenite	
104	Magnesium chlorate	
15	Magnesium fluoride	
104	Magnesium nitrate	
104	Magnesium perchlorate	
104	Magnesium peroxide	
33, 105	Magnesium sulfide	
32	Malathion	
3	Maleic acid	
3, 26	Malonic nitrile	Cyanoacetic acid
12	Maneb	
22, 23, 24	Manganese	
24	Manganese acetate	
24	Manganese arsenate	Manganous arsenat
24	Manganese bromide	Manganous bromid
24	Manganese chloride	Manganous chlorid
24	Manganese methylcyclopentadienyl-tricarbonyl	
24, 104	Manganese nitrate	Manganous nitrate
24, 33, 105	Manganese sulfide	
24	Manganous arsenate	Manganese arsenat
24	Manganous bromide	Manganese bromid
24	Manganous chloride	Manganese chlorid
104	Manganous nitrate	Manganese nitrate
27, 102	Mannitol hexanitrate	Nitromannite
9	Matacil®	
24	Mayer's reagent	Mercuric potassium
13, 27	Medinoterb acetate	
9	Meobal	
8, 20	Mercaptobenzothiazole	
4, 20	Mercatoethanol	

RGN	Names	Synonyms
32	Mercarbam	
24	Mercuric acetate	
24	Mercuric ammonium chloride	Mercury ammonium chloride
24	Mercuric benzoate	Mercury benzoate
24	Mercuric bromide	
24	Mercuric chloride	Mercury chloride
11, 24	Mercuric cyanide	Mercury cyanide
24	Mercuric dioxysulfate	Mercuric subsulfate
24	Mercuric iodide	Mercury iodide
24, 104	Mercuric nitrate	Mercury nitrate
24	Mercuric oleate	Mercury oleate
24	Mercuric oxide	
11, 24, 102	Mercuric oxycyanide	
24	Mercuric potassium iodide	Mayer's reagent
24	Mercuric salicylate	Salicylated mercury
24	Mercuric subsulfate	Mercuric dioxysulfate
24	Mercuric sulfate	Mercury sulfate
24, 33, 105	Mercuric sulfide	
24	Mercuric thiocyanate	Mercury thiocyanide
24	Mercuric thiocyanide	Mercury thiocyanate
24	Mercurol	Mercury nucleate
24	Mercurous bromide	
24	Mercurous gluconate	
24	Mercurous iodide	
24, 104	Mercurous nitrate	
24	Mercurous oxide	
24	Mercurous sulfate	Mercury bisulfate
24	Mercury	
22, 24	Mercury (vapor)	
24	Mercury acetate	Mercuric acetate
24	Mercury ammonium chloride	Mercuric ammonium chloride
24	Mercury benzoate	Mercuric benzoate
24	Mercury bisulfate	Mercurous sulfate
24	Mercury chloride	Mercuric chloride
11, 24	Mercury cyanide	Mercuric cyanide
24, 102	Mercury fulminate	
24	Mercury iodide	Mercuric iodide
24, 104	Mercury nitrate	Mercuric nitrate
24	Mercury nucleate	Mercurol
24	Mercury oleate	Mercuric oleate
24	Mercury sulfate	Mercuric sulfate
16	Mesitylene	1,3,5-trimethylbenzene
19	Mesityl oxide	
9	Mesurol®	
32	Metasystox-R	Demeton-S-methyl sulfoxid
12	Metham	
3	Methanal	Formaldehyde
29	Methane	
20	Methanethiol	Methyl mercaptan
3	Methanoic acid	Formic acid

RGN	Names	Synonyms
4	Methanol	Methyl alcohol
9, 20	Methomyl	Lannate®
24	Methoxyethylmercuric chloride	Agallolaretan®
13	Methyl acetate	
101	Methyl acetone	
28	Methyl acetylene	Methyl butyne
13, 103	Methyl acrylate	
4	Methyl alcohol	Methanol
105, 107	Methyl aluminum sesquibromide	
105, 107	Methyl aluminum sesquichloride	
7	Methylamine	Aminomethane
13	Methyl amyl acetate	
7	N-Methyl aniline	
7	Methyl aziridine	Propyleneimine
16	Methyl benzene	Toluene
17	Methyl bromide	Bromomethane
28, 103	Methyl butadiene	Isoprene
29	Methyl butane	Isopentane
28	Methyl butene	
14	Methyl butyl ether	
19	Methyl t-butyl ketone	
28	Methyl butyne	Isopropyl acetylene
13	Methyl butyrate	
17	Methyl chloride	Chloromethane
13, 17	Methyl chlorocarbonate	Methyl chloroformate
17	Methyl chloroform	
13, 17	Methyl chloroformate	Methyl chlorocarbona
14, 17	Methyl chloromethyl ether	CMME
26	Methyl cyanide	Acetonitrile
29	Methyl cyclohexane	
24	Methyl dichloroarsine	
107	Methyl dichlorosilane	
17	Methylene chloride	Dichloromethane
18, 107	Methylene diisocyanate	
7, 17	4,4-Methylene bis(2-chloroaniline)	
17	Methyl ethyl chloride	
14	Methyl ethyl ether	
19	Methyl ethyl ketone	Butanone
30	Methyl ethyl ketone peroxide	
7	Methyl ethyl pyridine	
13	Methyl formate	
8	Methyl hydrazine	Monomethyl hydrazi
17	Methyl iodide	
19	Methyl isobutyl ketone	
18, 107	Methyl isocyanate	
19	Methyl isopropenyl ketone	
105, 107	Methyl magnesium bromide	
105, 107	Methyl magnesium chloride	
105, 107	Methyl magnesium iodide	
20	Methyl mercaptan	Methanethiol

RGN	Names	Synonyms
13; 103	Methyl methacrylate	
16	Methyl naphthalene	
32	Methyl parathion	
13	Methyl pentanoate	Methyl valerate
13	Methyl propionate	
19	Methyl n-propyl ketone	
28, 103	Methyl styrene	
20	Methyl sulfide	Dimethyl sulfide
107	Methyl trichlorosilane	
13	Methyl valerate	Methyl pentanoate
19	Methyl vinyl ketone	Butene-2-one
7, 8	Methyl yellow	Dimethylamino azobenzene
32	Mevinphos	Phosdrin®
9	Mexacarbate	Dowco-139®
101	Mineral spirits	
32	Mintacol®	Paraoxon
9	Mipcin®	
9	Mobam®	
32	Mocap®	
22, 23, 24	Molybdenum	
24	Molybdenum anhydride	Molybdenum trioxide
24, 33, 105	Molybdenum sulfide	
24	Molybdenum trioxide	Molybdenum anhydride
24	Molybdic acid	
17, 19	Monochloroacetone	Chloroacetone
3, 17	Monochloroacetic acid	Chloroacetic acid
32	Monocrotophos	Azodrin®
4, 7	Monoethanol amine	
1	Monofluorophosphoric acid	
4, 7	Monoisopropanolamine	
8	Monomethyl hydrazine	Methyl hydrazine
7	Morpholine	
101	Municipal solid waste	Refuse
1	Muriatic acid	Hydrochloric acid
12	Nabam	
21, 107	Nack	Sodium-potassium alloy
21, 107	Nak	Sodium-potassium alloy
101	Naptha	
16	Naphthalene	
31	Naphthol	
7	Naphthylamine	
20	Naphthyl mercaptan	
27, 102	Naphtite	Trinitronaphthalene
17	Nemagon®	Dibromochloropropane
29	Neohexane	Dimethyl butane
27	4-NBP	Nitrobiphenyl
12	Niacide®	
32	Nialate	Ethion
22, 24	Nickel	
24	Nickel acetate	
24, 107	Nickel antimonide	
24	Nickel arsenate	Nickelous arsenate
24	Nickel arsenite	Nickelous arsenite
24	Nickel carbonyl	Nickel tetracarbonyl
24	Nickel chloride	Nickelous chloride
11, 24	Nickel cyanide	
24, 104	Nickel nitrate	Nickelous nitrate
24	Nickelous arsenate	Nickel arsenate
24	Nickelous arsenite	Nickel arsenite
24	Nickelous chloride	Nickel chloride
24, 104	Nickelous nitrate	Nickel nitrate
24	Nickel selenide	
24, 33, 105	Nickel subsulfide	
24	Nickel sulfate	
24	Nickel tetracarbonyl	Nickel carbonyl
7, 27	Nitraniline	Nitroaniline
2	Nitric acid	
7, 27	Nitroaniline	Nitraniline
27	Nitrobenzene	Nitrobenzol
27	Nitrobenzol	Nitrobenzene
27	Nitrobiphenyl	4-NBP
104	Nitrocalcity	Calcium nitrate
27, 102	Nitrocellulose	Cellulose nitrate, gun cotton
17, 27	Nitrochlorobenzene	Chloronitrobenzene
104	Nitrogen dioxide	
27, 102	Nitromannite	Mannitol hexanitrate
7, 17	Nitrogen mustard	
104	Nitrogen tetroxide	
27, 102	Nitroglycerin	Trinitroglycerin
2	Nitrohydrochloric acid	
27, 31	Nitrophenol	
27	Nitropropane	
7, 27	Nitrosodimethylamine	Dimethylnitrosiamine
27, 102	Nitrosoguanidine	
27, 102	Nitrostarch	Starch nitrate
27	Nitroxylene	Nitroxylol, Dimethylnitrobenzen
27	Nitroxylos	Nitroxylene, Dimethylnitrobenze
7, 27	N-Nitrosodimethylamine	Dimethylnitrosoamine
31	Nonyl phenol	
107	Nonyl trichlorosilane	
29	Nonane	
28	Nonene	
19	Nonanone	
5	Nonanal	
6	Nonanol	
107	Octadecyl trichlorosilane	
28	Octadecyne	
6, 32	Octamethylpyrophosphoramide	Schradan
5	Octanal	
29	Octane	

RGN	Names	Synonyms
19	Octanone	
4	Octanol	
28	Octene	
30	Octyl peroxide	Caprylyl peroxide
107	Octyl trichlorosilane	
101	Oil of bergamot	
1	Oil of vitriol	Sulfuric acid
2, 24	Oleum	Sulfuric acid
101	Orris root	
31	Orthozenol	o-Phenyl phenol
23, 24	Osmium	
24, 109	Osmium amine nitrate	
24, 109	Osmium amine perchlorate	
9	Oxamyl	
3	Oxalic acid	
109, 107	Oxygen difluoride	
17	PCB	Polychlorinated biphenyl
101	Paper	
32	Paraoxon	Mintacol®
32	Parathion	
24	Paris green	Copper acetoarsenite
12	PETD	Polyram combi®
	PETN	Pentaerythrityl tetranitrate, Pentaerythritol tetranitrate
27, 102		
105	Pentaborane	
17, 31	Pentachlorophenol	
27, 102	Pentaerythritol tetranitrate	Pentaerythrityl tetranitrate, PETN
16	Pentamethyl benzene	
29	Pentane	
20	Pentanethiol	Amyl mercaptan
5	Pentanal	Valeraldehyde
19	Pentanone	
28	Pentene	Amylene
7	Pentylamine	
28	Pentyne	
3, 30	Peracetic acid	Peroxyacetic acid
2	Perbromic acid	
2	Perchloric acid	
17	Perchloroethylene	Tetrachloroethylene
17, 20	Perchloromethyl mercaptan	Trichloromethylsulfenylchloride
2	Perchlorous acid	
109	Perchloryl fluoride	
2	Periodic acid	
1	Permonosulfuric acid	
3, 30	Peroxyacetic acid	Peracetic acid
12	PETD	Polyram combi®
101	Petroleum naptha	
101	Petroleum oil	
16	Phenanthrene	
7, 24	Phenarsazine chloride	Diphenylamine chloroarsine

RGN	Names	Synonyms
31	Phenol	Carbolic acid
3	Phenyl acetic acid	
26	Phenyl acetonitrile	
16	Phenyl acetylene	
7	Phenylaniline	Diphenylamine
16	Phenylbenzene	Diphenyl
16	Phenylbutane	Butylbenzene
17, 19	Phenylchloromethyl ketone	Chloroacetophenone
24	Phenyl dichloroarsine	
7	Phenylene diamine	Diaminobenzene
16	Phenylethane	Ethylbenzene
8	Phenyl hydrazine hydrochloride	
31	o-Phenyl phenol	Orthozenol, Dowicide 1
107	Phenyl trichlorosilane	
26	Phenyl valerylnitrile	
16	Phenylpropane	Propylbenzene
31	Phloroglucinol	
32	Phorate	Thimet®
32	Phosdrin®	Mevinphos
32	Phosphamidon	Dimecron®
105	Phosphine	Hydrogen phosphide
20, 32	Phospholan	Cyolan®
105, 107	Phosphonium iodide	
1	Phosphoric acid	
107	Phosphoric anhydride	Phosphorus pentoxide
33, 105, 107	Phosphoric sulfide	Phosphorus pentasulfide
105, 107	Phosphorus (Amorphous red)	
105	Phosphorus (White-Yellow)	
33, 105	Phosphorus heptasulfide	
104, 107	Phosphorus oxybromide	Phosphoryl bromide
104, 107	Phosphorus oxychloride	Phosphoryl chloride
107	Phosphorus pentachloride	Phosphoric chloride
33, 105, 107	Phosphorus pentasulfide	Phosphoric sulfide
107	Phosphorus pentoxide	Phosphoric anhydride
33, 105, 107	Phosphorus sesquisulfide	Tetraphosphorus trisulfide
107	Phosphorus tribromide	
107	Phosphorus trichloride	
33, 105, 107	Phosphorus trisulfide	
104, 107	Phosphoryl bromide	Phosphorus oxybromide
104, 107	Phosphoryl chloride	Phosphorus oxychloride
3	Phthalic acid	
7, 27, 102	Picramide	Trinitroaniline
27, 31, 102	Picric acid	Trinitrophenol
7	Picridine	
17, 27, 102	Picryl chloride	Chlorotrinitrobenzene
7	Piperidine	
9	Pirimicarb	
14	Polyglycol ether	
101	Polyamide resin	
17	Polybrominated biphenyl	

RGN	Names	Synonyms
28	Polybutene	
	Polychlorinated biphenyls	PCB, Askarel, Arochlor®, Chlorextol, Inerteen
17		
17	Polychlorinated triphenyls	
101	Polethylene	
101	Polyester resin	
101	Polymeric oil	
18, 107	Polyphenyl polymethylisocyanate	
28, 101	Polypropylene	
12	Polyram combi®	PETD
20, 101	Polysulfide polymer	
101	Polystyrene	
101	Polyurethane	
101	Polyvinyl acetate	
101	Polyvinyl chloride	
27, 102	Polyvinyl nitrate	
32	Potasan	
21, 107	Potassium	
15	Potassium acid fluoride	Potassium fluoride
10	Potassium aluminate	
24	Potassium arsenate	
24	Potassium arsenite	
15	Potassium bifluoride	Potassium fluoride
24, 104	Potassium bichromate	Potassium dichromate
104	Potassium bromate	
10	Potassium butoxide	
11	Potassium cyanide	
104	Potassium dichloroisocyanurate	
24, 104	Potassium dichromate	Potassium bichromate
27, 102	Potassium dinitrobenzfuroxan	
15	Potassium fluoride	Potassium acid fluoride
105, 107	Potassium hydride	
10	Potassium hydroxide	Caustic potash
102, 104	Potassium nitrate	Saltpeter
25	Potassium nitride	
104	Potassium nitrite	
107	Potassium oxide	
104	Potassium perchlorate	
24, 104	Potassium permanganate	
104, 107	Potassium peroxide	
33, 105	Potassium sulfide	
9	Promecarb	
5	Propanal	Propionaldehyde
29	Propane	
20	Propanethiol	Propyl mercaptan
3	Propanoic acid	Propionic acid
4	Propanol	Propyl alcohol
17	Propargyl bromide	
17	Propargyl chloride	
4	2-Propen-1-ol	Allyl alcohol

RGN	Names	Synonyms
13	Propiolactone	
5	Propionaldehyde	Propanal
6	Propionamide	
3	Propionic acid	Propanoic acid
26	Propionitrile	
13	Propyl acetate	
4	Propyl alcohol	Propanol
7	Propylamine	
16	Propyl benzene	Phenyl propane
17	Propylene dichloride	Dichloropropane
4	Propylene glycol	
4, 14	Propylene glycol monomethyl ether	
30, 103	Propylene oxide	
7	Propyleneimine	Methyl aziridine
14	Propyl ether	
13	Propyl formate	
20	Propyl mercaptan	Propanethiol
107	Propyl Trichlorosilane	
32	Prothoate	Fostion®
16	Pseudocumene	1,2,4 trimethylbenzene
7	Pyridine	
31	Pyrogallol	
107	Pyrosulfuryl chloride	Disulfuryl chloride
27	Pyroxylin	Collodion
19	Quinone	Benzoquinone
22	Raney nickel	
27, 102	RDX	Cyclotrimethylene trinitran ne
101	Refuse	Municipal solid waste
101	Resins	
31	Resorcinol	
21	Rubidium	
24	Salicylated mercury	Mercuric salicylate
31	Saligenin	
102, 104	Saltpeter	Potassium nitrate
	Schradan	Octamethyl pyrophosphoran ide, OMPA
6, 32		
1, 24	Selenious acid	Selenous acid
22, 23, 24	Selenium	
12, 24	Selenium diethyldithiocarbamate	
15, 24	Selenium fluoride	
1, 24	Selenous acid	Selenious acid
107	Silicochloroform	Trichlorosilane
107	Silicon tetrachloride	
15, 107	Silicon tetrafluoride	
24, 102, 105, 107	Silver acetylide	
24, 102	Silver azide	
11, 24	Silver cyanide	
24, 104	Silver nitrate	
24, 25, 102	Silver nitride	
24, 27, 102	Silver styphnate	Silver trinitroresorcinate

RGN	Names	Synonyms
24, 33, 105	Silver sulfide	
24, 102	Silver tetrazene	
24, 27, 102	Silver trinitroresorcinate	Silver styphnate
10, 107	Slaked lime	Calcium oxide
102	Smokeless powder	
10, 107	Sodamide	Sodium amide
104	Soda niter	Sodium nitrate
21, 105, 107	Sodium	
15	Sodium acid fluoride	Sodium fluoride
10, 105	Sodium aluminate	
105, 107	Sodium aluminum hydride	
10, 107	Sodium amide	Sodamide
24	Sodium arsenate	
24	Sodium arsenite	
102	Sodium azide	
24, 104	Sodium bichromate	Sodium dichromate
15	Sodium bifluoride	Sodium fluoride
104	Sodium bromate	
24	Sodium cacodylate	Sodium dimethylarsenate
10	Sodium carbonate	
104	Sodium carbonate peroxide	
104	Sodium chlorate	
104	Sodium chlorite	
24	Sodium chromate	
11	Sodium cyanide	
104	Sodium dichloroisocyanurate	
24, 104	Sodium dichromate	Sodium bichromate
24	Sodium dimethylarsenate	Sodium cacodylate
15	Sodium fluoride	Sodium acid fluoride
105, 107	Sodium hydride	
10	Sodium hydroxide	Caustic soda, Lye
10, 104	Sodium hypochlorite	
105	Sodium hyposulfite	Sodium thiosulfate
10, 107	Sodium methylate	Sodium methoxide
10, 107	Sodium methoxide	Sodium methylate
24	Sodium molybdate	
10, 107	Sodium monoxide	Sodium oxide
104	Sodium nitrate	Soda niter
25	Sodium nitride	
104	Sodium nitrite	
10, 107	Sodium oxide	Sodium monoxide
31	Sodium pentachlorophenate	
104	Sodium perchlorate	
24, 104	Sodium permanganate	
104, 107	Sodium peroxide	
31	Sodium phenolsulfonate	
27, 102	Sodium picramate	
101	Sodium polysulfide	
21, 107	Sodium potassium alloy	Nak, Nack
24	Sodium selenate	
24, 33, 105	Sodium sulfide	
105	Sodium thiosulfate	
24, 107	Stannic chloride	Tin tetrachloride
33, 105	Stannic sulfide	
27, 102	Starch nitrate	Nitrostarch
16	Stilbene	Diphenyl ethylene
101	Stoddard solvent	
24	Strontium	
24	Strontium arsenate	
24, 104	Strontium dioxide	Strontium peroxide
24, 33, 105	Strontium monosulfide	
24, 104	Strontium nitrate	
104	Strontium peroxide	Strontium dioxide
24, 33, 105	Strontium tetrasulfide	
27, 31, 102	Styphnic acid	Trinitroresorcinol
16, 28, 103	Styrene	Vinylbenzene
3	Succinic acid	
30	Succinic acid peroxide	
107	Sulfonyl chloride	Sulfuryl chloride
107	Sulfonyl flouride	
32	Sulfotepp	Dithione®, Blada-Fum®
107	Sulfur chloride	Sulfur monochloride
101	Sulfur (elemental)	
2, 107	Sulfuric acid	Oil of Vitriol, Oleum
104, 107	Sulfuric anhydride	Sulfur trioxide
107	Sulfur monochloride	Sulfur chloride
20	Sulfur mustard	
107	Sulfur oxychloride	Thionyl chloride
15, 107	Sulfur pentafluoride	
104, 107	Sulfur trioxide	Sulfuric anhydride
107	Sulfuryl chloride	Sulfonyl chloride
107	Sulfuryl fluoride	Sulfonyl fluoride
32	Supracide®	Ultracide®
32	Surecide®	Cyanophenphos
101	Synthetic rubber	
14, 17	TCDD	Tetrachlorodibenzo-p-dioxin
32	TEDP	Tetrethyl dithionopyrophosphate
24	TEL	Tetraethyl lead
6, 32	TEPA-	Tris-(1-aziridinyl) phosphine oxid
32	TEPP	Tetraethyl pyrophosphate
14	THF	Tetrahydrofuran
7	TMA	Trimethylamine
24	TML	Tetramethyl lead
27, 102	TNB	Trinitrobenzene
27, 102	TNT	Trinitrotoluene
101	Tall oil	
101	Tallow	
101	Tar	
15, 24	Tellurium hexafluoride	
9, 20	Temik®	Aldicarb

RGN	Names	Synonyms
105	Tetraborane	
14, 17	Tetrachlorodibenzo-p-dioxin	TCDD
17	Tetrachloroethane	
17	Tetrachloroethylene	Perchloroethylene
17	Tetrachloromethane	Carbon tetrachloride
17, 31	Tetrachlorophenol	
14, 17	Tetrachloropropyl ether	
28	Tetradecene	
32	Tetraethyl dithionopyrophosphate	TEDP
24	Tetraethyl lead	TEL
32	Tetraethyl pyrophosphate	TEPP
14	Tetrahydrofuran	THF
7	Tetramethylenediamine	
24	Tetramethyl lead	TML
26	Tetramethyl succinonitrile	
27, 102	Tetranitromethane	
16	Tetraphenyl ethylene	
33, 105, 107	Tetraphosphorus trisulfide	Phosphorus sesquisulfide
24, 25, 102	Tetraselenium tetranitride	
20	Tetrasul	Animert® V-101
25, 102	Tetrasulfur tetranitride	
8, 102	Tetrazene	
24	Thallium	
24, 25, 102	Thallium nitride	
24, 33, 105	Thallium sulfide	
24	Thallous sulfate	
32	Thimet®	Phorate
107	Thionyl chloride	Sulfur oxychloride
107	Thiocarbonyl chloride	Thiophosgene
17, 20	Thiodan®	Endosulfan
32	Thionazin	Zinophos®
107	Thionyl chloride	Sulfur oxychloride
107	Thiophosgene	Thiocarbonyl chloride
107	Thiophosphoryl chloride	
12	Thiram	
22, 23, 24	Thorium	
24, 107	Tin tetrachloride	Stannic chloride
24, 107	Titanic chloride	Titanium tetrachloride
22, 23, 24	Titanium	
24, 33, 105	Titanium sesquisulfide	
24	Titanium sulfate	
24, 33, 105	Titanium sulfide	
24, 107	Titanium tetrachloride	Titanic chloride
7	TMA	Trimethylamine
27, 102	TNB	Trinitrobenzene
27, 102	TNT	Trinitrotoluene
5	Tolualdehyde	
16	Toluene	Toluol, Methylbenzene
18, 107	Toluene diisocyanate	
3	Toluic acid	

RGN	Names	Synonyms
7	Toluidine	Aminotoluene
16	Toluol	Toluene, Methylbenzer
6	Topcide®	Benzadox
9, 26	Tranid®	
6, 32	Triamphos	Wepsyn® 155
17	Tribromomethane	Bromoform
107	Tri-n-butylaluminum	
24, 25	Tricadmium dinitride	
25	Tricalcium dinitride	
24, 25	Triceslum nitride	
5, 17	Trichloroacetaldehyde	Chloral hydrate
107	Trichloroborane	
17	Trichloroethane	
17	Trichloroethene	Trichloroethylene
104	Trichloroisocyanuric acid	
17	Trichloromethane	Chloroform
17, 20	Trichloromethyl sulfenyl chloride	Perchloromethyl merc
17, 27, 102	Trichloronitromethane	Chloropicrin
3, 17	Trichlorophenoxyacetic acid	
17	Trichloropropane	
107	Trichlorosilane	Silicochloroform
28	Tridecene	
4, 7	Triethanolamine	
105, 107	Triethyl aluminum	
24, 105, 107	Triethyl antimony	Triethylstibine
24, 107	Triethyl arsine	
24	Triethyl bismuthine	
7	Triethylamine	
6, 32	Triethylene phosphoramide	Tris(1-aziridinyl) phosphine oxide
7	Triethylene tetraamine	
24, 105, 107	Triethyl stibine	Triethyl antimony
17	Trifluoroethane	
17	Trifluoromethylbenzene	Benzotrifluoride
105, 107	Triisobutyl aluminum	
24, 25, 102	Trilead dinitride	
24, 25, 102	Trimercury dinitride	
105, 107	Trimethyl aluminum	
7	Trimethylamine	TMA
24, 105	Trimethyl antimony	Trimethylstibine
24, 107	Trimethyl arsine	
16	1,2,4-Trimethylbenzene	Pseudocumene
16	1,3,5-Trimethylbenzene	Mesitylene
24	Trimethyl bismuthine	
29	Trimethyl pentane	Isooctane
24, 105, 107	Trimethylstibine	Trimethyl antimony
105, 107	Tri-n-butylborane	
7, 27, 102	Trinitroaniline	Picramide
14, 27	Trinitroanisole	Trinitrophenylmethyl
27, 102	Trinitrobenzene	TNB

RGN	Names	Synonyms
3, 27, 102	Trinitrobenzoic acid	
27, 102	Trinitroglycerin	Nitroglycerin
27, 102	Trinitronaphthalene	Naphtite
27, 31, 102	Trinitrophenol	Picric acid
14, 27	Trinitrophenyl methyl ether	Trinitroanisole
27, 31, 102	Trinitroresorcinol	Styphnic acid
27, 102	Trinitrotoluene	TNT
105, 107	Trioctyl aluminum	
16	Triphenyl ethylene	
16	Triphenyl methane	
7	Tripropylamine	
24, 107	Tripropyl stibine	
24, 107	Trisilyl arsine	
6, 32	Tris-(1-aziridinyl) phosphine oxide	TEPA, Triethylene phosphoramide
32	Trithion	
24, 25	Trithorium tetranitride	
24, 107	Trivinyl stibine	
9	Tsumacide®	
24	Tungstic acid	
101	Turpentine	
8	UDMH	Dimethyl hydrazine
32	Ultracide®	Supracide®
28	Undecene	
101	Unisolve	
24, 104	Uranium nitrate	Uranyl nitrate
24, 33, 105	Uranium sulfide	
24, 104	Uranyl nitrate	Uranium nitrate
5	Urea formaldehyde	
27, 102, 104	Urea nitrate	
17, 103	VC	Vinylidene chloride
5	Valeraldehyde	Pentanal
6	Valeramide	
3	Valeric acid	
24	Vanadic acid anhydride	Vanadium pentoxide
24	Vanadium oxytrichloride	
24	Vanadium pentoxide	Vanadic acid anhydride
24	Vanadium sulfate	Vanadyl sulfate
24	Vanadium tetroxide	
24, 107	Vanadium trichloride	
24	Vanadium trioxide	
24	Vanadyl sulfate	Vanadium sulfate
32	Vapona®	DDVP
13, 103	Vinyl acetate	
102	Vinyl azide	
16, 28, 103	Vinylbenzene	Styrene
17, 103	Vinyl chloride	
26, 103	Vinyl cyanide	
14	Vinyl ethyl ether	
17	Vinyl isopropyl ether	
17, 103	Vinylidene chloride	VC
28, 103	Vinyl toluene	
107	Vinyl trichlorosilane	
20, 32	VX	
106	Water	
101	Waxes	
6, 32	Wepsyn® 155	Triamiphos
101	Wood	
9	Zectran®	Dowco 139®
22, 23, 24	Zinc	
24, 105, 107	Zinc acetylide	
24, 104	Zinc ammonium nitrate	
24	Zinc arsenate	
24	Zinc arsenite	
24	Zinc chloride	
24, 102, 104, 107	Zinc dioxide	Zinc peroxide
24, 105, 107	Zinc ethyl	Diethyl zinc
11, 24	Zinc cyanide	
24, 15	Zinc fluoborate	
24, 104	Zinc nitrate	
24, 104	Zinc permanganate	
24, 102, 104, 107	Zinc peroxide	Zinc dioxide
24, 107	Zinc phosphide	
12, 24	Zinc salts of dimethyl dithiocarbamic acid	
24	Zinc sulfate	
24, 33, 105	Zinc sulfide	
12, 24	Zineb®	
20	Zinophos®	Thiozin
12, 24	Ziram®	
22, 23, 24	Zirconium	
24	Zirconium chloride	Zirconium tetrachloride
24, 104	Zirconium picramate	
24	Zirconium tetrachloride	Zirconium chloride