



HAZARDOUS WASTE TRAINING MANUAL



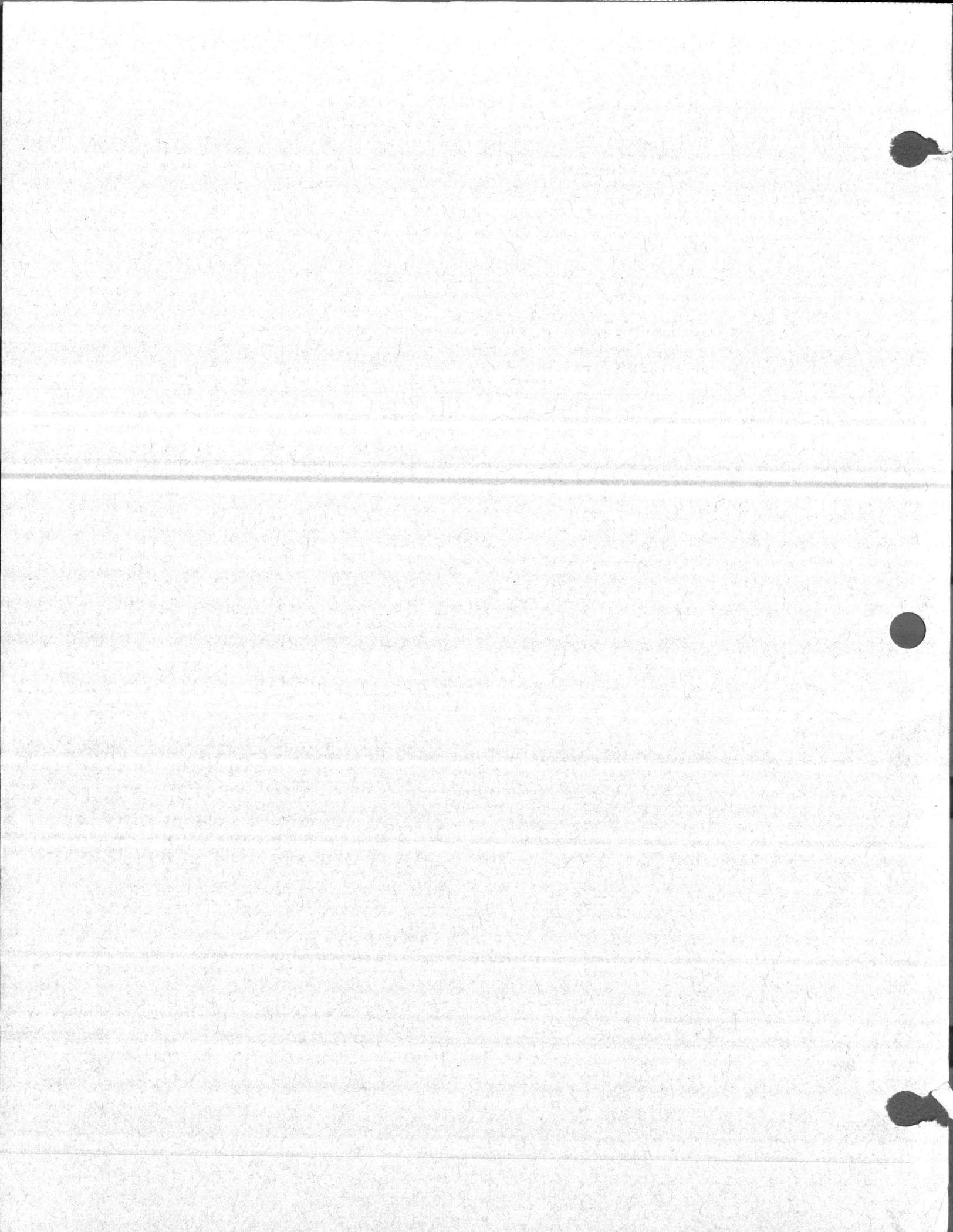
COMPLIANCE TRAINING FOR:
HMDCs, HMDOs
SITE MANAGERS
HANDLERS

Revised
NOVEMBER 1993

Updated
MAY 1994



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

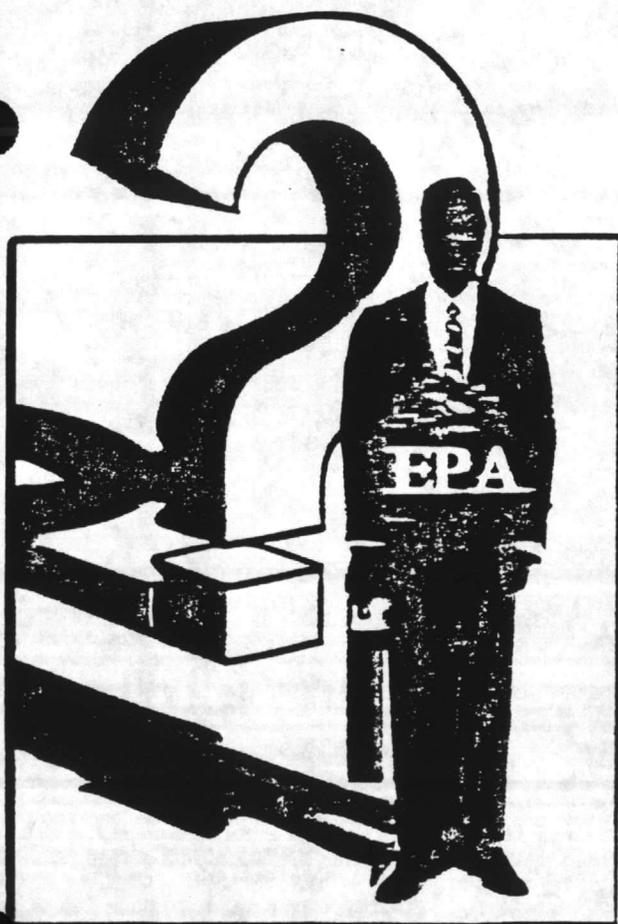


● Would You Be Ready If An EPA Inspector "Dropped In" Tomorrow?

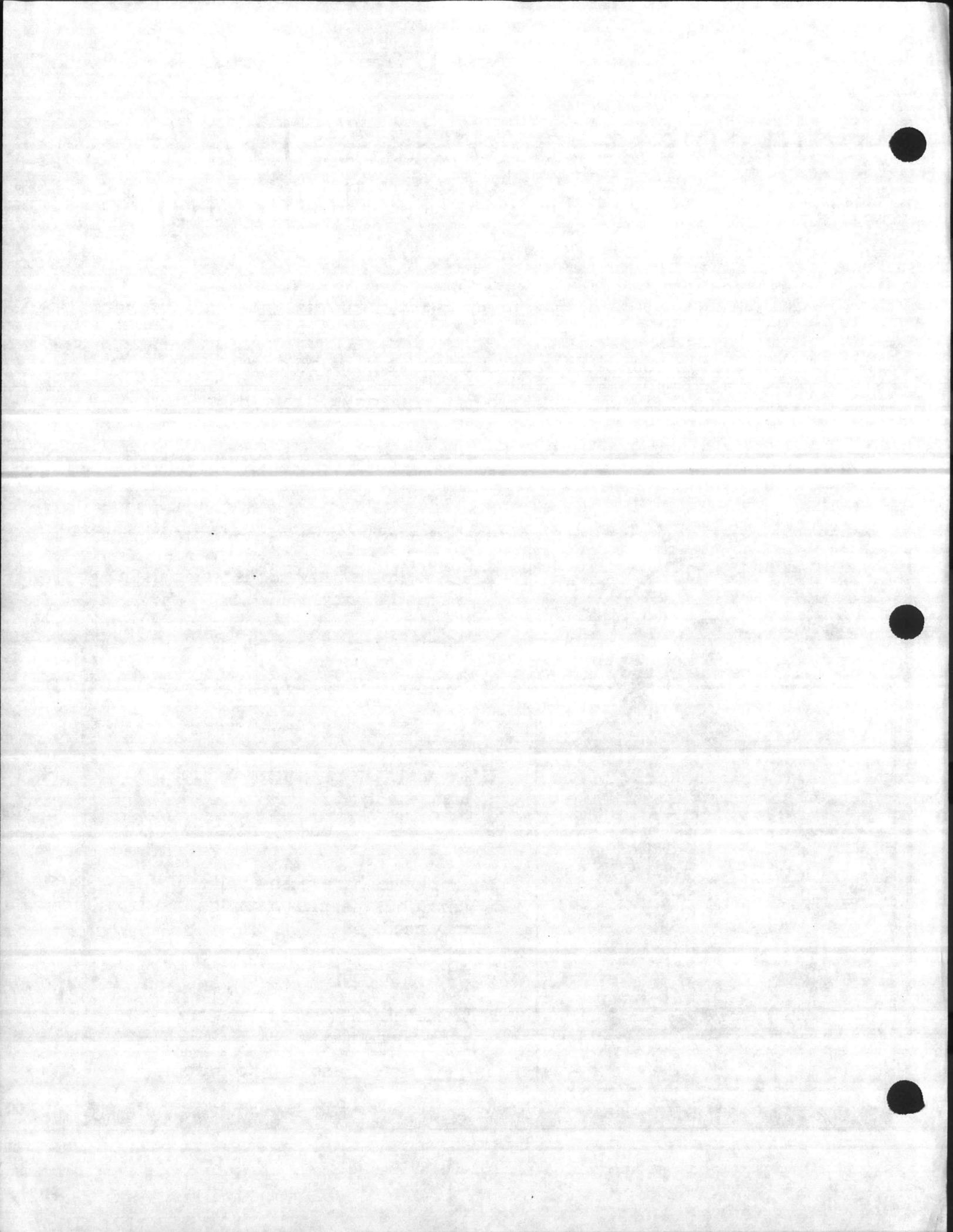
IT'S HARD TO KEEP UP WITH ALL THE CHANGES IN THE EPA REGULATIONS.
BUT YOU HAVE TO!

IT'S YOUR RESPONSIBILITY TO KEEP UP TO DATE!

CAN YOU ANSWER "YES" TO THE FOLLOWING QUESTIONS?



- 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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LIST OF INSTRUCTORS**

EMD PERSONNEL	Building	Exten.
HW Training Coordinator, Manual Editor:	67	5878
Carol S. Shores, Environmental Control Specialist		5837
Sammy Gwynn, Acting Director, Environmental Compliance Division	67	5878
John Riggs, Base HMDC	1103	1482
Sammy Gwynn, Head, Resource Conservation and Recovery Branch	67	5878
Scott Brewer, Head, Training Branch	1	5003
Danny Sharpe, Head, Environmental Compliance and Monitoring Branch	67	5878
MGySgt Ernest Palombi, Military Liason SNCO, AHMDC	1103	1482
Julie Shambaugh, Environmental Control Specialist, Head, Recycling Section	67	5878
Eugene Jones, Biological Technician	1103	1482
McArthur Farrow, Motor Vehicle Operator Foreman	913	5468
Sgt Randall Weyer, Hazardous Waste Instructor	1103	1482
Twylah Hardison, Recycling Specialist	913	1690
Karen Craig, Engineer, Planning (Air)	67	5068

EMD RECYCLING CENTER

For assistance with recycling	913	5478
For assistance with used oil pickup, soil/dry sweep	913	5478

GUEST INSTRUCTORS

Base Fire Department, Hazmat Team		2383
Base Safety Office		5725
Industrial Hygiene, Preventive Medicine Unit (Naval Hospital)		2707
For additional information on specific MCAS procedures, contact Mrs. Mary Wheat, Base Safety Office, MCAS, New River		6143

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SUMMARY OF DIVISIONS

EMD DIVISIONS	Building	Exten.
Assistant Chief of Staff	1	5003/2083
Deputy	1	5003/2083
Admininstration and Finance Off	1	5063/2083
Environmental Compliance Division	67	5063/5068
Environmental Compliance and Monitoring Br	67	5063/5068
Environmental Quality Control Sect	67	5063/5068
Environmental Quality Analysis Sect	65	2471/5977
Resource Conservation and Recovery Br	67	5063/5068
Recycling Center	913	5468/5478
Hazardous Waste Disposal Sect	1103	1482
Training Br	67	5063/5068
Environmental Planning Division	67	5837/5878
Installation Restoration Division	67	5837/5878
Fish and Wildlife Division	1103	2195/2148
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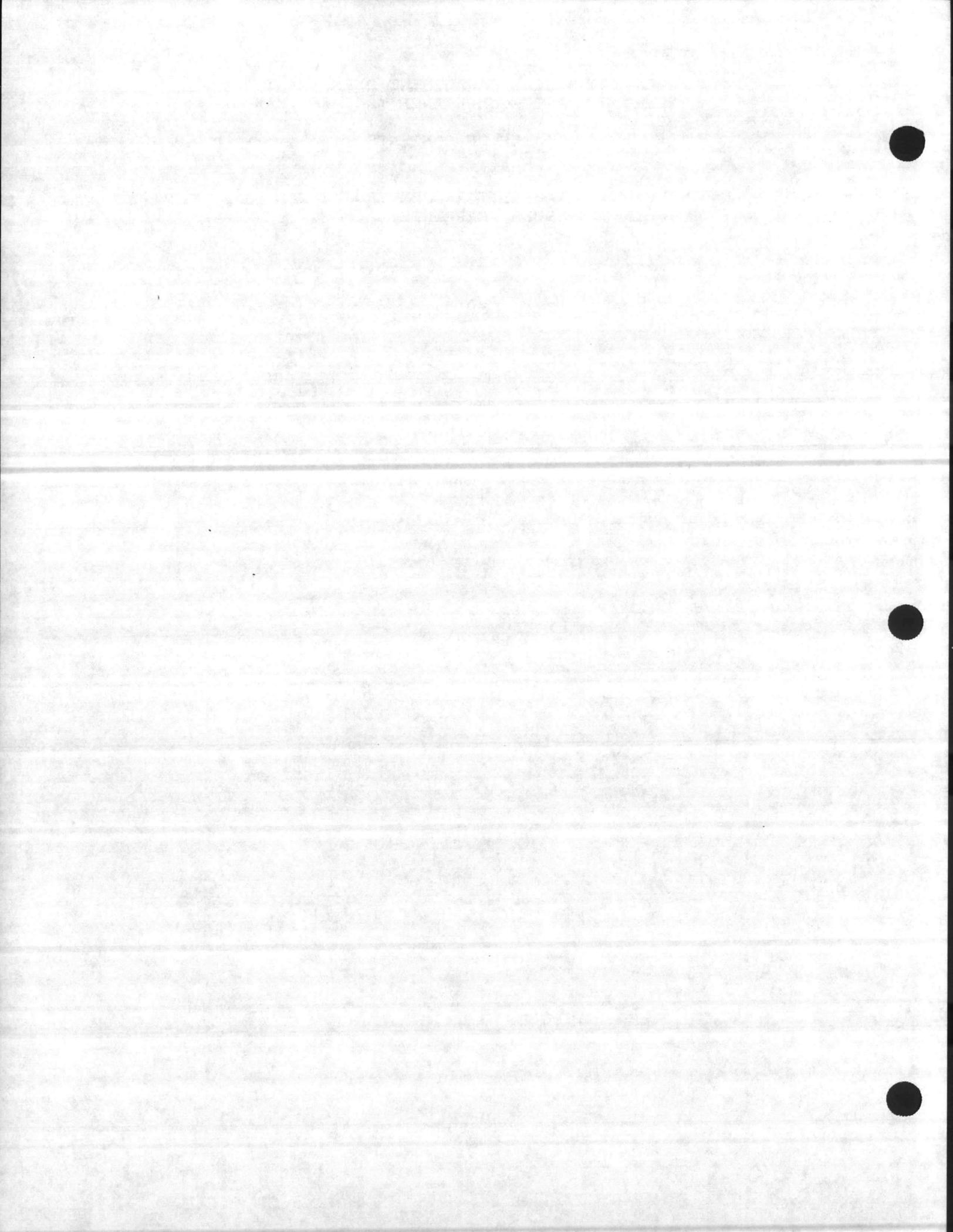
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COMMENTS

A. PERSONAL LIABILITY = INDIVIDUAL LIABILITY = ACCOUNTABILITY

IF

- YOU HAVE A DUTY, AND
- YOU FAIL TO PERFORM THAT DUTY, AND
- YOU HAVE NO LEGAL JUSTIFICATION, EXCUSE, OR IMMUNITY

THEN

- PREPARE TO FACE THE CONSEQUENCES

B. SO WHAT'S A BODY TO DO?

1. LEARN YOUR JOB

- a. learn the duties you have to perform and the results you have to achieve
- b. learn the rules you have to follow
- c. learn the authority you have been given
- d. learn the avenues of appeal and support when you own capabilities are insufficient

2. DO YOUR JOB

- a. Get the information you need. Use ECEs, internal audits, etc. **Never** ignore a potential problem
- b. Make early demands for necessary resources and follow-up aggressively
- c. Use all available resources. If you need legal or technical help call the EFD early and often.
- d. Never lie, misrepresent, falsify or cover-up
- e. Document compliance and efforts made to obtain necessary resources.

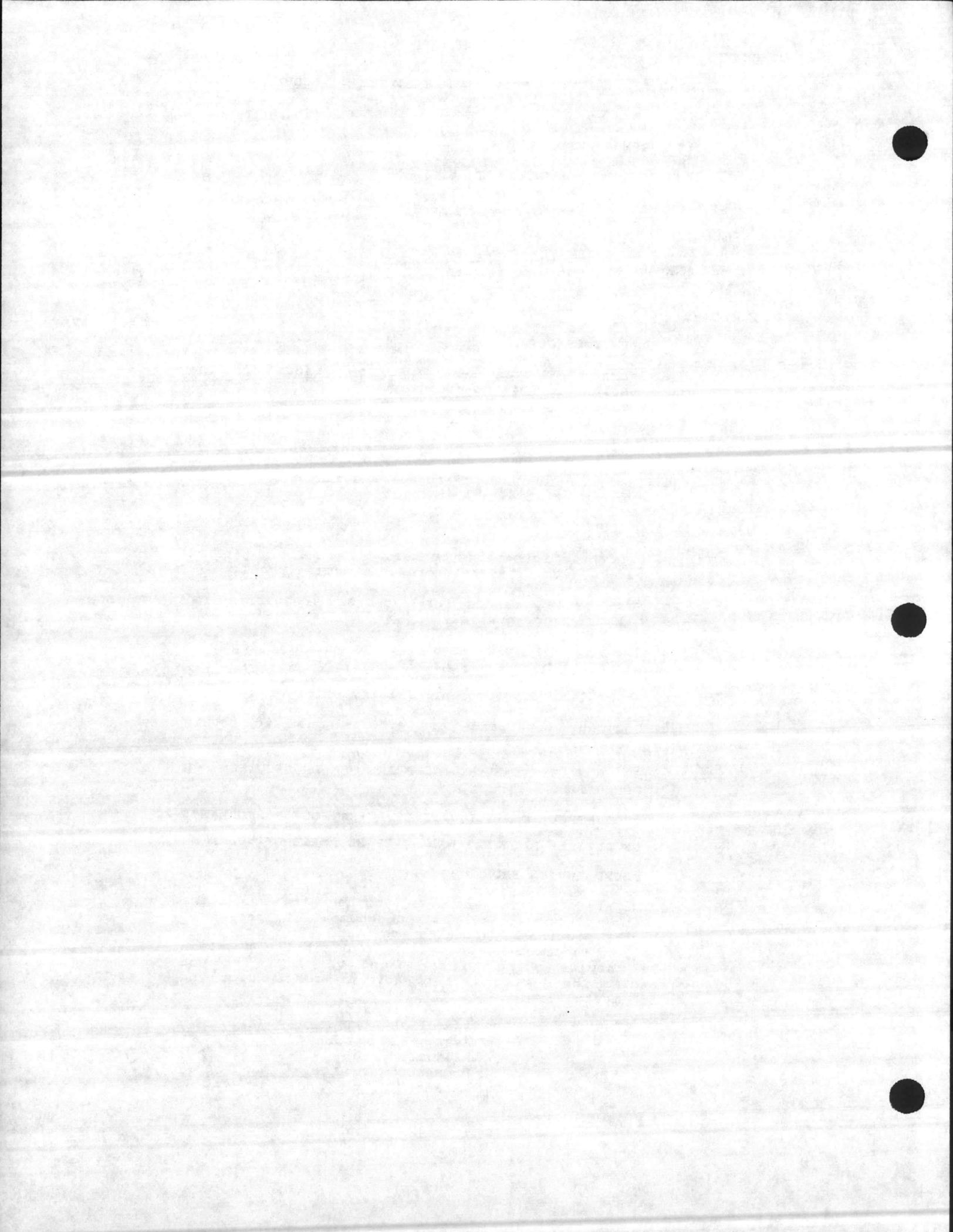
3. DO NOT BE DRIVEN BY FEAR OF PROSECUTION OR PENALTIES.

4. THOUGHTFUL, CAREFUL, AND CONSCIENTIOUS PERFORMANCE OF DUTY IS ALL THAT WILL EVER BE ASKED OF YOU.

5. SOUND ADVICE FROM A PROSECUTOR

"If you are a Federal employee, you need to bump up the problem [to your superiors], to document it, because I guarantee you that funding can be found [to resolve the violation] because no one wants to be in the position where they're going to be taking the heat for not arranging their budget to be able to comply with the environmental laws."

JANE F. BARRETT
Asst. U.S. Attorney
Baltimore, MD
Prosecutor in U.S. v. Dee
and U.S. v. Pond.





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

IN REPLY REFER TO:
CMC-LF/CL
14 Dec 92

WHITE LETTER NO. 20-92

From: Commandant of the Marine Corps
To: All General Officers
All Commanding Officers
All Officers in Charge

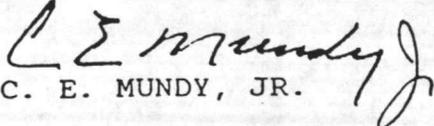
Subj: ENVIRONMENTAL COMPLIANCE

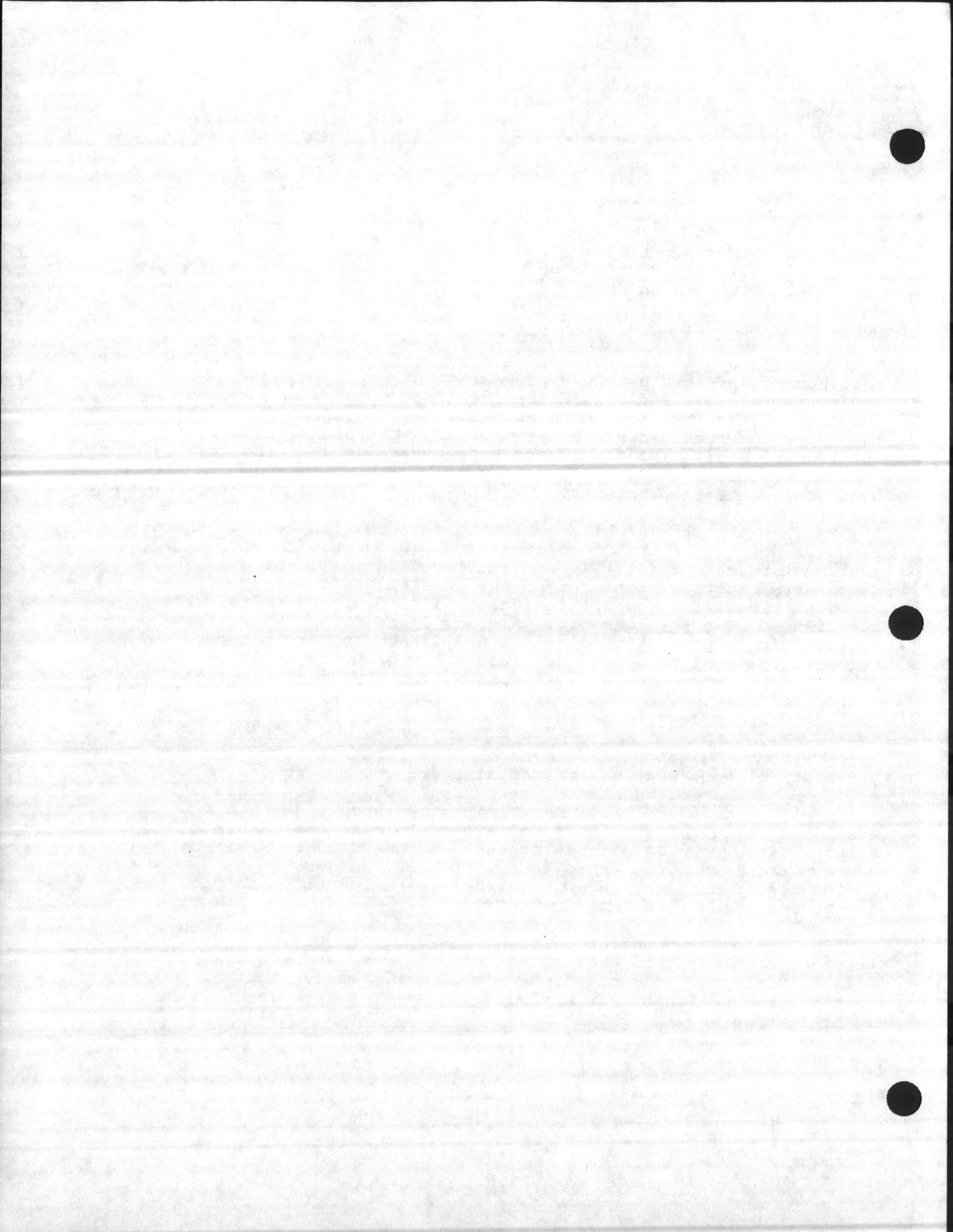
1. Compliance with federal, state, and local environmental requirements affects nearly every aspect of how we do business. Environmental laws and regulations continue to grow in terms of numbers, complexity, and costs and levy new and often unplanned burdens on our resources. In particular, the recent passage of the Federal Facilities Compliance Act now empowers states to levy fines and penalties for failure to comply with solid and hazardous waste requirements.

2. Marines must train while achieving full compliance with these mandates. Environmental compliance is a leadership challenge that must be met to fulfill our military mission. You, as Commanders, must be cognizant of the challenge and work diligently toward accomplishing the goal of full and sustainable compliance. The Environmental Campaign Plan, MCO P5090.2, The Commander's Guide to Environmental Compliance and Protection, and our Environmental Compliance Evaluation Program are tools published for your use in developing a strategy to attain this goal. Counsel for the Commandant has created a system to provide you with expert legal support.

3. Environmental compliance demands your personal attention. You must all emphasize environmental awareness and incorporate environmental compliance into every aspect of how you conduct business. Commanders must take affirmative steps, using all available technical and legal resources, to make compliance happen. Know your compliance status, assign adequate staff to address the issues, instruct your personnel, address any incidences of noncompliance immediately, and identify and plan for your environmental requirements.

4. Environmental compliance is the law and our duty. Your personal commitment is what is needed. We can, and we will, find ways to train and accomplish our mission in a manner that protects the health of our Marines, the American people, and the lands that we use. Compliance is cost effective, benefits everyone, and is what I expect.


C. E. MUNDY, JR.





UNITED STATES MARINE CORPS
EASTERN AREA COUNSEL OFFICE
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5001

IN REPLY REFER TO:
6280.30
EACO
27 Oct 1992

MEMORANDUM FOR STAFF JUDGE ADVOCATES AND ENVIRONMENTAL MANAGERS

Subj: FEDERAL FACILITY COMPLIANCE ACT OF 1992

Ref: (a) CMC (LFL/CL) msg 160130Z Oct 92

Encl: (1) Selected Provisions of the FFCA

1. Earlier this month the President signed into law the Federal Facility Compliance Act of 1992 (FFCA). Implementation of this Act has the potential to significantly impact Marine Corps facilities. This memorandum is intended to provide additional information to assist in understanding the purpose and consequences of the FFCA.

2. The FFCA amends only the Solid Waste Disposal Act, which is often referred to by the title of one of its amendments, the Resource Conservation and Recovery Act, or RCRA. In other words, the FFCA addresses only the handling and disposal of hazardous and non-hazardous solid waste. Contrary to indications in some of the news media, the Act is not an amendment of the Clean Water Act or Superfund (the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)).

3. As it concerns the Marine Corps, the FFCA addresses issues of federal sovereign immunity, EPA administrative enforcement actions against federal facilities, federal facility inspections or assessments, the handling of hazardous waste generated on a public vessel, the identification of munitions as hazardous waste, and the classification of waste processed by "federally owned treatment works" (federally operated sewage treatment facilities). A more detailed discussion of the Act's provisions is contained in the enclosure.

4. One of the major impacts of the FFCA is the waiver of sovereign immunity which subjects federal facilities to civil and administrative penalties for violation of waste disposal regulations. Be advised that the reference directs that the receipt of any solid or hazardous waste Notices of Violation should be immediately reported to Headquarters (LFL or CL).

5. Please make the widest appropriate dissemination of this memorandum. Any questions that might arise can be directed to the undersigned at DSN 484-5053/5054.

D. B. Mercier

D. B. Mercier
Lieutenant Colonel
Associate Counsel, Environmental Law

Selected Provisions of the FFCA

FEDERAL SOVEREIGN IMMUNITY

The FFCA expressly waives the federal government's sovereign immunity and subjects federal agencies, including the Marine Corps, to civil and administrative fines and penalties regardless of whether those fines and penalties are punitive or coercive in nature, or are imposed for isolated, intermittent, or continuing violations. This provision reverses that portion of the Supreme Court case of Department of Energy v. Ohio, decided earlier this year, which applied to the Solid Waste Disposal Act.

Unless otherwise required by presently existing State law, any funds collected from fines and penalties shall be used by the State only for projects designed to improve or protect the environment or to defray the costs of environmental protection or enforcement.

The Act makes it clear that federal facilities will pay reasonable nondiscriminatory service charges assessed in connection with a Federal, State, interstate, or local solid waste or hazardous waste regulatory program. A reasonable service charge is defined to include fees or charges assessed in connection with the processing and issuance of permits; renewal of permits; amendments of permits; review of plans, studies, and other documents; and inspections and monitoring of facilities.

The FFCA clarifies that no agent, employee, or officer of the United States shall be personally liable for any civil penalty under any solid or hazardous waste law with respect to an act or omission performed within the scope of that individual's official duties.

EPA ADMINISTRATIVE ENFORCEMENT

The Act provides EPA the authority to commence an administrative enforcement action against any Federal agency in the same manner and under the same circumstances as an action would be initiated against another person. No administrative order will become final until the federal agency subject to the order has an opportunity to confer with the EPA Administrator. Any voluntary resolution or settlement of the enforcement action must be set forth in a consent order.

FACILITY ENVIRONMENTAL ASSESSMENTS

The FFCA requires EPA to inspect each federal facility annually to enforce compliance with the regulations

governing the treatment, storage, or disposal of hazardous waste. EPA shall be reimbursed for the costs of its inspection by the agency operating the facility inspected. Any State with an authorized hazardous waste program may also conduct an inspection to enforce the federal facility's compliance with the State hazardous waste program.

WASTE GENERATED ON PUBLIC VESSELS

With limited exceptions, the Act provides that any hazardous waste generated on a public vessel is not subject to the storage, manifest, inspection, or recordkeeping requirements of the Solid Waste Disposal Act until the waste is transferred to a shore facility.

MUNITIONS

The EPA is required to consult with the Secretary of Defense and appropriate State officials, and within 6 months of enactment of the FFCA, EPA must propose regulations that identify when military chemical and conventional munitions become hazardous waste, and provide for their safe transportation and storage. Within 2 years of enactment, and following public notice and an opportunity for comment, EPA must promulgate those regulations.

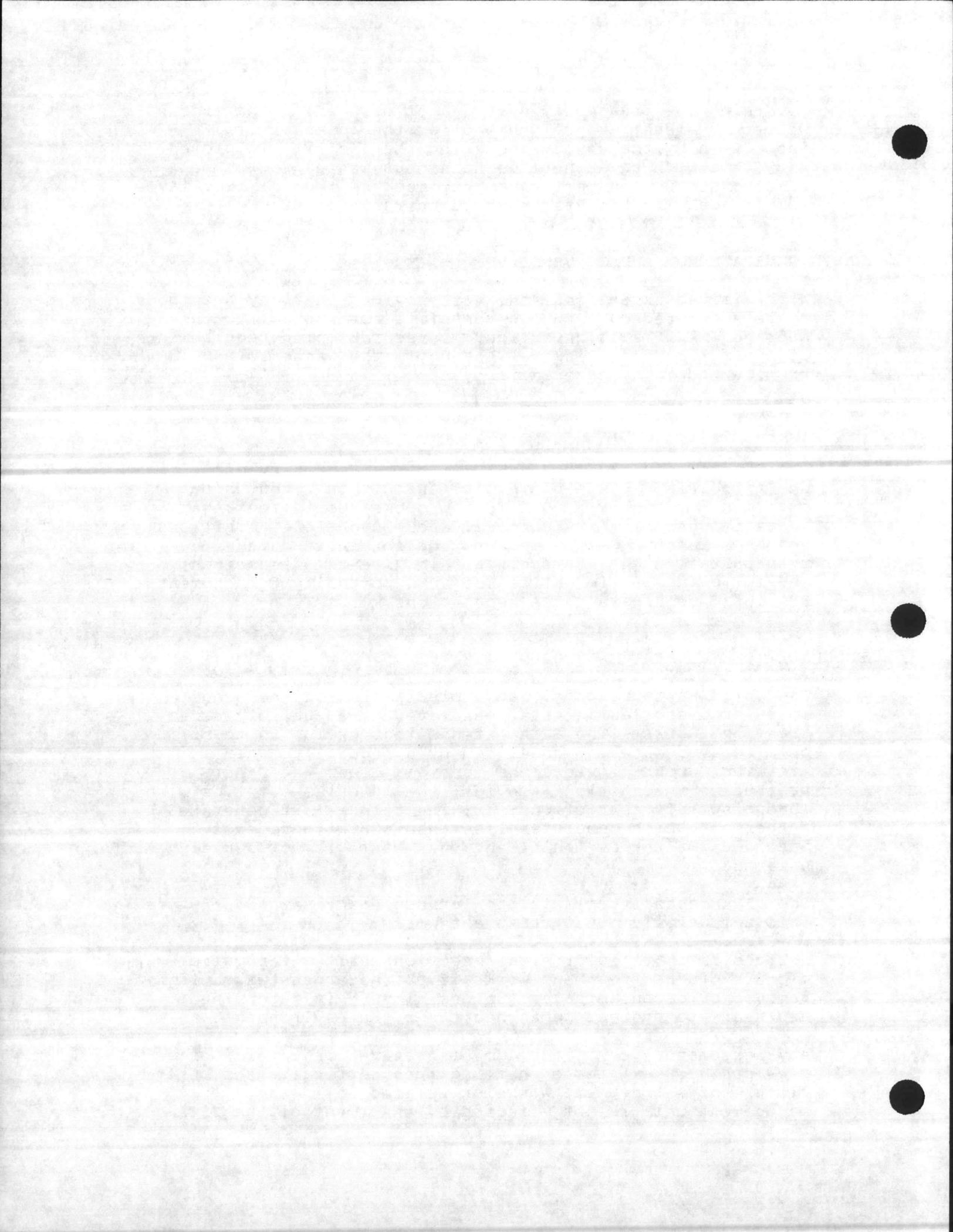
FEDERALLY OWNED TREATMENT WORKS

The Solid Waste Disposal Act excludes from its coverage solid or dissolved material generated by a publicly owned treatment works. The FFCA extends that exclusion to solid or dissolved material generated by a federally owned treatment works provided that certain Clean Water Act pretreatment conditions are met; the material complies with land disposal restrictions; or, the material is generated by a "person" which generates less than 100 kilograms of hazardous waste per month, and that waste is not acutely hazardous.

The FFCA makes it unlawful to introduce any hazardous waste into a federally owned treatment works.

Actions taken to enforce this section shall not require closure of the treatment works if the hazardous waste is removed or decontaminated, unless closure is determined necessary to protect human health or the environment.

Any agreement, permit, or administrative or judicial order previously in existence that requires corrective action or closure of a treatment works or related solid waste management unit is not affected by enactment of the FFCA.





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

IN REPLY REFER TO

6280
BEMD

JUL 31 1992

From: Commanding General, Marine Corps Base, Camp Lejeune

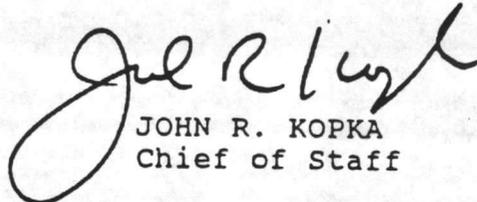
Subj: ENVIRONMENTAL COMPLIANCE

Encl: (1) Personal Liability of Marine Corps Officers and
Employees for Environmental Noncompliance

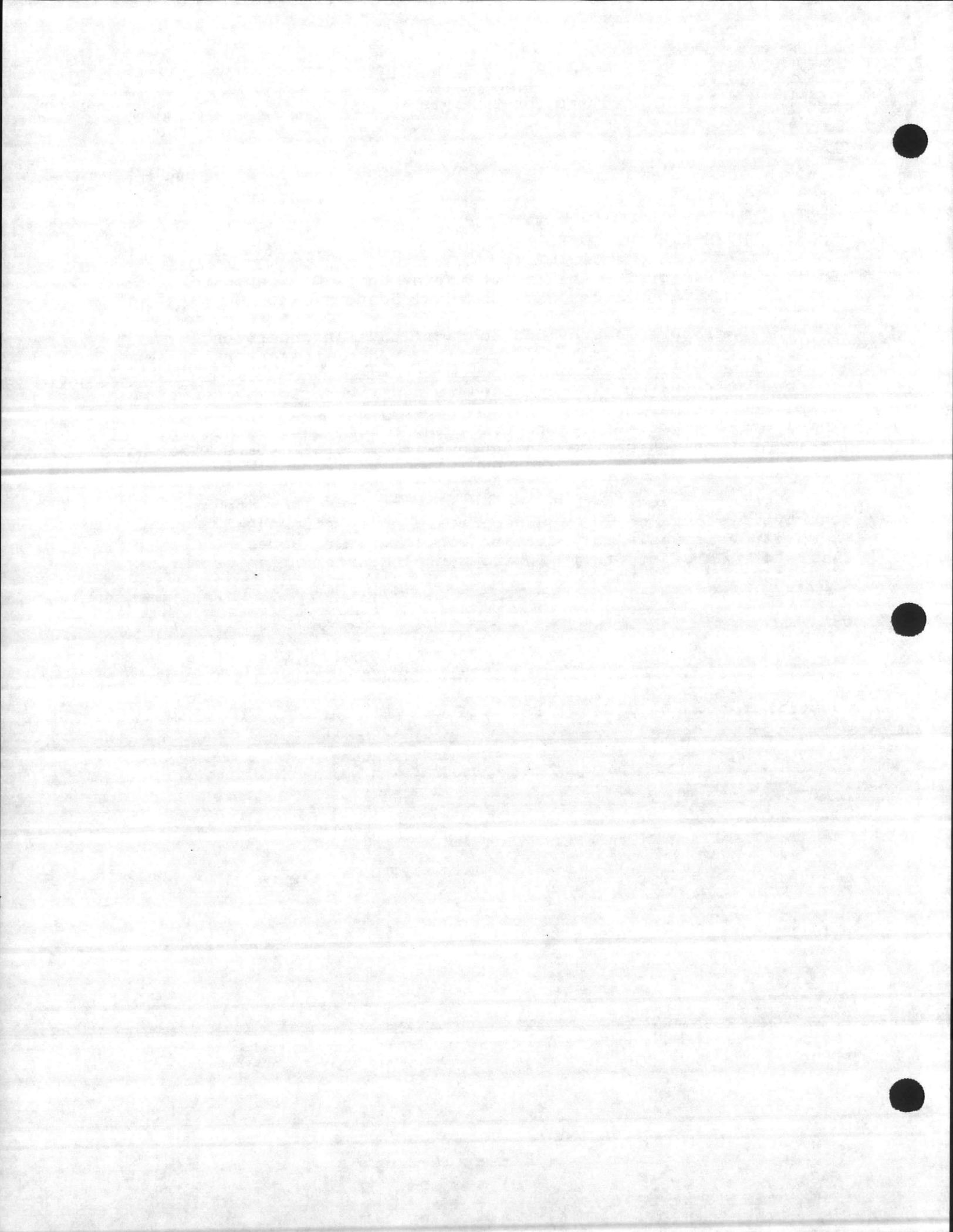
1. The enclosure is provided to facilitate an understanding of personal, civil and criminal liability under environmental laws.

2. Past efforts of all concerned to contribute to environmental compliance at Marine Corps Base, Camp Lejeune are appreciated. This Command is committed to fostering a compliance ethic and taking actions which are consistent with federal, state, and local environmental laws and regulatory requirements.

3. Please contact the Environmental Management Department whenever assistance is required regarding environmental compliance issues. Our point of contact is Mr. Robert L. Warren, Assistant Chief of Staff, Environmental Management at extension 5003/2083.


JOHN R. KOPKA
Chief of Staff

Distribution: A CAT's I, II, & IV (1)



PERSONAL LIABILITY
OF MARINE CORPS OFFICERS AND EMPLOYEES
FOR ENVIRONMENTAL NONCOMPLIANCE*

1. What is personal liability?

One who is personally liable must serve any adjudged criminal sentence, pay any fine, judgment, or penalty from personal assets. You, not the Marine Corps or the United States, are the responsible party.

2. What types of personal liability am I subject to?

You may be personally liable for tortious conduct arising from lack of environmental compliance, for civil penalties provided for in environmental statutes, as an operator of a facility under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and for criminal punishments imposed for violations of Federal or state law.

3. Under what circumstances can I be liable for tortious conduct?

Under common law principles you are liable to pay money damages for death or injury to another person or damages to another's property which are caused by your acts or omissions. Any act or omission which violates environmental law, regulations, permits, or orders which results in damages is likely to constitute a tort.

Discussion. A tort is a private or civil wrong or injury, other than breach of contract, for which money damages are payable. Common law torts included negligence, assault and battery, false arrest, and defamation. To establish a tort a plaintiff must prove: (a) a duty running from defendant to plaintiff, (b) a breach of that duty by defendant, (c) an injury, (d) the injury was proximately caused by the breach, and (e) the injury is compensable in money damages.

All major environmental statutes create legal duties. In the large majority of cases, federal agencies must comply with those duties just like any citizen. Any breach of those obligations, either willfully or negligently which causes injuries or damages a person or property may constitute a tort making the individual responsible for the breach liable for damages. It is easy to imagine how a breach of any one of the multitude of environmental requirements could cause injury or damage--failure to properly label hazardous waste, failure to segregate or properly

*Prepared by Lieutenant Colonel Orval Nangle, U.S. Marine Corps, Associate Counsel, Office of Counsel for the Commandant

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dispose of hazardous waste, causing contamination that creates health problems, etc. In Westfall v. Erwin, 484 U.S. 292 (1988), for example, an Army employee who suffered chemical burns when he inhaled soda ash dust that was stored in the depot where he worked brought suit against his co-workers and supervisors for negligence in storing and handling the material.

4. Can I be personally liable for actions taken in my official capacity?

When an officer or employee is sued in his/her official capacity, the action is against the United States and the individual will not be personally liable. Where the action is against the official in his/her individual capacity, the official will be liable in the same manner as any other person. Federal law does provide for the United States to be substituted as defendant in any tort action against an employee of the United States when the employee is determined to have been acting within the scope of his/her duties. As discussed in Question 8 below, some special defenses are also available in other legal actions; however, all defenses require at a minimum that the employee was acting within the scope of official duties.

Discussion. Some lawsuits, though filed against a named individual, are brought against the official in his/her official capacity. Such a lawsuit targets the United States, and the assets used to satisfy a judgment would come from the U.S. Treasury. An individual or personal capacity lawsuit targets the individual defendant and is specifically aimed at that person's personal financial resources. It is because of the potential personal legal and financial disaster that the latter type of suit is used to chill, intimidate, or seek retribution for some federal decision.

The United States, by virtue of its sovereignty, is immune from lawsuits unless Congress has waived its immunity. The Federal Tort Claims Act (FTCA) (28 USC §§ 1346, 2671-80) waives sovereign immunity for claims against the United States for property damage, personal injury, or death caused by the negligent or wrongful acts or omissions of an employee acting within the scope of his/her employment. 28 USC §2676 provides that a judgment (or settlement) against the United States under the FTCA bars entry of a judgment against the federal employee whose conduct gave rise to the action. Thus a tort judgment against the United States immunizes federal employees from liability (even for Constitutional torts or punitive damages). Sierra v. Pichardo, 786 F.2d 237 (6th Cir. 1986), cert. denied, 107 S. Ct. 103 (1986); Arevalo v. Woods, 811 F.2d 487 (9th Cir. 1987).

The Federal Employees Liability Reform and Tort Compensation Act of 1988 (FELRTCA) (P.L. 100-694, 28 USC § 2679) directs that upon certification

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by the Attorney General that a defendant employee was acting within the scope of his office or employment at the time of the incident from which the claim arose the United States shall be substituted as the party defendant. On the other hand, Plaintiffs can ask a court to reverse substitution of the United States and the court can decide to reinstate the suit against the individual. Arbour v. Jenkins, 903 F.2d 1239 (6th Cir. 1990).

FELRTCA does not affect actions for civil penalties, does not apply to Constitutional torts or where federal statutes authorize action against the individual, and does not apply to criminal proceedings.

See Question 8 below addressing qualified immunity, a judicial concept that protects federal employees in a broader range of cases.

5. Under what circumstances could I be held liable for civil penalties under the environmental laws?

Recent environmental laws contain specific provisions for imposing civil penalties for violations of federal laws, regulations, permits or orders. Such penalties are usually sought against facilities but could be assessed against individuals. Two significant environmental laws, the Clean Water Act and Clean Air Act, expressly provide that such penalties do not apply to the conduct of officers, agents, and employees of the U.S. acting within the scope of their official duties.

Discussion. A potential major basis for liability is contained in the environmental laws themselves. (Clean Air Act, 42 U.S.C. §7418; Clean Water Act, 33 U.S.C. § 1324; Solid Waste Disposal Act, 42 U.S.C. § 6961; Safe Drinking Water Act, 42 U.S.C. § 300j-6) These laws permit the imposition of civil penalties for violations of federal or state laws, regulations, permits, or orders. While we normally speak of our installations' liability for civil penalties, they can be assessed against individuals as well. Fortunately, the Clean Air Act, Safe Drinking Water Act, and Clean Water Act expressly provide that such penalties do not apply to the conduct of officers, agents and employees of the U.S. arising out of official duties. Exposure to civil penalties is therefore limited to actions regarding solid and hazardous wastes.

The decision to pursue civil penalties and the amount of the penalty are matters within the discretion of the regulatory agency. Civil penalties are assessed on a strict liability basis. Liability exists once the commission or omission giving rise to the violation occurs. There is no requirement that the offender knew the legal implications of the conduct or that the offender intended to violate the provision.

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As discussed below in Question 8, official immunity might preclude such liability so long as the acts were performed within the scope of one's duties.

At present, EPA does not seek civil penalties against federal agencies or federal employees; however, it has supported legislation that would change this. Congress is now considering a provision which would exempt federal employees from civil penalties under the Solid Waste Disposal Act. See the response to Question 14.

Penalties are not provided under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); however, the DOD/EPA model provisions for Federal Facility Agreements do contain provisions for stipulated penalties. Other model provisions expressly provide that nothing in the Agreement shall be construed to render any DOD officer or employee personally liable for stipulated penalties.

6. What is my potential liability for a cleanup under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)?

Individuals directly involved in the management of hazardous substances can be held personally liable for the entire costs of a CERCLA cleanup. Analogizing from corporate cases, military commanders and supervisors are potentially liable as CERCLA owners and operators depending on their degree of control and the manner in which that authority has been exercised.

Discussion. CERCLA makes the following parties liable for cleanup costs:

- a. the owner and operator of a vessel or facility;
- b. any person who owned or operated a facility at the time when hazardous substances were disposed of; and
- c. any person who arranges for disposal or treatment, or for transport for disposal or treatment of hazardous substances. 42 U.S.C. § 9607. A broad reading of this provision could make a commander personally liable for the cost of cleanup of released hazardous substances. Such an interpretation has been used by the United States to assert that individual corporate officials with direct participation in decision making regarding hazardous substances are directly liable under CERCLA. A large majority of case law at the trial and appellate level has supported that position. While a lawsuit seeking cleanup costs has not been filed against a federal official, the potential exists to analogize from corporate cases and file such a suit.

The following personal liability cases in the corporate setting are instructive:

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a. One individual who was the company President, chief operating officer, director and majority shareholder was personally liable when he participated in securing a disposal contract with a personal friend. U.S. v. Ward, 618 F.Supp. 884 (E.D.N.C. 1985).

b. A company president was liable as an operator although he was not personally involved in the actual decision to transport and dispose of hazardous substances; he was in charge of and directly responsible for all company operations including ultimate authority to control disposal of hazardous substances. U.S. v. Northeastern Pharmaceutical & Chemical Co., Inc., 810 F.2d 726 (8th Cir. 1986).

c. A corporate officer who has responsibility for arranging for the disposal of hazardous waste is personally liable under CERCLA. U.S. v. Northernair Plating Co., 670 F.Supp. 742 (W.D. Mich. 1987).

d. In determining the application of corporate liability on corporate officers, the court will look to evidence of an individual's authority to control waste handling practices and distribution of power within the organization. Weighed along with the power factor will be evidence of responsibility undertaken for waste disposal practices, including evidence of responsibility undertaken and neglected, as well as affirmative attempts to prevent unlawful hazardous waste disposal. Kelly v. ARCO Industries Corp., 723 F.Supp. 1214 (W.D. Mich. 1989).

Compare Mass. v. Blackstone Valley Electric Co., No. 87-1799-T (D.C. Mass. Nov. 25, 1991) in which individual company officers were held not liable under CERCLA where the company, not the individuals, owned the site, the individuals were not personally involved in hazardous waste storage or disposal, and the individuals did not run the company at the time of the dumping.

Scope. Liability under CERCLA is strict, that is, without regard to fault or willfulness. Liability is also joint and several, meaning that where two or more persons cause a single and indivisible harm, each is subject to liability for the entire harm. U.S. v. Chem-Dyne Corporation, 572 F.Supp. 802, 810 (S.D. Ohio 1983). In virtually all cases brought against an official, the U.S would also be liable and would be available to satisfy a judgment.

7. Can I be prosecuted for environmental actions?

All federal officials are subject to federal and state criminal laws, and there is a trend

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toward increased investigation and prosecution of environmental crimes. Individuals are expected to know and comply with environmental laws. Many environmental crimes do not require proof of an intent to break the law. Responsible officials can be liable for the conduct of other persons.

Discussion. There is a trend toward increased criminal prosecution for environmental crimes. Prior to October 1980, there was no such thing as a federal environmental felony; now, every major environmental statute contains felony sanctions. Since 1983 there have been 774 indictments and 550 convictions for environmental crimes. EPA now has 70 full time criminal investigators. Thanks to legislation passed in 1990, they will have 4 times that number by 1996. The FBI has doubled the number of resources it expends on environmental crimes each year. In April 1991, it had 64 agents working full-time on 325 environmental crime cases. 24 states have environmental crime enforcement programs.

State of mind. In drafting environmental criminal statutes, Congress and the states have incorporated various mental elements. Some statutes can be violated by mere negligence. The Clean Water Act is an example. Failure to exercise due care which results in a pollutant entering waters of the United States is a crime. 33 U.S.C. § 1319(c)(1).

Various statutes, including those most often prosecuted, require proof that the defendant acted "knowingly." See e.g. RCRA, 42 U.S.C. §§ 6928(d)-(e); CERCLA, 42 U.S.C. §§ 9603(b)-(d). Under most criminal laws, knowing violations are ones where the individual intended to do something unlawful. Not so with environmental laws. Because environmental laws are classified as public welfare statutes, i.e. those regulating the handling of dangerous substances that threaten the community's health and safety, knowing violations merely require proof of a general intent to do the act that gave rise to the violation. They do not have to prove you knew what the law was or that you intended to violate it. It is presumed, for example, that anyone handling hazardous material or pollutants knows that the activities are capable of threatening public health and therefore knows the laws require a greater degree of care. See U.S. v. International Minerals & Chemicals Corp., 402 U.S. 558 (1971). The focus is whether a defendant knew he was dealing with hazardous material not whether he knew the permit or pollution standards were being violated.

Finally, the most serious offenses are those involving "knowing endangerment," that is, an act performed knowing that it may place persons in imminent danger of death or serious injury. A Washington man, for example, was convicted of knowing endangerment when he disposed of hazardous wastes by mixing it with

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pesticides and spraying it on a field causing neighbors to become ill.

Vicarious liability. The Supreme Court has ruled that a responsible corporate officer may be held criminally liable when a public welfare statute is violated. In U.S. v. Dotterweich, 320 U.S. 277, 280-81 (1943) the Court upheld the conviction of the president of a pharmaceutical company for shipping adulterated and mislabeled drugs finding that:

"The purposes of this legislation thus touch upon phases of the lives and health of people which, in the circumstances of modern industrialism, are largely beyond self-protection... [The act is] now a familiar type of legislation...[which] dispenses with the conventional requirement for criminal conduct--awareness of some wrongdoing. In the interest of the larger good, it puts the burden of acting at hazard upon a person otherwise innocent but standing in responsible relation to a public danger."

Consequently, a person in a position of responsibility can be criminally responsible for someone else's conduct if he/she had the responsibility and authority to prevent or to promptly correct a violation and failed to do so.

Priorities. Individuals are expected to know and comply with environmental laws. Because environmental laws and regulations are legal requirements, backed by criminal sanctions, Federal and state prosecutors believe that environmental compliance takes precedence over completing the mission. That point could be dramatically made by convicting a military officer.

8. Am I entitled to any special defenses by virtue of my federal status?

You are immune from lawsuits against you in your official capacity, from lawsuits by service members, and lawsuits based on actions taken within the scope of your official duties. There is no immunity to federal prosecution, and immunity from state prosecution is limited to cases where federal duties required you to violate state law.

Discussion. There are four types of immunity that may shield federal officials. The first is sovereign immunity. It protects the United States from lawsuit without its consent. Many people, including lawyers, will use the term sovereign immunity to refer to all governmental immunities. As an agent of the federal government, as long as your acts are within the scope of your official duties, any action against you will really be an action against the U.S. and sovereign immunity applies.

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A second and more important immunity to you is official immunity. This immunity was created by the courts to protect judges, prosecutors, legislators (absolute immunity) and Executive Department employees (for acts in the performance of duties, qualified immunity). Qualified immunity is designed to protect federal officials from insubstantial lawsuits and from the burdens of having to go to trial. It is an immunity from lawsuit rather than a mere defense. Denials of qualified immunity are immediately appealable. Mitchell v. Forsyth, 472 U.S. 511 (1985). Governmental officials performing discretionary functions generally are shielded from liability for civil damages insofar as their conduct does not violate clearly established statutory or Constitutional rights of which a reasonable person would have known. Harlow v. Fitzgerald, 457 U.S. 800 (1982).

What is in the performance of duties? There is no magic test. The determination is fact specific turning upon one's position description, billet, command orders, and the other circumstances. One clear guideline, however, is that no conduct violating federal criminal law will be within the scope of your duties.

There is also Intra-military immunity otherwise known as the Feres doctrine, which is a defense to both common law and constitutional torts. The doctrine precludes lawsuit for injuries to service personnel where the injuries arise out of or are in the course of activity incident to service. Feres v. U.S., 340 U.S. 135 (1950). The doctrine applies to lawsuits by members of the uniformed services against the United States, other service members, or civilian employees. Since the application of the doctrine depends on the status of the parties, the legal theory asserted by the plaintiff is of little consequence.

Finally, because states cannot be allowed to prevent a federal officer from performing his duties, a federal officer is immune from state criminal prosecution for acts committed within the scope of his duties where the officer has an honest and reasonable belief that the acts were necessary and proper for performance of his duties. In re Neagle, 135 U.S. 1 (1890).

9. Am I entitled to legal representation at Government expense?

The Department of Justice will generally represent you if a civil suit is filed against you in your official capacity or in your individual capacity if you acted within the scope of employment and it is in the interest of the United States. In limited cases (e.g. conflict of interest) private counsel will be provided at Government expense. No representation will be provided in federal criminal prosecution but representation may

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be available to defend state criminal prosecutions under some circumstances.

Discussion. Pursuant to 28 USC §§ 516-519, the Attorney General and Department of Justice are responsible for representing the interests of the United States in litigation. The Department of Justice represents federal officials sued in their official capacity in connection with their duties. Since it is U.S. interests at stake, no formal request for personal representation is required in such cases.

Although there is no obligation to represent federal employees who are personally sued for money damages in their individual capacity, it is the policy and practice of the Department of Justice to provide such representation for those actions taken within the scope of employment/duties. Case law recognizes that the Department of Justice advances the interests of the United States when it represents its employees who are personally sued for actions taken within the scope of their employment. Booth v. Fletcher, 101 F.2d 676 (D.C. Cir. 1938).

An official sued in his/her individual capacity must submit a written request for representation via the chain of command. Supporting factual material should be attached. The criteria for Department of Justice representation are:

- a. the actions giving rise to the suit must reasonably appear to have been performed with the scope of federal employment; and
- b. it must be in the interests of the U.S. to provide representation.

The Department of Justice receives recommendations from the Navy and Marine Corps but is responsible for determining whether the criteria are met. See 28 CFR §§50.15, 50.16.

Federal employees/officials may retain private counsel at their own expense to represent their interests at any time. They are not required to request or accept Department of Justice representation.

10. *Have any federal officials been held civilly liable?*

There are a multitude of lawsuits filed against federal officials. In 1989 over 5,000 suits were pending against present or former federal officials. As of 1989 only 44 lawsuits had resulted in adverse verdicts, and only 6 of those had been paid by individual defendants. No individuals have been civilly liable for conduct related to environmental compliance.

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11. *How many Federal employees have been prosecuted for environmental crimes?*

Prior to 1991, there had been only two federal prosecutions for environmental crimes. Since January 1991 there have been four federal convictions (one by court-martial) and five additional individuals have been indicted by federal or state authorities and are pending trial.

Discussion. The following summaries include all known prosecutions of federal officials:

U.S. v. Dee, Lantz, & Gepp: On May 11, 1989 three managers at the Aberdeen Proving Ground were convicted of various counts of illegally storing, treating, and disposing of hazardous wastes and sentenced to three years probation and 1,000 hours of community service.

U.S. v. David Carr: On December 16, 1988, Carr, a range foreman at Fort Drum was convicted of two counts of failing to report the spill of hazardous substances into the environment. He was sentenced to two one-year terms of probation to run concurrently and fined \$300.00.

U.S. v. Cleus Bond: On April 9, 1991 Bond, a civilian employee at the Navy Exchange Auto Repair facility at the 32nd Street Naval Base in San Diego was convicted of illegally pouring radiator fluid contaminated with antifreeze into a storm drain. He was sentenced to one year probation and a \$500 fine.

U.S. v. Richard Pond: On April 17, 1991 Pond, a civilian manager of the Fort Meade wastewater treatment plant was sentenced to eight months in prison, a year of supervised release, and restitution of \$99.99 for one violation of the plant's National Pollution Discharge Elimination System permit, eight counts of making false statements on discharge monitoring reports, and using government equipment to test water samples from a privately owned wastewater treatment plant.

U.S. v. John Curtis: Curtis, a civilian Navy Fuel Division Officer at NAS Adak was convicted in 1992 of both negligently and knowingly violating the Clean Water Act by allowing JP5 to spill into U.S. waters. Curtis is awaiting sentencing and has resigned his government employment.

U.S. v. Woodward: Petty Officer Woodward was convicted in 1992 at a special court-martial of falsifying documents regarding the disposition of hazardous wastes. He was sentenced to 75 days confinement at hard labor, forfeiture of \$500 pay per month for two months, and reduction from E-4 to E-2.

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The following cases are pending:

California v. Sam Lam: Lam, the former environmental engineer at MCLB Barstow, is charged with unlawful transportation and disposal of hazardous waste for sending sandblast grit to the county landfill.

U.S. v. James Ferrin: Ferrin, a civilian employee at the 32nd Street Naval Station, San Diego, has been indicted for illegally disposing of hazardous wastes and making a false statement.

U.S. v. Dunn, Larimore, & Divinyi: These individuals are civilian employees in the environmental division at Fort Benning Georgia. They are charged with conspiring to violate the Endangered Species Act (permitting timber cutting in red-cockaded woodpecker habitat) and making false statements.

The Navy has an Article 32, UCMJ, investigation ongoing concerning the unlawful disposal of ammunition.

12. What other adverse actions may be taken for environmental activities?

There are a number of possible actions that may be taken by the armed forces in addition to or in lieu of federal, state, and local enforcement. Civilian employees are subject to adverse personnel action to include termination. Members of the armed forces are subject to court-martial, nonjudicial punishment, or other administrative action.

13. Should I purchase private insurance?

This is a personal decision. Potential personal liability for decisions, policies, and actions relating to environmental matters will be minimal so long as officials act within the scope of their duties. There are, of course, other areas where liability may arise-- violation of Constitution rights, adverse personnel decisions, etc. Insurance coverage may be purchased to pay adverse judgments, costs and attorney fees arising from the performance of official duties. Insurance will not provide coverage for costs associated with criminal charges or civil penalties.

14. Are there any changes in the near future?

Two prospective actions to further protect DOD personnel are under consideration. DOD has produced a preliminary draft policy that would permit DOD to indemnify its officers and employees for money damages adjudged against them individually

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provided the conduct giving rise to the action was within the scope of the individual's duties. Both Houses of Congress have passed statutory changes to RCRA which would limit the application of civil penalties to federal officials acting within the scope of their duties.

Discussion. The Federal Government is not obligated to pay or indemnify a federal official for an adverse verdict or judgment for money damages against the official for actions committed within the scope of his/her duties. Agencies may, however, indemnify their officials under these circumstances. NASA, for example, has developed such a policy. DOD General Counsel has drafted a preliminary policy that would permit DOD to indemnify DOD personnel for money damages adjudged against them individually provided the conduct giving rise to the action was within the scope of the individual's duties. Unlike the scope of duty determinations for FELRTCA, qualified immunity, or representation, which are made by other agencies, DOD would make the determination for purposes of indemnification. The draft is now in staffing.

Both the Senate and House have passed provisions limiting the application of civil penalties under Federal, state, interstate, or local solid or hazardous waste laws. Individuals will not be personally liable for any act or omission taken within the scope of official duties. The language is part of the Federal Facilities Compliance Act of 1991 and is presently in Conference Committee. Passage is expected in late summer 1992.

15. What can I do to avoid personal liability?

Commanders should follow the guidance in CMC White Letter 9-91. When questions or doubt arise, consult with your professional staff. All persons must learn their job, the extent of their authority, the rules that must be followed, and the internal avenues for seeking further support.

Discussion: Paragraph 5 of CMC White Letter 9-91 of 27 December 1991 provides commanders with detailed guidance on affirmative steps to achieve environmental compliance and avoid personal liability. Many of these steps apply equally to those not in command:

a. Promote environmental compliance as part of your mission. Use both orders and personal leadership. Ask about environmental compliance during planning. Your Marines need to know you are personally committed to compliance.

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b. Learn the compliance status of your command. Environmental Compliance Evaluations and inspections by regulatory agencies, while instructive are only conducted annually. Consider personally participating in periodic in-house inspections.

c. Clearly designate responsibility for environmental compliance and maintain accountability. Since individuals engaged in environmental management are subject to potential criminal enforcement for their performance, they need to be clearly apprised of their duties, responsibilities, and authorities.

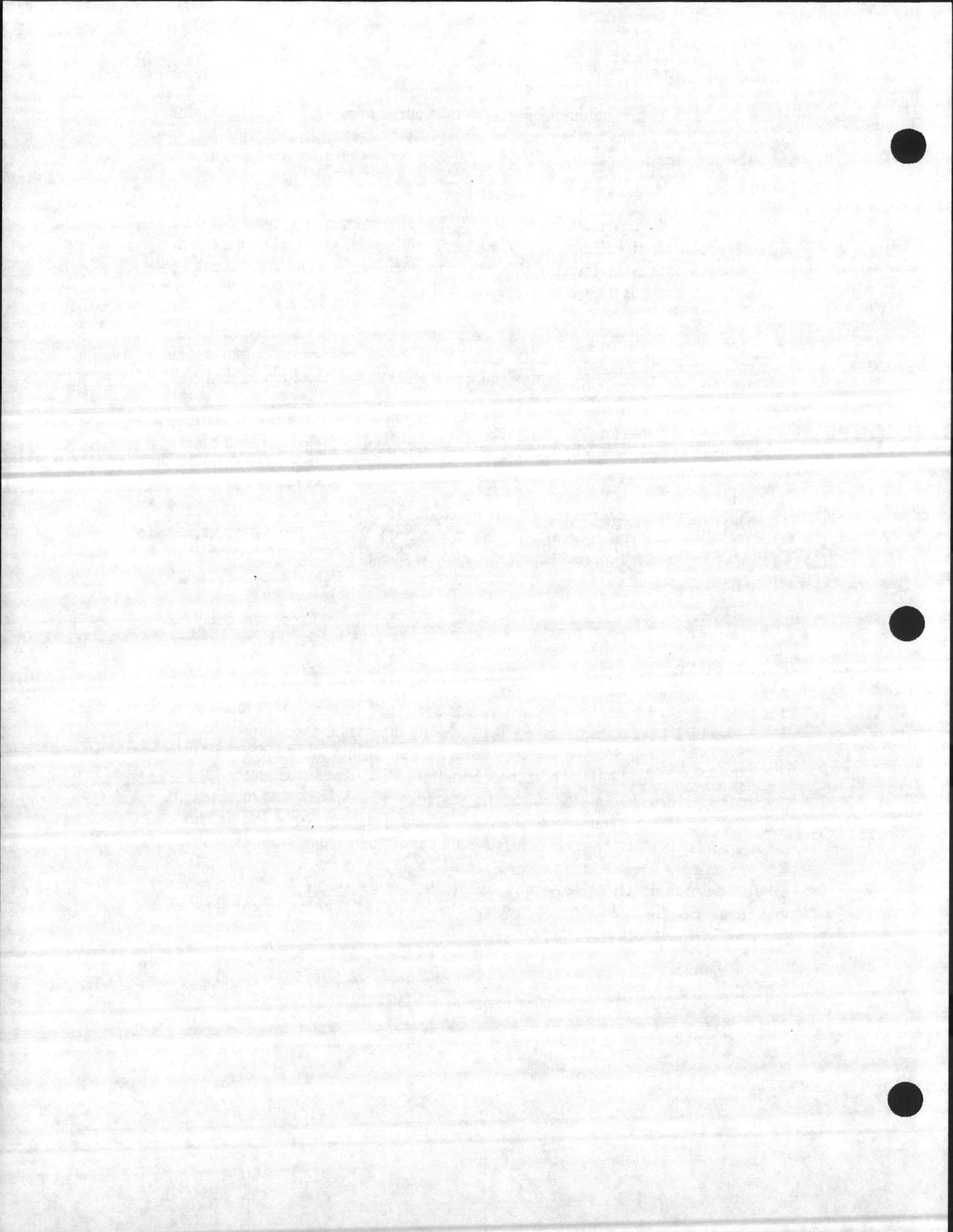
d. Ensure the environmental compliance staff is adequately manned, organized, and trained to accomplish its assignment. Assigning too few personnel or untrained personnel to environmental compliance is an invitation to disaster.

e. Do not ignore problems, address them promptly. Failure to address an environmental problem will only cause it to become a bigger issue and may be viewed as apathy, recalcitrance, or insensitivity toward compliance.

f. If you lack necessary resources to address an issue, seek those resources up your chain of command. No one expects commanders to "make do" when the law requires more. Commanders should use the chain of command to identify resources that are needed but not possessed.

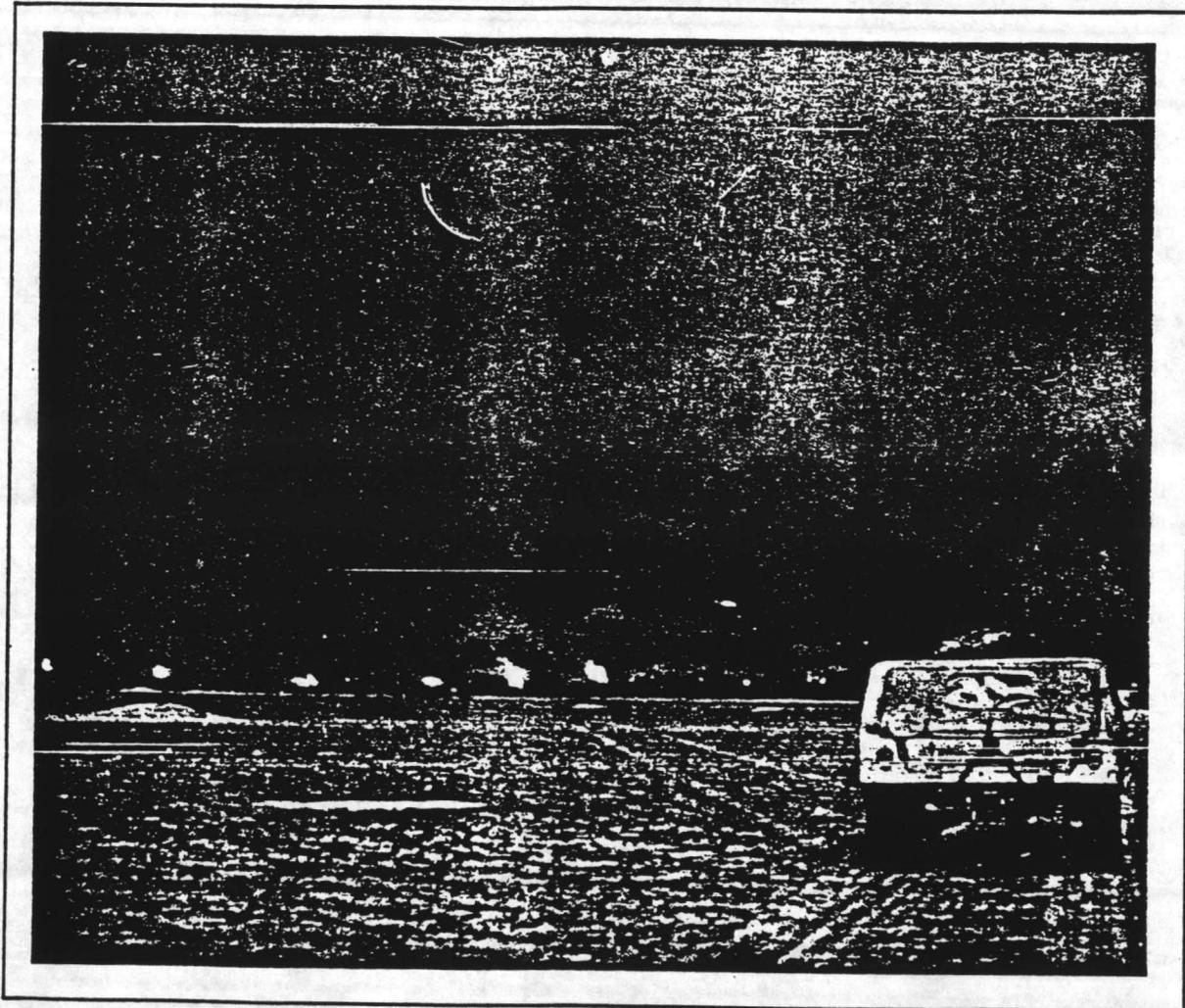
g. Document your efforts. It is important that compliance and progress toward compliance be available to the American public, the regulators, and the chain of command.

It is crucial that all persons know their duties and the results they have to achieve, the rules which have to be followed, the authority they have, and the methods for appealing or obtaining support when additional capabilities are needed. Ensure that all actions are within the scope of your official duties. Counsel for the Commandant provides environmental law advice to Headquarters and installations (through the Area Counsel Offices). When questions arise about legal requirements or whether an action is within the scope of one's duties, consult with Counsel. Relying upon the advice of trained experts whose job it is to provide environmental law advice is justified and serves to prove that a decision maker made a good faith to comply with the law, even if enforcement agencies were to later disagree with the advice given.

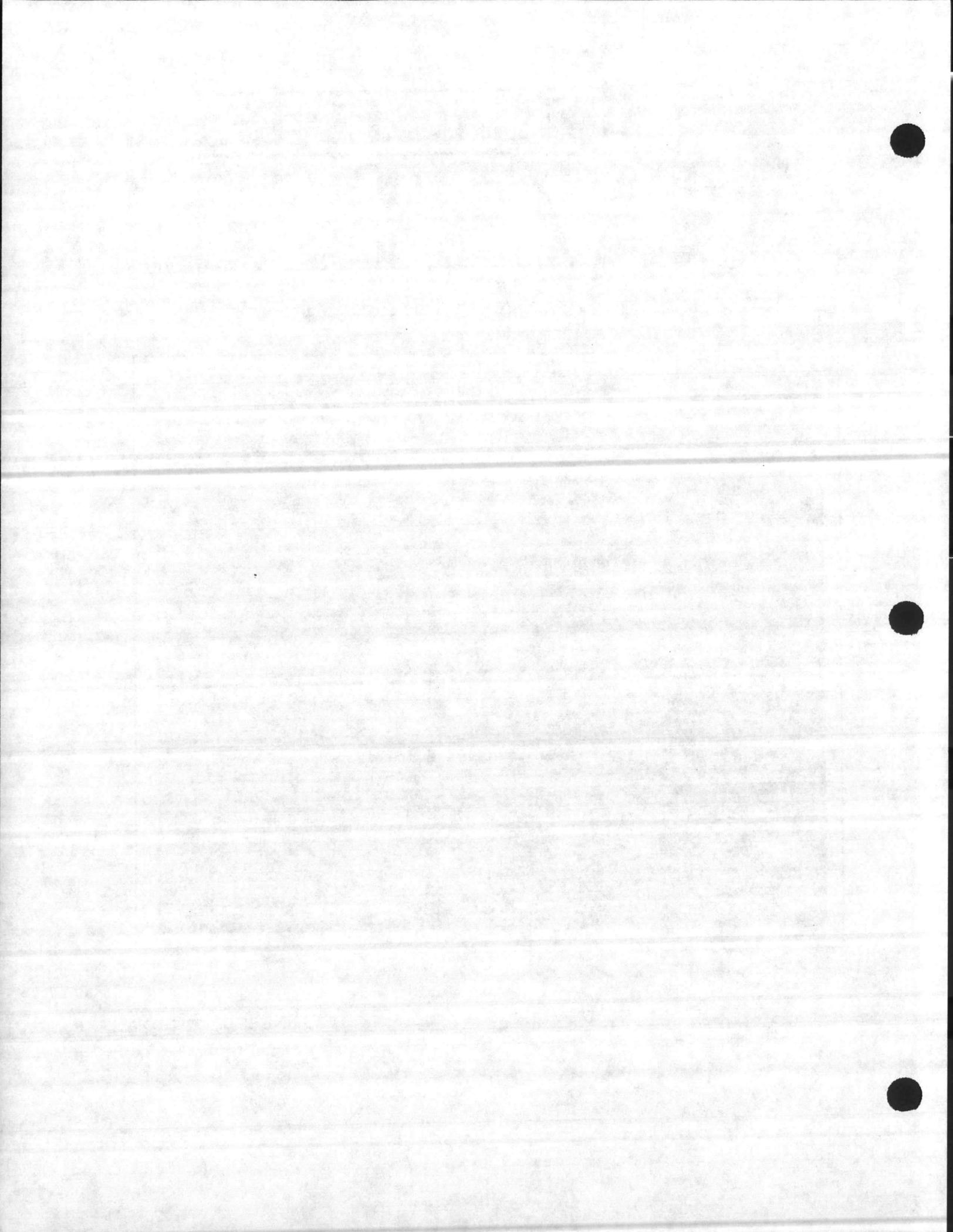


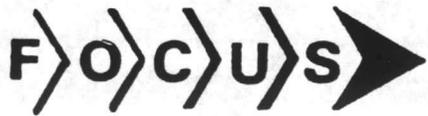
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JUNE 1991  \$1.50





on Environmental Issues

Although modern environmentalism arrived on the scene a scant three decades ago (announced by Rachel Carson's *Silent Spring*, 1962), it has grown into a major concern that is covered by a wealth of laws and regulations, and almost overnight it has acquired a full array of bureaucratic trappings. Environmental and legal experts—to say nothing of vast sums of money—are essential to meet newly defined requirements and past oversights. The environment is now a major concern of every Marine command, and Marines must give it their full attention.

Environmental Laws: Beware!

by LtCol Paul A. Wilbur

The Marine Corps has a new challenge to face—environmental laws that have the potential to affect virtually every aspect of a Marine's life. It is a challenge that must not be taken lightly.

In February 1989 a Federal court convicted three high-ranking civilian supervisors of felony hazardous waste law violations at the Army's Aberdeen Proving Ground in Maryland. Each defendant was placed on probation and required to complete 1,000 hours of community service. Under new guidelines issued by the U.S. Sentencing Commission, if trial were held today the defendants would almost certainly be sent to jail.

Of equally important note, the indictment in *United States v. William Dee, Robert Lentz, and Carl Gepp* did not allege specific individual actions. Liability arose solely through the defendants' official positions of authority. The message cannot be lost on the Marine Corps: failure to adhere to environmental laws will lead to serious consequences.

Why Aberdeen Is Relevant

In 1988 Mr. William Dee, a member of the Senior Executive Service, was the director of the Munitions Directorate of the Chemical Research Development

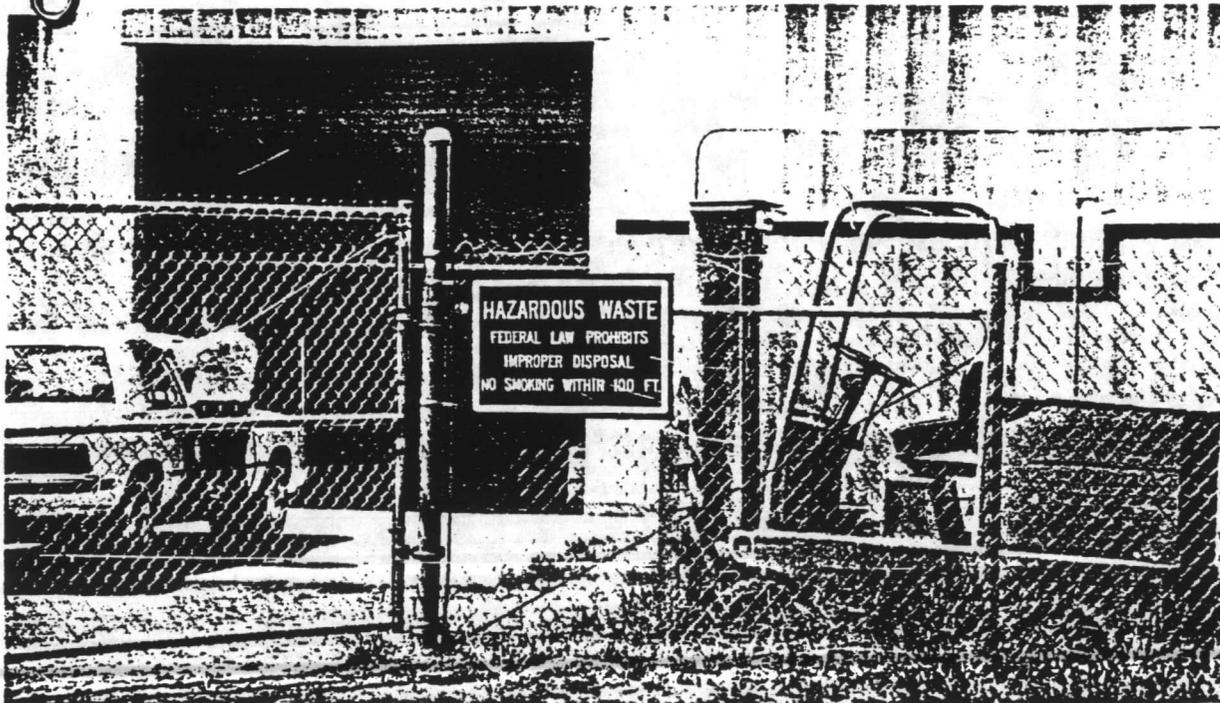
and Engineering Center (CRDEC) at Aberdeen Proving Ground. Mr. Robert Lentz, a GS-15, was chief of the Producibility Engineering and Technology Division, CRDEC. Mr. Carl Gepp, a GS-14, was chief of the Process Technology Branch. Combined, the men had accumulated more than 70 years of government service. In June 1988, they were indicted on four felony counts of violating the Resource Conservation and Recovery Act (RCRA) and one misdemeanor count of violating the Federal Water Pollution Control Act, better known as the Clean Water Act. Events giving rise to the five counts occurred from June 1983 until August 1986.

The RCRA violations dealt with illegal storage, treatment, and disposal of hazardous wastes. At CRDEC, extremely hazardous substances were dumped into sumps leading to sanitary sewers, and dangerous chemicals that had served their research purposes were stored both inside and outside the facility. The misdemeanor count alleged a spill of hydrosulfuric acid to

waters of the United States that resulted in a fish kill.

The men were tried in January and February 1989 and sentenced in May. Since prosecution was brought by the United States, the Department of Justice refused to provide counsel for their defense. They were each convicted of some of the four RCRA violations, but none was found guilty of the Clean Water Act violation.

In its case, the Government did *not* have to prove that any damage occurred to the environment. The case focused on the fact that practices used by personnel and management at CRDEC were not in compliance with environmental statutes. Two main defenses—that the defendants were unaware of the requirements of RCRA and that their superiors were aware of existing problems and had responsibility to fix them—both failed. According to the chief prosecutor, the case arose because "environmental compliance had a nonexistent priority." Further, the case was brought "to send a message to Federal employees that



there is no sovereign immunity when you're being prosecuted by the Federal Government."

A frequently asked question about the Aberdeen case is why weren't senior Army officers prosecuted? It seems that their legal responsibility for all that occurs within their cognizance would extend to vicarious criminal liability for their subordinates' behavior. The fact is, the prosecutor was unable to establish that any higher officials had knowledge of the improper activities occurring at CRDEC. According to the prosecutor, had any of the defendants informed their superiors of the

treatment, storage, and disposal practices and problems that were rampant at CRDEC, military officials would also have been prosecuted.

The Laws

Anyone involved in, or responsible for, environmental matters must be familiar with his legal obligations. There are many Marines and civilian employees who should acquire such familiarity.

The Defense Management Review in 1989 identified 77 laws that pertain to environmental matters and affect Department of Defense (DOD) installations. Only a handful of the 77 laws generally apply to most bases and stations. Most of that handful contain criminal sanctions.

The principal environmental laws bearing on the Marine Corps are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA)), the RCRA, the Clean Water Act, the Clean Air Act, the Endangered Species Act, and the National Environmental Policy Act (NEPA).

CERCLA and SARA deal with cleanup of past hazardous waste sites. DOD, as of 30 September 1990, has identified 17,482 locations where toxic wastes have been spilled at 1,855 facilities. Each of these locations must undergo a preliminary assessment and

site investigation and, if warranted, a remedial investigation, feasibility study, remedial design, and remedial action. So far, the Environmental Protection Agency (EPA) has placed 89 DOD installations on the National Priorities List (NPL) for cleanup of past hazardous waste sites. The Marine Corps has six bases and stations on the NPL: Camp Pendleton, Camp Lejeune, Marine Corps Air Station (MCAS) El Toro, MCAS Yuma, Marine Corps Logistics Base (MCLB) Albany, and MCLB Barstow.

CERCLA contains two provisions that can result in criminal liability. First, the law requires that a person in charge of a facility give immediate notice to the National Response Center as soon as he has knowledge that there has been a release into the environment of a hazardous substance (above a "reportable quantity" threshold). Second, the law imposes criminal liability for knowingly destroying or falsifying records that the EPA requires to be kept.

While CERCLA concerns yesterday's wastes and today's spills, the RCRA deals with present waste handling. Through permits issued by either the EPA or a State, RCRA regulates generation, transportation, storage, and disposal of hazardous waste. The law contains numerous criminal provisions. It is against the law to transport hazardous waste to an unpermitted facili-

Key Acronyms	
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
DOD	Department of Defense
EPA	Environmental Protection Agency
MCLB	Marine Corps Logistics Base
NEPA	National Environmental Policy Act
NPL	National Priorities List
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act of 1986
VOCs	Volatile organic compounds

Aging Facilities+Declining Funds= Environmental Problems

by Thomas E. Neven

Military Services are by and large responsive and responsible organizations—fair game for nongovernmental groups with environmental interests. The Marine Corps Combat Development Command (MCCDC), Quantico, recently had to pay \$195,000 to settle a lawsuit brought by a private citizens' group, the Natural Resources Defense Council (NRDC). The money went to pay attorney's fees, expert witness fees, and costs, although no civil penalties were assessed.

The suit stemmed from problems with the base's sewage treatment plant, which was exceeding pollution limits set by the State of Virginia's Water Control Board for effluent discharged into the Potomac River. The NRDC brought suit in the summer of 1990 stating MCCDC continued to exceed the voluntary limits, to include some instances of raw sewage leaking into the river. NRDC said it was forced to take such action because government agencies, such as the Environmental Protection Agency and the State Water Control Board, are often reluctant

to sue Federal polluters.

Penny Clark, counsel to MCCDC, said that in addition to the settlement with the NRDC, the Marine Corps has committed \$18 million over three years to improve the sewage plant, which was built in 1917. The consent agreement signed as part of the settlement requires MCCDC to create a new position for environmental compliance to be headed by a civilian of GS-13 or GS-14 rank with experience in sewage treatment and other environmental issues. The base must hire an environmental engineering firm to conduct a short-term feasibility study to upgrade the quality of the plant and a long-term study to plan for future sewage needs as the base grows. This firm would also provide on-call expertise for any environmental issues arising in the future.

MCCDC has also instituted an ongoing inspection program on a five-year cycle to inspect the base's entire sewage collection system to ensure pipes and collection points are in good working order.

ty. Also, it is a crime to treat, store, or dispose of hazardous waste without a permit, to violate a condition of a RCRA permit, or to transport any hazardous waste without a permit. Moreover, it is impermissible to knowingly endanger another person through improper handling of hazardous waste (via transport, treatment, storage, or disposal).

The Clean Water Act maintains surface water quality through National Pollutant Discharge Elimination System permits that regulate "point source" discharges. Criminal liability attaches to negligent violation of many aspects of the law. Examples include failure to comply with permit conditions or pretreatment program requirements and negligent introduction of any pollutant or hazardous substances into a sewer or publicly owned treatment works. (See accompanying box.) Knowingly endangering another person by violating provisions of the Clean Water Act is punishable by up to 15 years im-

prisonment. Failure by the person in charge of a vessel or facility to give immediate notice of a discharge of oil or a hazardous substance into waters of the United States is also a crime.

The Clean Air Act makes it a crime to knowingly violate a State implementation plan, a national emissions standard for hazardous air pollutants, or other requirements of the Act.

The Endangered Species Act protects endangered and threatened wildlife and plants and their habitats. The statute makes it unlawful to import, export, possess, take, or sell any species of wildlife or plants listed as endangered or threatened. To "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Anyone violating these prohibitions may be punished by imprisonment for one year.

One major environmental law that does not contain criminal sanctions is the National Environmental Policy

Act. Failure to abide by its provisions, however, may result in an injunction, issuance of which can disrupt military construction, operations, or training.

The Everyday Pitfalls

In everyday activities, Marines encounter many situations involving potential violation of environmental laws. Perhaps the most prominent area of environmental interest for most Marines is that concerning endangered or threatened species of wildlife. The vast reaches of Marine Corps bases are home to numerous plants and critters that enjoy special protection. Among these are the rough-leaved loosestrife, the Hawaiian stilt, the least Bell's vireo, the Atlantic loggerhead turtle, the desert tortoise, and the red cockaded woodpecker. The law prohibits harming these species or their habitats. In some cases, avoiding harm to them while driving a tracked vehicle or during troop maneuvers proves difficult, but this is what the law requires.

Also of interest for most Marines are the environmental effects of cleaning materials and petroleum products. Many such products contain substances that are categorized as hazardous waste after their primary use. Certain items, such as photographic development chemicals, some pesticides, and nuclear, biological, and chemical decontamination units, also contain substances that require special handling. Residues of these items must be segregated, containerized, and delivered to appropriate accumulation or storage points prior to disposal.

Compliance vigilance arises in other activities typical to a Marine Corps installation. For instance, many States tightly regulate air emissions of volatile organic compounds (VOCs), a common ingredient in the special paints used on most of the Marine Corps' tactical vehicles. Where an organization's paint booth is subject to a permit limiting the amount of VOCs that may be released per day, all work must stop when that limit is reached unless a variance can be obtained from the regulatory agency. Operators of industrial and domestic wastewater treatment plants must ensure that effluent outfalls do not exceed permitted limits for specified substances.

The Consequences

The environmental laws are designed to safeguard human health and

ensure a quality environment. Violation of the laws can, at worst, lead to increased health risks or loss of wildlife, plants, or their habitats. Failure to protect the environment is costly—DOD now estimates that cleaning up past hazardous waste sites will require more than \$17 billion, and DOD's bill for current compliance costs is more than \$1 billion per year. Destroying wildlife habitat, leading to loss of a species, cannot be priced out.

Environmental compliance requirements impose significant complications on the way the Marine Corps conducts its business. Commanders who disregard environmental obligations in order to accomplish their mission may well find their mission entirely aborted. Federal, State, or local regulators can halt many activities unless proper permits are obtained and their requirements fulfilled. Concern over regulators' authorities in March 1990 led to MCLB Barstow ceasing effluent discharges to its depot maintenance activity's industrial wastewater treatment plant. Surface impoundments there did not meet design and operational standards dictated by a 1984 Federal law. As a result, repair and maintenance work was crippled for more than a week until other wastewater treatment procedures could be brought on line.

For individuals, noncompliance with environmental laws can lead to prosecution. Historically, the probability of being prosecuted for environmental offenses and the chances of receiving significant punishment have been remote. But that was then, this is now. Over the past four years, several events having great potential to affect individuals have occurred. In 1987 the Department of Justice elevated its Environmental Crimes Unit in both size and stature within the Department. In 1988 Congress passed the Powers of the Environmental Protection Agency, giving EPA criminal investigators permanent law enforcement powers. The biggest change, however, occurred in November 1987, when the U.S. Sentencing Commission issued sentencing guidelines for environmental crimes. It is imperative to understand what has not changed—that Federal employees are subject to Federal prosecution for violation of Federal law. The environmental laws contain varying waivers of Federal sovereign immuni-

ty, a principle that normally allows a defendant to escape conviction should criminal prosecution be brought by State or local officials. The one critical fact, however, remains: the Marine or civilian employee who violates a Federal statute can be investigated, prosecuted, and jailed by Federal authorities.

With there being a more extensive prosecutorial apparatus in place, an individual should have more interest in understanding how his conduct might transgress the law. In almost all cases, it is no defense to an indictment that the defendant did not know the existence or requirements of the law. In contrast to common law offenses, in which courts normally require the defendant to have a specific intent to violate the law, environmental offenses are viewed as crimes against the public welfare. Accordingly, there is no requirement for specific knowledge of the law or, with a few exceptions, knowledge that particular actions are against the law. Thus, the prosecutor of an environmental crime has a lighter burden of proof (the standard of proof remains beyond a reasonable doubt).

The text of RCRA and some of the other major environmental statutes require "knowing" conduct by the offender. "Knowing" is a term of art. In *United States v. Ouelette* (1977) the judge explained that

the government will have to prove that the defendant knowingly [voluntarily and intentionally] made the false statement, but it will not have to prove that the defendant, in doing so, knowingly violated the law or purposely intended to violate the law.

Two other principal standards of liability exist in the environmental arena. Strict liability refers to a category of crimes that are unaccompanied by any "fault." Under CERCLA and the Clean Water Act, strict liability arises upon failure to report releases or discharges of hazardous substances from a facility. To obtain conviction, the prosecutor must first prove that the defendant knew of the release or discharge. That established, criminal liability attaches if the defendant has not notified the appropriate Federal agency. The second standard pertains to negligence. Criminal sanctions can be imposed under the Clean Water Act if the defendant is negligent, that is, if his conduct grossly deviates from the standard

of care that a reasonable person would observe under similar circumstances.

The good news is that prosecutors exercise substantial discretion whether to proceed with a case, and many cases are weeded out before getting to a criminal courtroom. Frequently, there are simple "technical" violations of a regulatory program that do not warrant criminal prosecution. Examples include failure to maintain complete training records for personnel assigned to environmental duties, failure to submit reports on time, and other relatively minor indiscretions not threatening human health or the environment. At the other end of the spectrum are events or practices that, even to a casual observer, deserve society's vilification and vindication.

The Department of Justice's *Principles of Federal Prosecution*, issued in 1980, lists seven major factors U.S. attorneys should evaluate in deciding whether to prosecute a case. These factors are:

- Federal law enforcement priorities,
- nature and seriousness of the offense,
- deterrent effect of prosecution,
- defendant's culpability in the offense,
- defendant's history regarding criminal activity,
- defendant's willingness to cooperate with law enforcers, and
- probable sentence and consequences of conviction.

As to environmental crimes, a senior Department of Justice official in 1987 stated that greatest priorities were given to cases involving illegal dumping or discharging without a permit and knowing misuse of regulatory apparatus (e.g., submitting false reports). When asked to make recommendations on whether a case should proceed to trial, the EPA looks to the seriousness of the misconduct as measured by the extent of contamination, the impact on EPA regulatory functions, and the defendant's history of noncompliance. Review of these factors sheds light on why prosecution occurred at the Aberdeen Proving Ground.

Assuming a Marine or civilian employee seriously errs and a Federal prosecutor decides that the case should proceed, will the defendant end up in jail? Nowadays, probably yes. Environmental crimes after November 1987 are subject to the guidelines issued by the U.S. Sentencing Commission. The

A Possible Solution

by Capt Phillip E. Thompson

The monetary costs associated with cleaning up our environment are enormous. It has been estimated that by 1992, the Department of Defense (DOD) will need almost \$1 billion a year to maintain its pace of cleanups and site assessments, with a total of \$11 billion to \$14 billion required over the next 25 years. These estimates may be conservative. The Marine Corps will be heavily involved in this process. A number of Marine Corps installations are currently listed on the National Priorities List, which means these installations have been targeted for environmental cleanups of old hazardous waste sites. At the same time, most of these installations are struggling to meet present requirements.

It will be incumbent on commanders to prepare for these eventualities in much the same way the Marine Corps prepares for any other threat it faces in battle. This can be accomplished by employing the Marine Corps' basic troop-leading procedures, "BAMCIS." These steps have proven successful on the real-life battlefield and can be employed for success on the environmental battlefield.

guidelines require judges to follow strict rules, within certain parameters, for designated offenses. To eliminate wildly disparate sentences among offenders, the rules remove nearly all discretion that judges once traditionally enjoyed at the sentencing stage.

The guidelines operate rather mechanically. They ascribe a "base offense level" to each type of violation. Added to or subtracted from the base offense level are certain amounts for "specific offense characteristics" such as whether the offense involved repeated discharges of pollutants or discharges without a permit. Adjustments may also be made depending on the actual or potential harm that resulted from the offense, the culpability of the particular defendant, and the defendant's remorse and acceptance of personal responsibility. Multiple counts do not arithmetically increase a sentence because the adjustments available to the base offense level already provide for instances of repetitive or

Begin Planning: As the Commandant's White Letter 2-90 stated, "Awareness of environmental protection standards is a first step towards attaining" the goal of environmental compliance. The Marine Corps must ensure that all Marines gain an appreciation for the environmental situation that will plague the Marine Corps into the next century. The environmental threat matrix, made up of Federal, State, and local governments, Federal and State agencies, as well as environmental and citizens' groups and the laws they pass and enforce, is fluid, with new rules and new players constantly entering the picture. Consequently, the Marine Corps must get on top of this situation by planning now.

A thorough analysis must be undertaken to identify the Marine Corps' environmental goals and objectives. Once identified, a comprehensive strategy for managing those goals and objectives can be developed. This strategy would outline goals, directions, priorities, and objectives. Within this framework, training prerequisites, budgetary considerations, permitting and reporting requirements, policy guidelines, and

ongoing misconduct. Once the total offense level is obtained, the judge refers to a published table that dictates a range of confinement (in months).

As a simplified example, suppose a Marine knowingly dumps half a drum of cleaning solvent that is hazardous waste behind a maintenance shed. Such conduct falls in the sentencing guidelines category of "Mishandling of Hazardous or Toxic Substances or Pesticides; Recordkeeping, Tampering, and Falsification." The base offense level is eight. In this hypothetical, the fact that it involves a discharge to the environment warrants 4 additional offense levels and that it was done without a permit warrants 4 more offense levels, bringing the total offense level to 16. The nature of the hazardous waste and the degree of cleanup effort could result in as many as four more offense levels being added. For a defendant whose conduct reaches 20 offense levels, the sentencing guidelines table dictates a prison

other considerations necessary to meet the Marine Corps' environmental needs could be implemented.

Arrange For: Arrangements must be made to ensure that appropriate resources are allocated to accomplish the mission. At the same time, steps to include key personnel (civilian and military) in the process should be made. Efforts to gain input from key players within the Department of the Navy (DON), DOD, other executive agencies, Congress, and the private sector must be made. Once these individuals or institutions have been identified, arrangements must be made to put the necessary information into their hands so that competent analysis and recommendation can be made. Therefore, there will be a need to gather important environmental information.

Make Reconnaissance: The Marine Corps' *Troop Leading Guide* talks about doing a careful reconnaissance of the ground over which a battle will be fought. The Commandant's White Letter says that the Marine Corps must analyze the situation to determine what needs to be done to accomplish the mission. However, reconnaissance on this issue would be similar to the collection of strategic and tactical intelligence.

sentence of 33 to 41 months. Moreover, a total offense level of 20 requires imposition of a fine of not less than \$7,500 and not more than \$75,000.

The U.S. Sentencing Commission guidelines bring about other significant changes to treatment of offenders. Under the guidelines sentences are determinate, meaning that an individual serves his entire period of confinement (subject only to 54 days relief after serving the first year). Parole is abolished. A judge cannot impose a sentence and then suspend it in favor of probation. A first-time offender's background, such as community ties or record of exemplary citizenship, are less relevant than in the past. And, except in certain limited circumstances, "the court shall impose a fine in all cases."

Avoiding Trouble

Today's increased emphasis on the punitive aspects of the environmental laws requires better education of Ma-

On the strategic side, the Marine Corps must examine the forces that affect environmental policy. As stated earlier, there are forces that affect the regulatory structure—Congress, Environmental Protection Agency (EPA), States, DOD, and DON. The regulatory environment is constantly changing. Steps must be taken to stay abreast of these changes. The ability to predict and monitor changes will put the Marine Corps in a better position to contend with regulatory and budgetary challenges.

On the tactical side, the Marine Corps must take a hard look at the ground over which this battle will occur—its installations. The most practical method to "recon the ground" would be to conduct environmental audits on all Marine Corps installations. Environmental audits are similar to major inspections. However, instead of determining if a unit is combat ready, the audit team will look at an installation's environmental situation. Audit teams would evaluate hazardous waste management procedures, waste minimization plans, sanitary treatment plans, air pollution control measures, wildlife protection programs, solid waste disposal procedures, and other standard or site-specific issues. Each installation has its own unique

problems that audit teams must take into account. The goal of these audits would not be to find fault but to find out where the Marine Corps stands environmentally. Audits will let planners know what is being done right and what is being done wrong, and make comparisons of the same.

Complete Plan: Once the reconnaissance is completed, information synthesized, and input from key players included, then a Marine Corps Environmental Master Plan could be completed. The plan's strategic scope would act as a base for the implementation of further command and occupational field directives and initiatives. The plan would deliver the necessary information to commanders so they could ensure compliance with environmental standards.

Issue Order: This is the easy part for Marines. The alternatives are to write a Marine Corps order and issue it through the traditional channels or use more innovative methods to get the message out. Teams could be dispatched to brief selected Marines (officers and staff noncommissioned officers), then these Marines could brief their subordinates. Also, a short course on environmental issues could be taught

at boot camp, noncommissioned and staff noncommissioned officer courses, The Basic School, Amphibious Warfare School, and Command and Staff College. Eventually, an environmental course could be offered by the Marine Corps Institute. These steps would raise environmental awareness. All Marines would be briefed and would have a working knowledge of the plan and its objectives.

Supervise: The *Troop Leading Guide* states "that supervision must be continuous throughout the conduct of an operation." Commanders must first provide an atmosphere that supports environmental compliance. All Marines must know that specific actions and activities constitute a violation of an environmental law. Leaders must also lead by example, which means they should have a thorough understanding of the Marine Corps Environmental Master Plan, especially those parts of the Plan that affect their specific activity. Awareness must be continuous, and commanders must ensure that the message is reaching everyone. The costs for making mistakes are high and will continue to rise.

>Capt Thompson is an associate counsel at Marine Corps Logistics Base, Albany, GA.

ness and civilian employees. Yesterday's shortcuts and ignorance, feigned or otherwise, are prescriptions for trouble. It should come as no surprise to discover that there are ways to operate within the bounds of the law and yet attain the Marine Corps' mission. Rule One for anyone involved in, or responsible for, environmental matters must be, "At all costs, avoid damage to the environment." Oil and petroleum product spills and habitat destruction can be avoided through proper planning and adherence to set, safe procedures. Midnight dumping of hazardous waste, sometimes resorted to as an expedient way of reducing costs or administrative hassle, is neither necessary nor legally and environmentally acceptable. Related to environmental protection is the vogue belief that the armed services should reduce their hazardous waste generation. Having hazardous waste on hand poses a threat of accidental release. Disposing of it consumes an increasingly expensive frac-

tion of an installation's operations and maintenance budget. *Minimization* has become a fine-sounding watchword. A Marine who uses only one gallon of solvent instead of five gallons to clean a piece of gear can congratulate himself for his efficiency. The problem is that there remains one gallon of hazardous waste. What is needed is *prevention*. The goal should be use of products and implementation of procedures that do not generate hazardous waste.

Another way to reduce one's chances of running afoul of environmental laws is to get to know the regulators. EPA, State, and local regulators frequently provide technical advice on what is permissible under the environmental laws. Regulators are far less prone to recommend prosecution if they are brought into a problem at an early stage. For example, in 1989 MCLB Albany realized that its industrial wastewater treatment system did not fully treat depot maintenance ac-

tivity effluent. Wastes routed to the domestic wastewater treatment system remained classified as hazardous waste but were not dealt with as such. Upon seeking the State of Georgia's advice, the base received administrative process (a notice of violation and proposed consent order) to correct the problem. Had base personnel knowingly allowed the situation to continue unabated, a prosecution for illegal storage and disposal of hazardous waste might have been brought.

Virtually every environmentally dictated requirement brings increased costs. Unlike corporations, which can pass along to consumers their increased costs for altered processes or environmentally safer equipment, the Armed Services do not operate on a profit basis. All funding must be justified before Congress. Some commanders erroneously cling to the belief that pollution abatement funding competes with other budget demands. Congressional sentiment has been un-

mistakable: commanders must fund their environmental requirements fully. Failure to do so is viewed by regulators and prosecutors as recalcitrance or, worse yet, disregard for statutory requirements. Middle management and subordinate personnel responsible for day-to-day operations who do not initiate and follow up on funding requests for necessary equipment or construction will, like the Aberdeen defendants, be held accountable.

Finally, both general and technical environmental training for Marines and civilian employees is on the increase. Those who are more aware of their obligations and who are better trained in their duties will be less likely to commit errors that could lead to prosecution.

Marines and civilian employees who conscientiously attempt to meet environmental requirements should have

no fear of prosecution. Those who ignore their obligations under the environmental laws, who blatantly insist on predominance of mission over environmental protection, or who jeopardize human health and the environment should be prepared for significant changes in their lifestyles. At a minimum, they will spend substantial personal funds to retain private defense counsel.

Environmental 'Rules Of Engagement': Operational Requirements and Environmental Compliance

by Maj Russell J. Armentrout

The era of environmental consciousness is here to stay. While some Marines might consider the many environmental regulations as cumbersome and unnecessary, they are the law, and Marines ignore them at their peril.

The American public is becoming increasingly knowledgeable and more concerned with environmental issues. A speaker at the 1990 Marine Corps Environmental/Natural Resources Workshop referred to a 1989 study in which 47 percent of Americans polled considered global environmental problems a serious threat, while only 1 percent were equally concerned with Soviet or Chinese aggression. As the news focus begins to shift away from events in Southwest Asia, Americans are likely to concentrate their attention back to prewar concerns, such as environmental degradation.

The perception of many in Congress is that Federal facilities in general, and Department of Defense (DOD) facilities in particular, lag behind the private sector in complying with environmental laws. The Secretary of Defense and Secretary of the Navy have each indicated that their respective departments will set the standard for environmental compliance for the Nation. In the Commandant's (CMC's) White Letter 2-90 on environmental compliance, he stated that "we can, and we must, find ways to train and accomplish our mission in an environmentally acceptable manner" and that he con-

siders environmental standards to be "Rules of Engagement."

There are myriad Federal, State, and local laws covering every aspect of environmental compliance, from underground fuel storage requirements to protection of areas of historic interest. For base and station commanders, compliance with these laws requires extensive staff effort and dedication of significant resources. Fortunately, the operational commander's scope is less inclusive, but it is nevertheless just as important.

Environmental Awareness

There are two primary areas affecting the Fleet Marine Force (FMF) in the day-to-day routine of operations and training:

- *National Environmental Policy Act (NEPA) Compliance.* NEPA requires that each Federal agency, when proposing a major action (defined in MCO 11000.8B, *Real Property Facilities Manual, Volume V*), must document the environmental impacts and alternatives considered in the decision-making process. Records of this process shall be available for public review. In many instances, the government is required to publish its intentions and

expected consequences of its action for public review and comment; failure to adequately address all impacts or to fairly assess all alternatives may result in a delaying action from public interest groups.

It is important to understand that environmental impact is not limited to flora and fauna, but includes anything that affects the quality of the "total human environment." Factors to be considered include, but are not limited to, risk to public health or safety, increased noise or traffic, degradation of the local economy, impact on cultural or historic resources, and any other environmental concern likely to be the subject of controversy. The level of likely impact resulting from an action determines the extent of public review required.

NEPA does not prohibit any specific action, but as the likely environmental impact of our actions increases, so do the levels of public scrutiny and external review. Careful consideration of all available alternatives and choosing the course of action that meets our requirements with the least probable environmental impact will pay dividends in the avoided costs of litigation, penalties, restoration, mitigation,



and unnecessary delay. Failure to comply with NEPA may result in criminal or civil prosecution, loss of public trust, and ever-increasing restrictions on training.

• **Hazardous Waste Management.** Almost every unit deals with hazardous wastes of one type or another. Poor management procedures can affect units in two critical ways: First, they expose both individual Marines and their commanders to their greatest risk of prosecution for violation of environmental law. The Department of Justice (DOJ) has demonstrated its willingness to prosecute cases involving illegal dumping of hazardous wastes at Federal facilities. Several DOD sites are presently being investigated. A case at Aberdeen Proving Grounds in Maryland was tried in Federal Court, and three high-level civil service employees were found guilty (summarized in CMC White Letter 2-89). Because the violations were flagrant and the defendants received relatively light sentences, some observers opined that Federal Courts are not really very serious about enforcing environmental laws at federal facilities. Three additional facts lead to a different conclusion: (1) The DOJ has increased its staff of investigators and raised prosecution of environmental crimes to a higher priority. (2) Revisions to the Federal Sentencing Guidelines in November 1989 made the punishment for environmental crimes much stiffer and have taken much of the latitude away from judges. (3) Congress has seriously considered granting States greater authority to enforce and prosecute violations of both State and Federal environmental statutes aboard Federal facilities, includ-

ing explicitly waiving Federal sovereign immunity in these cases. Eventual passage of such amendments is considered likely.

Second, poor management procedures waste money. Sloppy practices such as improper labeling and failure to correctly segregate wastes can make disposal costs skyrocket. For example, a 55-gallon drum of waste oil may have a minor resale value or be recycled locally for reuse at your installation. However, if it becomes contaminated with other common waste products, it might cost on the order of \$750 for disposal.

Mistakes such as this are not uncommon, but until recently, disposal costs were the responsibility of the Defense Logistics Agency, and there was little incentive for individual activities to do it properly. In an effort to minimize hazardous waste costs DOD-wide, the burden of paying for disposal was shifted to the generators of the waste. As budgets are being reduced and disposal costs have risen six-fold over the past six years, proper management is vital. An adequate system will minimize additional costs resulting from errors; an exceptional system will seek to reduce costs through an active minimization program.

Rules of Engagement

As I see it, there are four elements that need to be incorporated into any plan to address operational requirements and environmental compliance:

1. *Adjustment of our decisionmaking process.* In many instances we decide where we want to train (or build) and then go through the necessary procedures to get that site approved. A bet-

ter way to proceed is to clearly define our requirements and then evaluate *all* alternatives. By avoiding sensitive areas, we can often still get the same results with much less effort. As stated earlier, NEPA does not prohibit any particular action, but much of the effort, expense, and negative public exposure resulting from a controversial or ill-advised decision may offset the value of the training benefits of a particular site.

2. *Better installation/operator coordination.* Range and training management personnel must work closely with the installation's environmental/natural resources staff. Failure to do so will undoubtedly result in short-term problems; the long-term effect may be the loss of training areas or costly remediation. Though it is normally seen as a "facilities order," MCO P11000.8B affects nearly every unit; operational units should be on its distribution list and training officers should familiarize themselves with it as it pertains to NEPA compliance.

Another long-standing issue that may need attention is the sometimes adversarial relationship between Marines and the "tree-huggers" of the base's environmental staff. Facing a labyrinth of environmental regulations, consultation with and consideration of their advice is in our best interest in the long run.

3. *Education.* Make Marines more aware of the issues and requirements. As with many problems, education is the key to solving it. The potential impacts of violations demand that every Marine be aware of regulations governing his daily activities. There are many opportunities available for us to improve in this area:

• **The Basic School.** While this is not a hard tactical skill, compliance with environmental laws will affect nearly every Marine officer during his career. A general overview advising him of applicable laws, Marine Corps policy, and the potential impact of noncompliance would be time well spent.

• **Formal military occupational speciality (MOS) schools.** Proper handling of hazardous wastes should be incorporated into the syllabus of every formal school for MOSs where these substances are likely to be encountered. Prime examples include engi-

neer, motor transport, aviation, armor, and communications schools.

- Marine Corps Institute. In most instances, the duty of the unit hazardous waste noncommissioned officer is assigned as a secondary job, often to a Marine who has had no formal training for the billet. This is a closely regulated area where even administrative errors can result in substantial penalties for the Marine and those in his chain of command. Formal training on the subject is often unavailable; at the very least, a Marine assigned this duty should have the opportunity to improve his skills by studying through a professionally prepared correspondence course.

- Professional military education (PME). The PME program already in effect throughout the Marine Corps provides an excellent opportunity for educating Marines on their responsibilities. Commanders should take advantage of the station environmental staff and staff judge advocate to assist in instructing these classes.

- Advanced degree/special education programs. The existing programs for officers to pursue graduate degrees

should be expanded to include environmental disciplines. Those earning master's degrees in environmental or civil engineering (specializing in environmental fields) could do their "payback" tour as facilities officers, where environmental management has become a matter requiring daily emphasis. Furthermore, officers with operational experience and background in environmental matters could provide a link between two communities previously considered mutually exclusive.

- Base media coverage. The base newspaper provides an excellent opportunity for educating base residents. By using creative approaches in these widely distributed publications, Marines and their dependents can learn more about environmental topics.

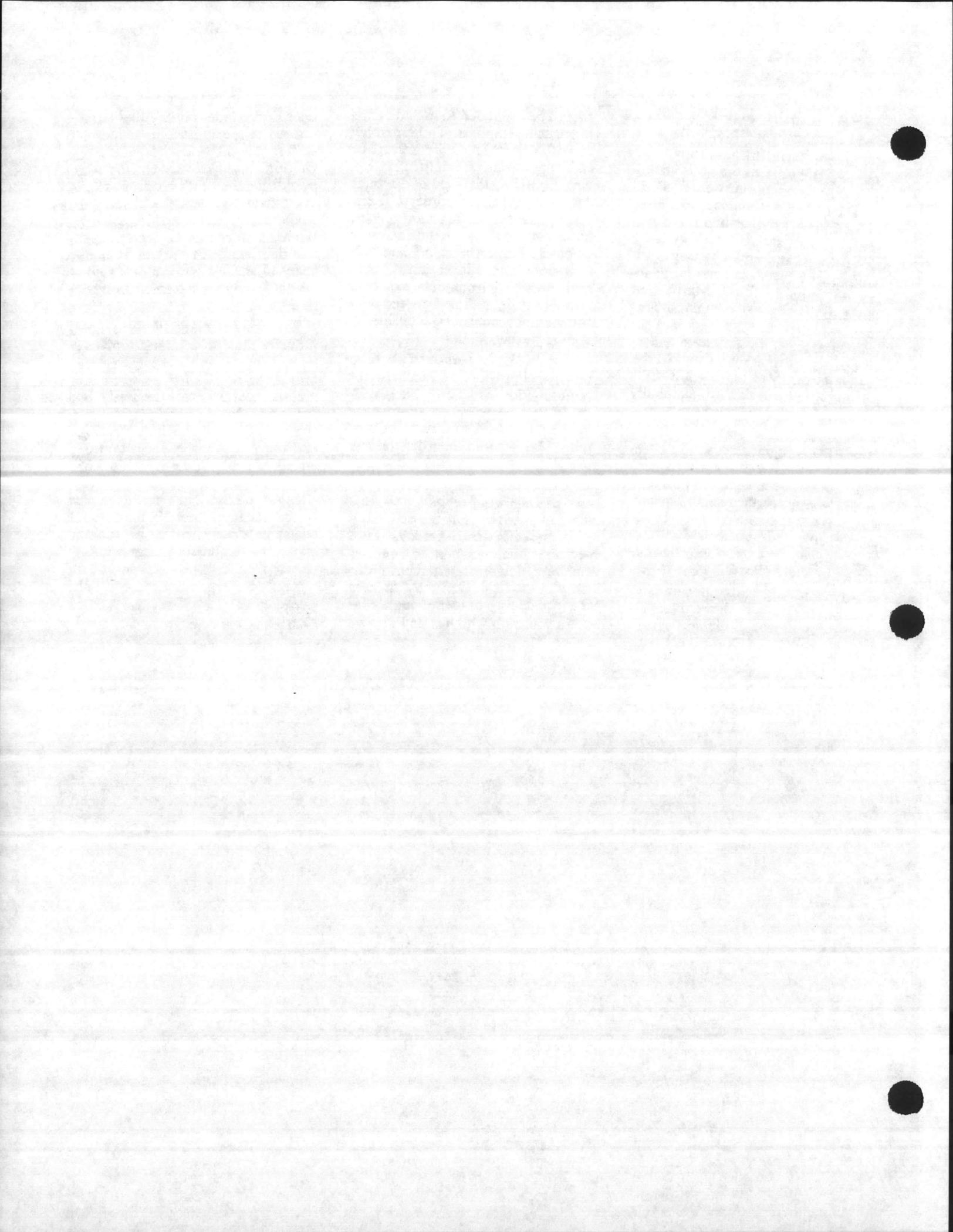
4. *Development of continuity in environmentally sensitive billets.* Establish a secondary MOS for hazardous waste specialists and assign it to Marines who have demonstrated their proficiency in the field. Currently, there is no adequate way of identifying a Marine in your unit who has had experi-

ence or received training as a hazardous waste specialist. This is a critical skill required by many organizations; we don't need to reinvent the wheel every time the unit's hazardous waste coordinator transfers. Additionally, this would assign some legitimacy to the billet. Marines who become skilled in this field are often working in non-existent billets; assignment of a secondary MOS may assist them at promotion time.

Environmental legislation is a growth industry that we cannot afford to ignore. While many Marines may feel that some or all of these restrictions are unnecessary or excessively burdensome, *they are the law*. Failure to comply can have serious professional and personal consequences that negatively affect both the individual Marine and the Corps. As we have adapted to other changes in the past, we must adapt to these. We must rethink our game strategy so that we can best play by these "rules of engagement."



>Maj Armentrout is the deputy force engineer for Marine Corps Bases, Pacific.

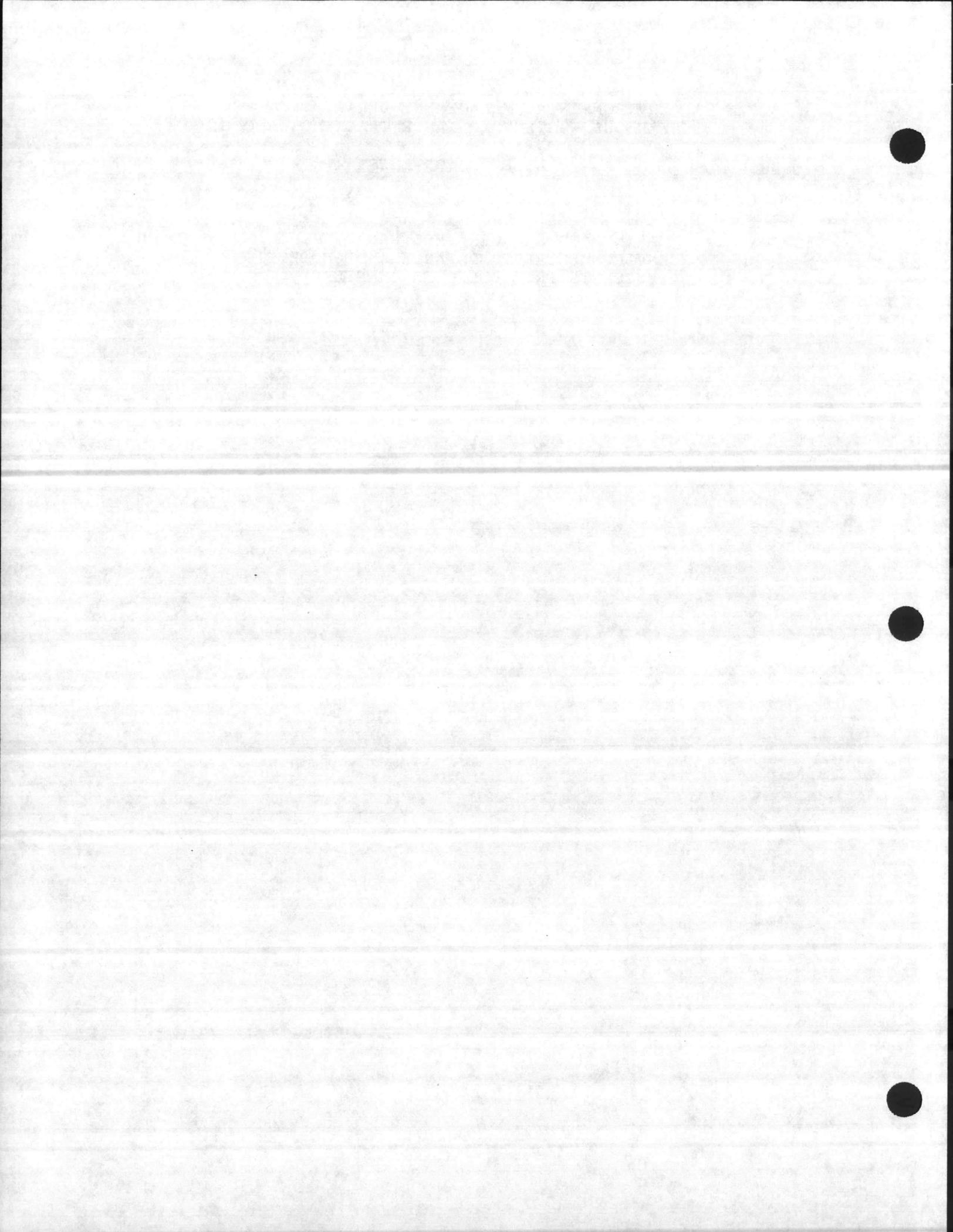


ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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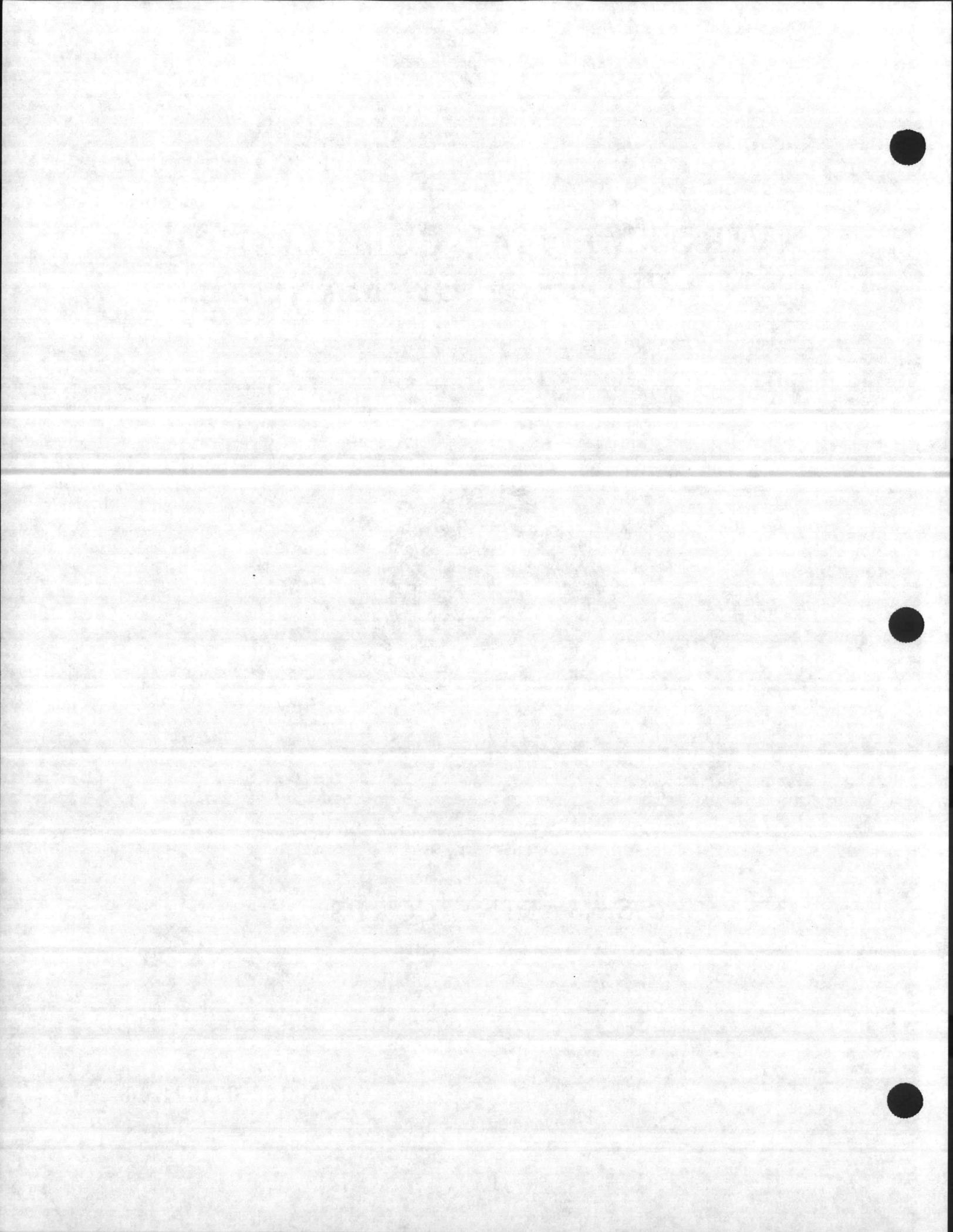
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ENVIRONMENTAL COMPLIANCE AND PROTECTION MANUAL



U.S. MARINE CORPS

PCN 102 071871 00



CHAPTER 6

AIR POLLUTION ABATEMENT

SECTION 2: FEDERAL STATUTES

6200. CLEAN AIR ACT

1. The CAA, 42 U.S.C. 7401 et seq., enacted in 1970 and most recently amended in 1990, is the Federal statute mandating the prevention and control of air pollution from both stationary and mobile sources. The CAA requires the EPA to establish three types of national standards: National Ambient Air Quality Standards (NAAQS), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). States may obtain authorization for the implementation and enforcement of some programs mandated by the CAA. This requires review and approval of the State Implementation Plan (SIP) by EPA.

2. NAAQS (CAA, sect. 109) establishes the allowable primary and secondary ambient concentrations for six priority pollutants:

- a. Total suspended particulates.
- b. Sulfur dioxide.
- c. Nitrogen oxides.
- d. Carbon monoxide.
- e. Ozone.
- f. Lead.

3. NAAQS apply to pollutant concentrations in ambient air and are not applicable to individual emission sources. The primary standards are meant to protect the health of the population; therefore, they

are more stringent than the secondary standards that were established to protect the public from adverse effects associated with the presence of air pollutants in ambient air. The CAA (sect. 110) mandates that States must develop SIP's that regulate emissions from stationary and mobile sources to ensure attainment and maintenance of NAAQS.

4. There are statutory provisions concerning the construction and modification of stationary sources in areas where air quality is better than that required by NAAQS (CAA, sect. 166). These provisions are intended to prevent significant air quality degradation in such areas. The Prevention of Significant Deterioration (PSD) regulations (CAA, sect. 166), which are specific for each State, establish strict preconstruction guidelines and monitoring requirements. For construction or modification of sources in nonattainment areas (NAA) where one or more NAAQS are not met, there are similar State regulations for preconstruction review, emission control systems, and monitoring.

5. NSPS (CAA, sect. 111) were developed for specific industrial categories to provide a ceiling for emissions from new sources. They are based on the application of the best technology available to reduce emissions. These standards include requirements for notification, recordkeeping, performance tests, maintenance, and monitoring.

6. NESHAP (CAA, sect. 112) were established to control air pollutants for which no ambient air quality standards are applicable and which may cause an increase in mortality or serious irreversible illness. These standards define emission limits, monitoring

requirements, restrictions on material use, worker practice standards, and reporting requirements for hazardous air pollutants. Facilities emitting the following pollutants must comply with the appropriate standard:

- a. Asbestos.
- b. Benzene.
- c. Beryllium.
- d. Coke oven emissions.
- e. Inorganic arsenic.
- f. Mercury.
- g. Radionuclides.
- h. Vinyl chloride.

The NESHAP program can be delegated to any qualifying State.

6201. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III. In addition to the CAA, title III of SARA of 1986, also known as the Emergency Planning and Community Right-to-Know Act (EPCRA), includes the requirement that facilities report the release of extremely hazardous substances (EHS) to the environment. See chapter 11 for detailed requirements. Implementation of SARA cannot be delegated to the States by EPA.

6202. MONTREAL PROTOCOL (PROTECTION OF STRATOSPHERIC OZONE). The United States is a signatory to the Montreal Protocol, which requires each participating nation to limit its total production and consumption of certain CFC and Halon compounds that degrade stratospheric ozone. The EPA has developed regulations governing production, consumption, and trade of CFC's. The Montreal Protocol was revised in 1990 by the signatory nations. The revisions were published by EPA in the 6 March 1991 Federal Register. Additionally, the provisions of the Montreal Protocol were included in the 1990 amendments to the CAA (title IV). The Marine Corps policy on ozone-depleting substances is identified in paragraph 6408.

6203. PENDING CHANGES. The CAA Amendments of 1990 will result in the regulation of 189 hazardous air pollutants. Many of these pollutants will be regulated for the first time, using technology-based emissions limitations standards and possible further controls based on Risk Assessment (CAA, title III, sect. 112(b)). Additionally, EPA will promulgate, under the authority of the CAA, more stringent regulations for mobile and stationary sources of air pollution. The amendments also addressed the need for federally enforceable State operating permits and tougher enforcement by EPA. There is also a provision for suits by private citizens (CAA, title II). Contained in CAA, title IV are new permitting requirements. Many previously unregulated emission sources will require permits, while sources already permitted will face more stringent emission standards.

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SECTION 3: REQUIREMENTS

6300. INTRODUCTION. The Federal regulations pursuant to the CAA are codified in 40 CFR, 50-80. State and local air pollution regulators may have more stringent requirements. Requirements applicable to operations at Marine Corps installations are outlined in the following paragraphs.

6301. STATE AND LOCAL AIR TOXICS PROGRAMS

1. Nearly every State in the United States as well as the District of Columbia, the Commonwealth of Puerto Rico, and the Virgin Islands, has or is developing an Air Toxics Program. The State Air Toxics Program is separate from the programs developed under NSPS, NESHAP, and NAAQS described in paragraph 6200. Regulations promulgated by the States under the Air Toxics Program are in response to guidelines provided by EPA. These EPA guidelines are only recommendations. State and local air toxics regulations and guidelines vary greatly. Existing State Air Toxics Programs encompass many activities, including the following:

a. Case-by-case evaluations of air pollution sources as part of other regulatory programs.

b. Emission inventory development.

c. Federal and State initiative review.

2. Marine Corps installations are required to be knowledgeable of and to implement appropriate State and local regulations.

6302. CONTROL OF EMISSIONS. Several State regulatory agencies are requiring existing stationary sources to successively reduce hydrocarbon emissions, and in some instances to reduce nitrogen oxide emissions, in an effort to lower ambient ozone levels. If additional control measures are not sufficient to achieve the Federal ozone standard, regulatory agencies may require Marine Corps installations to apply nontraditional control strategies, including material throughput limitations or emission caps on stationary sources, alternative fuels for mobile sources, and regulation of volatile organic compounds (VOC) from paints and coatings.

6303. STATIONARY SOURCES

1. **Permits.** Marine Corps installations operating, modifying, demolishing, or constructing stationary sources shall identify sources requiring permits, apply for those permits, operate those sources in compliance with permit limits, and periodically renew permits as required by Federal, State, or local air pollution control agencies. Technical assistance is available from the NAVFACENCOM EFD and NEESA (NEESA provides assistance on all aspects of air pollution management) upon request.

2. **Ambient Air Standard Compliance.** Applicants for permits to operate and/or construct air pollution sources are required by State and local agencies to provide assurances that the existing or proposed sources will not degrade ambient air quality. Such demonstrations may involve atmospheric dispersion modeling of the effect of emissions on ambient air

quality concentrations. The modeling shall be performed in compliance with EPA, State, or local regulations and guidance.

3. New Source Performance Standards. Each new, modified, or rebuilt source shall be constructed and operated in compliance with either the EPA-issued NSPS or more stringent State or local requirements. New sources that are smaller than the NSPS minimum qualifying size, or for which no NSPS category has been established, shall meet applicable State or local standards. However, installation commanders are advised that the permitting process can take from 6 to 24 months, and monitoring of the permitting process is recommended to ensure timely issuance of construction permits. Permit requirements for new sources can be coordinated with the cognizant NAVFACENCOM EFD.

4. Existing Source Standards. Existing stationary sources shall be brought into compliance with standards within the time frame required by the regulatory agency or as specified by a variance or delayed compliance order.

5. Operating Out of Compliance. Each installation with a stationary source unable to achieve timely compliance with applicable emission limitations shall request a variance to continue operating until compliance can be attained. Cognizant EPA, State, or local air pollution offices should be contacted to determine the need for delayed compliance orders (40 CFR 65) for sources with approved variances. Delayed compliance orders issued by a State for major sources must also be approved by EPA; they have no force until such approval has been obtained. Delayed compliance orders for nonmajor sources may be disapproved by EPA but are in force until such disapproval has been issued.

6. Monitoring and Reporting. Where applicable, Marine Corps installations shall comply with monitoring requirements prescribed either in Federal NSPS,

or State and local standards, delayed compliance orders, and permits. Reports shall be provided as required by State or local authorities.

7. Fuel Standards. Marine Corps installations shall comply with requirements with respect to sulfur and ash content, and other fuel composition requirements applicable to solid, liquid, and gaseous fuels for stationary fuel-burning equipment. Specific standards for stationary sources are contained in 40 CFR 60.

8. Disposal of Emission Residuals. Pollutants removed by air pollution control equipment shall be disposed of in compliance with requirements pursuant to RCRA (chapter 9) and the CWA (chapter 7). This includes determining if emission residues meet the definition of a RCRA HW (40 CFR 261).

9. Open Burning. SIPs allow varying degrees of control in open burning for firefighting training and for disposal of hazardous substances when no other feasible alternative exists. The Marine Corps shall comply with applicable requirements, which may include prior approval (verbal or written, including permits) for each occurrence from the responsible regulatory agency, burn-period restrictions, and limits on blackness or opacity of smoke emissions. Additionally, installations shall ensure that firefighting training pits and peripheral equipment are maintained and managed per the CWA and RCRA to prevent groundwater contamination from training exercises.

10. Volatile Organic Compound Emissions Compliance. Most States regulate the emission of VOC's into the atmosphere. Typical activities at Marine Corps installations that emit VOC's are JP-4, JP-5, and MOGAS in storage tanks, solvent cleaners and degreasers, painting and coating operations, plating operations, gasoline dispensing facilities, and drycleaning facilities. Emission limitations will vary from State to State and are usually expressed in pounds of VOC per unit volume of substance used.

The specific limits for VOC emissions are determined on a State by State basis and will be described by the installation permit or State regulations.

11. Sulfur Dioxide Emission Compliance. Sources burning fuel containing sulfur are typically limited to an allowable emission rate in pounds of sulfur dioxide per hour. Individual permits will specify these limitations. Testing, monitoring, and sampling data must be retained and available for inspection. In addition, many States regulate the sulfur content of fuel oil used by Marine Corps installations. Typically, sulfur content is limited to 1 to 2 percent.

12. Particulate Emission Compliance. Particulates emitted from fuel-burning equipment and incinerators are typically regulated at the State level through individual permits. Limitations are normally expressed as pounds of particulate per million Btu of heat input. Many States vary particulate emission limitations depending on the regional air quality conditions within the State. In addition, visible emissions are regulated to opacity levels by percentage (e.g., 20 percent opacity). Higher levels of visible emissions (opacity) are normally permitted during certain startup and maintenance operations for short periods of time (e.g., 5 minutes per hour).

6304. HAZARDOUS AIR POLLUTANTS

1. National Emission Standards for Hazardous Air Pollutants. NESHAP are based on health effects with strong reliance on technological capabilities. They apply to both existing and new stationary sources. The NESHAP program can be delegated to any qualifying State. The four substances on the NESHAP's list for which there are current regulations include beryllium, asbestos, mercury, and vinyl chloride.

2. Asbestos. Prior to demolition or repair work with the potential to release asbestos emissions, Marine

Corps installations shall ensure compliance with the Occupational Safety and Health Act of 1970 (29 U.S.C. 651) and contact local pollution control agencies regarding specific air pollution control requirements.

6305. MOBILE SOURCES

1. Motor Vehicle Pollution Devices. Marine Corps installations shall comply with all vehicle emission inspection and maintenance requirements where required by State or local regulations except for such vehicles that are considered military tactical vehicles as described below. Rendering inoperative or tampering with any pollution control device is strictly prohibited by CAA, title II, sect. 203(a)(2)(A). Requests for waivers from emission control standards for vehicles must be arranged with the appropriate State or local air pollution regulatory agency in coordination with installation legal representatives (40 CFR 85). Additionally, the 1990 CAA contains provisions for enhanced vehicle maintenance and inspection requirements in some areas, based on ambient air quality (title II).

2. Tactical Vehicle Exemption. CAA, title I part A 118(c) exempts from compliance with emission standards tactical vehicles that have been specifically identified by DoD and approved by the President. Accordingly, military vehicles and other mobile sources designed and used for combat or tactical purposes are not subject to EPA-established emission standards applicable to new motor vehicles. Installations receiving requests for permits or other controls on unique military equipment or vehicles should contact the CMC (LFL) for guidance.

3. Fuels. All installations in the United States that dispense fuel for vehicles with catalytic converters shall be equipped to dispense unleaded gasoline to such vehicles. Contracts for unleaded gasoline shall not exceed limitations prescribed in Federal regula-

tions. Vehicles designed to operate on unleaded gasoline under no circumstances shall be altered to receive leaded gasoline or to be fueled with leaded gasoline (40 CFR 80 subpart B; and CAA, title II sect. 211(g)(1)). The CAA requires EPA to promulgate standards for diesel fuels by 1 October 1993.

6306. AIR POLLUTION EMERGENCY. Marine Corps installations responsible for operating an air pollution source shall, as required by State law or permit, have an air pollution emergency plan that identifies all actions that can reasonably be taken without compromising essential services and mission responsibilities. This plan shall address such emergencies as described in 40 CFR 51, appendix L, or as directed by State or local requirements. It shall

address operations such as boilers, incinerators, motor vehicle operations, and other mobile or stationary sources of air pollution emissions.

6307. ROUTINE OPERATIONS. All routine training exercises and ongoing actions at Marine Corps installations are to be planned and executed in a manner that ensures compliance with applicable air pollution abatement standards.

6308. TECHNICAL ASSISTANCE. The cognizant NAVFACENCOM EFD and NEESA are available to provide technical assistance to installations upon request.

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AIR POLLUTION ABATEMENT

SECTION 4: MARINE CORPS POLICY

6400. NEW SOURCE PLANNING. Under the 1990 CAA amendments, a preconstruction permit is required for the construction, reconstruction, or modification of a major air pollution emission source. New major sources must obtain a preconstruction permit even if EPA fails to promulgate standards for the relevant source category. Therefore, when planning or designing a new emissions source or modifying an existing source at Marine Corps installations, the review of the design must be coordinated with the EPA Regional Office and State or local authorities at the earliest practicable time in the design cycle. Assistance is available from the cognizant NAVFACENGCOCM EFD in providing design consultation or in permit processing for those design or permit initiatives undertaken by Marine Corps installations.

6401. EMISSION OFFSET

1. The CAA amendments will require stringent emission limitation requirements for nonattainment areas. In these areas, the use of the best available controls on new sources may not be sufficient to meet the allowable emission levels. Under the CAA amendments, controls can be applied to existing sources to reduce emissions, and the reductions can then be applied to new or modified sources through an offset program. In many nonattainment areas, offsets may be the only means to allow operation of new or modified processes.

2. Marine Corps installations should coordinate emission offsets with other DoD installations and

activities in their nonattainment area and with the EPA regional office and State and local authorities. Technical assistance is available from the cognizant NAVFACENGCOCM EFD.

6402. PERMITS. Permitting authorities should be encouraged to include as many emission sources as practicable in a single operating permit. A single permit will consolidate administrative and compliance oversight activities and requirements. The permitting programs enacted by the 1990 CAA included the incorporation of all applicable Federal and State operating requirements into a single permit enforceable by EPA, the State, and private citizens. Marine Corps installations shall ensure that permit conditions are achievable before such permits are issued. In some cases, one permit to cover all sources under the administrative responsibility of a specific command at a Marine Corps installation may be most practicable. Regulatory agencies should be requested to include conditions in a multiple source permit that preclude actions against all complying sources in the event one source goes out of compliance. The CMC policy prohibits payment of any charge that is determined to be a tax. However, legitimate fees, as required by State or local regulatory agencies, are payable from base operating funds. Questions regarding whether the charge associated with obtaining air emissions permits are fees or taxes should be referred by the environmental coordinator to counsel at the installation level and then to the CMC (LFL).

6403. USE OF NONCOMPLYING FUELS. Extenuating circumstances may force some Marine Corps installations to temporarily burn fuels that fail to meet air pollution control standards. Requests shall be made by the installation to the CMC (LFL) through the chain of command for permission to burn non-complying fuels as soon as it appears that fuels complying with air pollution regulations will not be available.

6404. VOLATILE ORGANIC COMPOUNDS. Sources of VOC's that will receive additional scrutiny by regulatory agencies include organic liquid storage tanks and process transfer equipment, asphalt concrete plants, equipment leaks, wastewater operations, painting and coating operations, and fuel and fueling operations. VOC control options to be considered by Marine Corps installations include product or material substitution, raw materials or product reformulation, and the application of engineering controls to capture and remove or destroy the VOC's before they are vented into the atmosphere. Additionally, title I of the 1990 CAA substantially revised SIP's for nonattainment areas (classified according to severity of nonattainment). A certified emissions statement from every stationary source of VOC's and NO_x's, or other specific baseline data for VOC's and NO_x's will be used to gauge future reductions in emissions from stationary sources. Therefore, Marine Corps installations that have not yet been required to inventory emissions of VOC, nitrogen oxides, and hazardous air pollutants as identified in the 1990 CAA should begin to do so.

6405. RADIONUCLIDE EMISSIONS. Marine Corps installations are required to comply with MCO 5140.1 regarding airborne emissions of radionuclides that are regulated based on radiation doses to the general public and occupational workers.

6406. RADON

1. Recognizing the health hazards associated with exposure to radon gas, DoD required the military services to develop a radon assessment and mitigation program. To meet the DoD requirement, NAVFACENGCOM was tasked to develop the Navy Radon Assessment and Mitigation Program (NAVRAMP) for DON. The NAVRAMP was developed through a joint effort with CNO, NAVMED, and CHINFO, and coordinated with the CMC.

2. The NAVRAMP follows the EPA guidelines. EPA considers radon levels of less than 4 picocuries per liter (pCi/L) as a low risk, and no mitigation action is required. EPA recommends corrective action within several weeks for buildings with radon levels greater than 200 pCi/L; within 6 months for greater than 20 but less than 200 pCi/L; and within 1 to 5 years for greater than 4 but less than 20 pCi/L.

3. The NAVRAMP is a two-tiered program:

a. Tier 1: Selective sampling of installations with family housing, hospitals, schools, child care centers, BOQ/BEQ, and brigs.

b. Tier 2: Comprehensive sampling at installations where the selective sampling showed that radon levels exceeded the EPA recommended action of 4 pCi/L. Comprehensive sampling will identify individual structures with elevated radon levels requiring mitigation actions to reduce/eliminate entry of radon into structures.

4. Based on the results of comprehensive sampling, installations shall plan and budget for radon mitigation projects according to the EPA-recommended schedule. Technical support for radon mitigation is available through the cognizant NAVFACENGCOM EFD.

6407. INSPECTION BY REGULATORY AGENCIES. Federal, State, and local pollution control agency officials, upon presentation of proper credentials, shall be escorted by appropriate personnel and allowed access to Marine Corps installations for the purpose of examining nonclassified records, inspection of monitoring equipment, and sampling of air emissions. Inadequately cleared personnel are not to be allowed access to classified areas or information.

6408. OZONE-DEPLETING SUBSTANCES. Marine Corps installations shall follow policies on ozone-depleting substances per DoD Directive 6050.9 of 13 February 89, SECNAVINST 5090.5 of 20 November 89, and DON Environmental Strategic Plan Objectives of 25 April 91 as follows:

1. Establish procedures to eliminate the unnecessary release of ozone-depleting substances to the atmosphere.
2. Modify operational, training, and testing practices to minimize the emissions of CFC's and Halons when appropriate.
3. Minimize the use of ozone-depleting substances through substitution and conservation practices, where consistent with mission requirements.
4. By 1995, achieve a 50 percent reduction Marine Corps-wide in the procurement of specified CFC and Halon substances from 1986 levels. Identify exceptions for national defense concerns when no suitable substitute has been found. By the year 2000, eliminate procurement of specified CFC and Halon substances.
5. Annual surveys of the acquisition and use of ozone-depleting substances by Marine Corps installations will be performed. Assistance in this area will be provided by the Naval Sea Systems Command (NAVSEA) with support from the Naval Air Engineering Center. Survey data will be used for an annual report from the CMC to OASN (I&E) for eventual submission to DoD.
6. An annual survey of procurement of ozone depleting substances will be performed for the Marine Corps by NAVSEA. Data from the survey will be used for an annual report to OASN (I&E) for eventual submission to DoD.

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CHAPTER 6

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SECTION 5: RESPONSIBILITIES

6500. COMMANDING GENERAL/COMMANDING OFFICER OF MARINE CORPS INSTALLATIONS

1. Ensures that a base or station order is written implementing this chapter.
2. Determines permit and variance requirements, obtains data, and completes applications. Ensures that permit conditions are achievable prior to issuance of the permit.
3. Signs and secures applications for permits related to demolition, preconstruction, and construction phases of MILCON and non-MILCON-funded projects, and pays related fees. Similarly, signs applications and pays related fees associated with operations permits, variances, or hearings to temporarily operate sources out of compliance with emission limitations. Copies of such permits should be provided to the NAVFACENCOM EFD for review.
4. Identifies compliance requirements for new construction by early coordination of all new projects or modifications with appropriate State, local, and EPA regional offices.
5. Budgets sufficient resources to maintain compliance with applicable air pollution regulations, including all routine air monitoring and scheduled sampling or testing.
6. Notifies State and local authorities of all instances of noncompliance per permit requirements.
7. Refers cases where compliance with fuel standards is impractical to the CMC (LFL) for resolution.
8. Maintains a current inventory of physical, operational, and emission characteristics of stationary air pollution sources.
9. Ensures the development of air pollution emergency plans as required. (NEESA can provide expert assistance in preparing such plans.) Cooperates with EPA, State, and local air pollution control authorities in the execution of air pollution emergency plans.
10. Ensures that motor vehicles, other than exempted combat and tactical types, and other mobile sources comply with applicable emission standards and other requirements.
11. Develops and implements transportation control measures as required by SIP's and as applicable to Marine Corps vehicles and facilities.
12. Implements, as an adjunct to routine vehicle maintenance programs, vehicle emissions inspection and maintenance programs as required for all vehicles other than those exempted as military tactical vehicles. Ensures corrective maintenance necessary for compliance with emission standards is performed prior to returning these vehicles to service.
13. Develops plans and projects to convert vehicle fueling stations that dispense leaded fuels to alternative fuels such as unleaded, diesel, and alcohol, and retrofits dispensers with applicable vapor recovery systems, as required.

14. Plans and budgets for radon mitigation projects according to EPA-recommended schedule.
15. Beginning 1 January 1993, reports emissions of ozone-depleting substances in a format to be established by the SECNAV for eventual submission to EPA.
16. Implements appropriate ozone-depleting substances procurement and requisition procedures when established.
17. Establishes procedures to eliminate emissions of ozone-depleting substances to the atmosphere, and modifies operations, training, and testing practices accordingly.
18. Adopts conservation practices such as substitution and recycling of ozone-depleting substances where possible and when consistent with mission.
19. Submits annual surveys of the acquisition and use of ozone-depleting substances for use in the annual report from the CMC to OASN (I&E) and eventual submission to DoD in a format established by NAVSEA. The criteria for submitting this report are contained in MCO 5090.1. Report Control Symbol DD-5090-01 applies.
20. Identifies appropriate emission offsets, where required for new construction, and prepares and coordinates projects to implement offset requirements.
21. Arranges for visits by regulatory personnel to Marine Corps installations.
22. Submits required PCR exhibits and/or Project Data Forms, DD Form 1391, for air projects per chapter 3.
23. Modifies VOC emissions to meet State or local regulations and/or to meet waste minimization goals.

CHAPTER 6

AIR POLLUTION ABATEMENT

SECTION 6: TERMS AND DEFINITIONS

6600. TERMS AND DEFINITIONS

The following terms and definitions are applicable to chapter 6:

1. **Air Pollution Emergency.** The excessive buildup of air pollutants reaching levels that may cause imminent and substantial endangerment to the health of persons as further defined by State or local air pollution regulatory agencies.
2. **Air Toxics.** Pollutants that may pose a potential health risk when emitted into the air, but for which the EPA has not established NAAQS (as has been done for the criteria pollutants).
3. **Delayed Compliance Order.** An order issued by a State or EPA to a stationary source, which postpones the date by which the source is required to comply with any requirement contained in the applicable State Implementation Plan.
4. **Fuel-Burning Equipment.** Equipment whose primary purpose is the production of energy or power from the combustion of any fuel. The equipment is generally used for, but not limited to, heating water, generating or circulating steam, heating air, and furnishing process heat by transferring energy by fluids or through process vessel walls.
5. **Hazardous Air Pollutant.** An air pollutant to which no ambient air quality standard is applicable, and which in the judgment of the EPA Administrator causes or contributes to air pollution that may reasonably be anticipated to result in an increase in mortality or an increase in irreversible or incapacitating illnesses.
6. **Ozone-Depleting Substances.** A family of substances that reacts with and breaks down stratospheric ozone. These substances include CFC-11, CFC-12, CFC-113, CFC-114, CFC-115 (also referred to as "Freon" or "refrigerants" 11, 12, 113, 114, and 115), Halon 1211, Halon 1301, and Halon 2402 (also referred to as "R-1211," "1301," and "2402"). Additional chemicals may be added to this list. The EPA has already proposed that carbon tetrachloride and methyl chloroform be added to the list of chemicals regulated under the Montreal Protocol on Substances that Deplete the Ozone Layer.
7. **State Implementation Plan.** The plan, including the most recent revision, which has been approved or promulgated by EPA under CAA, sect. 110, and implements CAA, sect. 110. Its purpose is to ensure achievement of NAAQS.
8. **Stationary Sources.** Stationary sources include boilers; incinerators; petroleum, oil, and lubricants and other hazardous substances in storage tanks; asphalt concrete plants; firefighting training facilities; sites for open burning of munitions; industrial processes such as plating, spray painting, and abrasive blasting; jet engine test cells; and rocket engine test facilities.
9. **Transportable Equipment.** Transportable equipment is often subject to similar air emission standards that apply to stationary sources. Such equipment includes generators, compressors, heaters, asphalt kettles, and other nonself-propelled equipment that is

towed or mounted on a trailer or self-propelled platform.

10. **Volatile Organic Compound.** Any organic compound that participates in atmospheric photochemical reactions per NSPS.

CHAPTER 7

WATER POLLUTION ABATEMENT

SECTION 1: INTRODUCTION

7100. PURPOSE

1. This chapter is applicable to the prevention and control of surface water and groundwater pollution from all wastewater discharge, dredge and fill operations, and surface runoff at Marine Corps installations in the United States, its territories, and possessions. Actions concerning water pollution at Marine Corps installations within foreign countries will be managed and maintained in a manner that protects human health and the environment as directed by appendix C.

2. Specific requirements for protection of drinking water supplies are discussed in chapter 8. The prevention of water pollution from the release of hazardous substances is discussed in chapter 9. Marine Corps response actions for oil and hazardous substance spills are given in chapter 11.

3. Marine Corps operations that are regulated include the following:

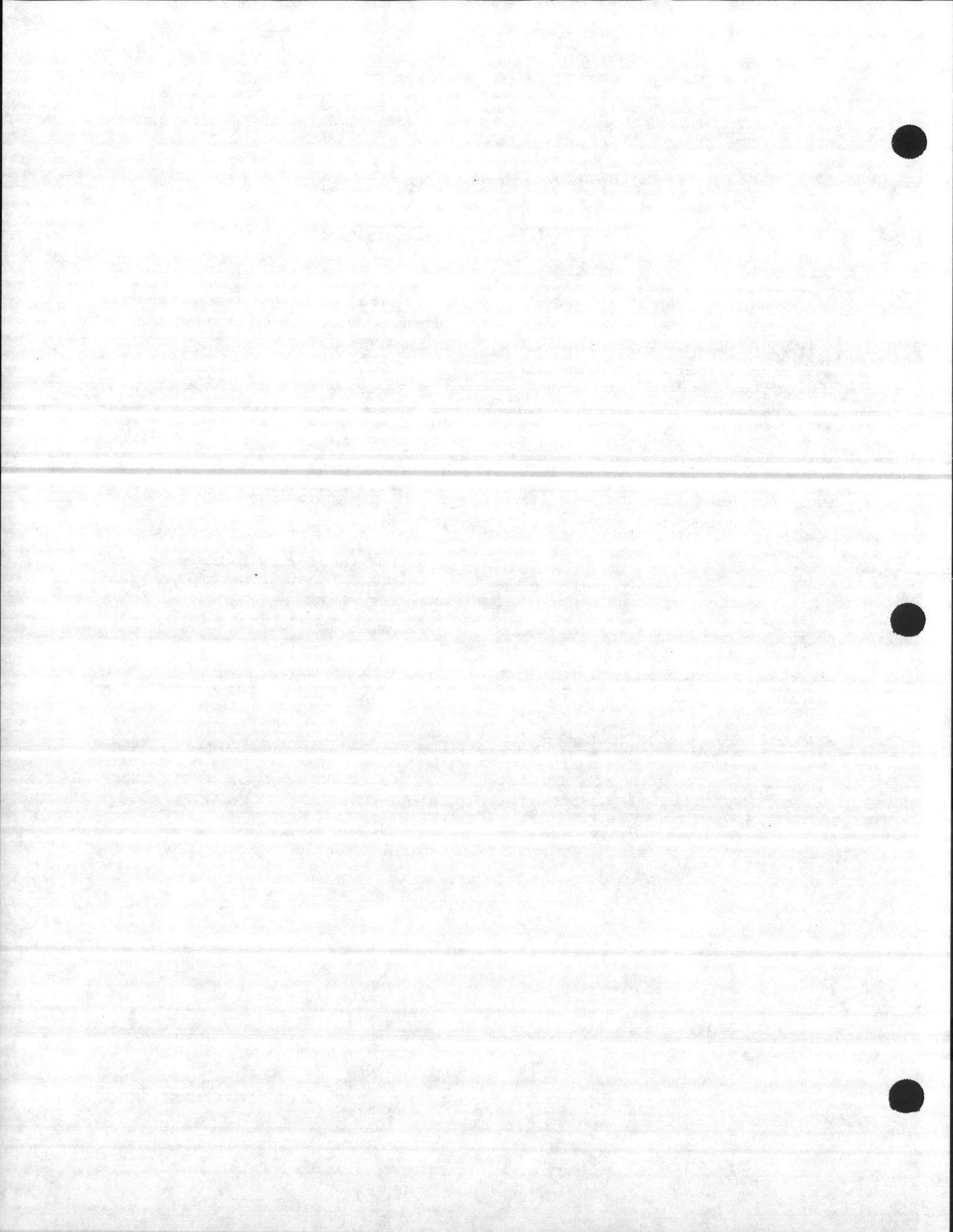
a. Sanitary or industrial wastewater discharge directly to a receiving stream, or through an onbase treatment facility.

b. Sanitary or industrial wastewater discharge to an offbase Publicly-Owned Treatment Works (POTW) or to a treatment plant of another DoD activity.

c. Stormwater runoff from industrial areas of the installation to a receiving stream or water body.

d. Underground or aboveground storage tanks containing petroleum, oil, and lubricants (POL), which are regulated under RCRA (40 CFR 280) and the CWA (40 CFR 112).

e. Hazardous materials storage areas and other regulated storage areas where runoff is likely to occur.



CHAPTER 7

WATER POLLUTION ABATEMENT

SECTION 2: FEDERAL STATUTES

7200. CLEAN WATER ACT AND FEDERAL WATER POLLUTION CONTROL ACT (FWPCA)

1. Congress enacted the FWPCA in 1956. Since then, the act has been amended to include the additions of the enactment of the CWA of 1977 and its reauthorization (Public Law 92-500, 33 U.S.C. 1251 et seq.) in 1987. The CWA's intent is to restore and protect the integrity of the Nation's waters by controlling the discharge of pollutants into those waters.
2. The CWA identifies the following three national goals:
 - a. To eliminate the introduction of pollutants into waters of the United States.
 - b. To ensure the attainment of "swimmable and fishable" waters.
 - c. To eliminate the discharge of toxic pollutants.
3. To attain these goals, the EPA has identified conventional, nonconventional, and toxic pollutants and the degrees of technology that must be applied to remove these pollutants from CWA, point and non-point sources of wastewater. Point source discharge requirements are implemented through the National Pollutant Discharge Elimination System (NPDES), a nationwide permit program administered by the EPA or State programs that have been authorized by the EPA. The CWA also authorizes the EPA to promulgate pretreatment standards for industrial sources discharging effluents to POTW's.
4. The CWA, sec. 313(a), subjects Federal agencies to Federal, State, and local water pollution controls. It limits Federal installation liability to "civil penalties arising under Federal law or imposed by a State or local court to enforce an order or the process of such court." Similar to the CAA, the CWA also provides for Presidential exemptions for executive branch agencies.
5. The CWA provides for citizen suits against any person (including Federal installations) that fail to obtain necessary permits, violate the terms of permits or violate effluent standards or limitations (sec. 505 (a)(1) and (f)).
6. The CWA makes it illegal for any person (including Federal installations) to discharge pollutants from a point source into waters of the United States without a permit (sec. 301). sec. 402, provides for the issuance of such permits by States (sec. 402(a)(5) under NPDES), and CWA, sec. 404, provides for the issuance of permits for discharges of dredged or fill material. (Note: Federal construction projects (i.e., dams and bridges) specifically authorized by Congress and for which an EIS has been submitted to Congress, do not require section 404 permits (CWA sec. 404(r)).
7. The CWA, sec. 404, provides EPA with the authority to establish criteria and guidelines for protecting the Nation's waters from contamination by dredged or fill material. The Army Corps of Engineers (COE) administers permit programs for dredge and fill operations in wetlands and waterways and construction activities in navigable waters. States, when approved by the EPA, administer permits for discharge of dredged and fill material.

8. The CWA, sec. 401, requires any applicant for a Federal license or permit to conduct any activity that may result in discharge to navigable waters to receive a certification from the State in which the discharge will originate, that any such discharges will comply with other sections of the act. In addition, the applicant shall provide an opportunity for a certifying State to review the manner in which the facility or activity shall be operated to ensure effluent limitations will not be violated.

7201. MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT (MPRSA). The MPRSA of 1972 (also known as the Ocean Dumping Act) as amended (33 U.S.C. 1401) provides for the protection of contiguous zone waters from sewage sludge discharge and direct dumping. Therefore, the MPRSA provides for regulation of any material transported from any location for the purpose of dumping into ocean waters. The primary means of regulation is a Federal permit system.

7202. RIVERS AND HARBORS ACT OF 1899. Section 10 of this act provides authority to the COE and the States to regulate dredge and fill operations and material disposal.

7203. SAFE DRINKING WATER ACT

1. The SDWA (42 U.S.C. 300(f) et seq.) prescribes treatment and distribution control strategies for abating contamination of drinking water and also requires the establishment of a permit program to regulate injection of liquids into underground strata. For more information on drinking water systems and conservation, refer to chapter 8.

2. The SDWA provides for direct control of underground injection of fluids that may affect groundwater supplies. States may assume the predominant role in

executing groundwater protection programs. The EPA has direct responsibility only if a State chooses not to participate in an underground injection control (UIC) program.

7204. COASTAL ZONE MANAGEMENT ACT

1. The CZMA plays a significant role in water pollution abatement, particularly with regard to nonpoint source pollution. State coastal zone management programs frequently incorporate flood control, sediment control, grading control, and storm-water runoff control statutes. Under the CZMA, Federal action that affects any land or water use or natural resource of the coastal zone (CZ) must be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved State management programs (15 CFR 930.32). This requirement applies to activities conducted both within or outside the CZ if there are impacts in the CZ.

2. As a result of their inclusion in State CZMA programs, these State statutes must be considered when addressing water pollution impacts of Marine Corps projects. Assistance in determining compliance requirements in specific situations is available from the CMC (LFL).

3. States are required to list in their CZ management program activities that, in their opinion, directly affect the CZ and therefore require a consistency determination. Installations should review this list to identify activities likely to require a consistency determination.

7205. RESOURCE CONSERVATION AND RECOVERY ACT. The RCRA of 1976 (42 U.S.C. 6901 et seq.) prescribes technical requirements for preventing leachate migration from solid or hazardous waste disposal sites to groundwater.

CHAPTER 8

DRINKING WATER SYSTEMS AND WATER CONSERVATION

SECTION 2: FEDERAL STATUTES

8200. SAFE DRINKING WATER ACT

1. The SDWA of 1974, as amended, establishes primary drinking water regulations applicable to public water systems. These regulations specify contaminants that may have an adverse effect on human health and set Maximum Contaminant Levels (MCL) for water delivered to any user of a public water system. The act also establishes secondary drinking water regulations. Secondary standards apply to contaminants that may adversely affect the taste, odor, or appearance of the water delivered to the users of a public water system.

2. The 1986 Amendments to the SDWA (section 1428) require States to develop programs to protect wellhead areas. Section 1428(h) requires all Federal agencies having jurisdiction over any potential source of contaminants identified by a State wellhead protection program to comply with all requirements of the State and local programs the same "as any other person, including payment of reasonable charges and fees."

3. In addition, the SDWA creates and regulates the UIC program that covers the reinjection of fluids into the subsurface through a well. The program's purpose is to protect groundwater, which is a present or potential source of drinking water.

4. States have primary responsibility to enforce Federal installation compliance with national primary drinking water standards, sampling, monitoring, notification, and recordkeeping requirements.

5. The SDWA requires each Federal installation with jurisdiction over a public water system to comply with applicable Federal, State, or local requirements, whether substantive or procedural, "in the same manner, and to the same extent, as any other person or any nongovernmental entity." The SDWA also provides for citizen suits for noncompliance.

6. Section 1427 establishes procedures for the development, implementation, and assessment of demonstration programs that are designed to protect critical aquifer protection areas located within areas designated as sole or principal source aquifers. Among these procedures, an individual must jointly submit an application with the State Governor's office.

7. Section 1447 of the SDWA requires Marine Corps facilities with jurisdiction over a public water system or underground injection wells to comply with all Federal, State, and local MCL requirements. Under section 1447(b) of the SDWA, the EPA has the authority to exempt public water systems owned or maintained by a Federal agency from complying with primary drinking water regulations. This authority may be exercised only upon request by the Secretary of Defense and after findings by the President that such a waiver is necessary in the interest of national security.

8. A Federal facility operating a public water supply system that meets all of the following criteria must comply with the SDWA:

- a. The water is intended for human consumption.
- b. The water supply system is a community system (i.e., it has at least 15 service connections or regularly serves an average of 25 individuals daily, for at least 60 days out of the year).
- c. The system has drinking water collection and treatment facilities (i.e., it does not consist solely of distribution and storage facilities).
- d. The facility treats some or all of its own drinking water (e.g., chlorination of water) or sells water from its system.

9. Marine Corps installations that own or operate underground injection wells must obtain permits or meet requirements before using a well. The disposal of waste from any of the following operations to a well would require authorization by the EPA or State agency, depending upon primary enforcement responsibilities for the UIC program:

- a. Public domestic sewage disposal.
- b. Underground discharge of industrial waste.
- c. Agricultural and dairy waste disposal.
- d. Powerplants (e.g., underground discharge of spent cooling water).

(4) Class IV existing wells are used to dispose of hazardous and radioactive waste; new class IV wells are prohibited, and the existing wells must be phased out.

(5) Class V wells include all other injection wells not included in classes I-IV, including heat pump wells (used to circulate groundwater for heating office buildings) and coal processing, wastewater wells.

2. Each of these classes of wells has rules, including the following:

a. UIC criteria and standards (40 CFR 146) specify rules that apply to each class of wells, including requirements for construction, operating, monitoring, and reporting.

b. Individual State UIC Programs (40 CFR 147) describe the regulations of each individual State's UIC program.

c. Sole Source Aquifer standards (40 CFR 149) provide criteria for identifying critical aquifer protection areas.

3. Records of bacteriological analyses shall be retained for 5 years, and records of chemical/physical analyses shall be retained for 10 years.

4. Report Control Symbol MC-6280-03 has been assigned for reporting and recordkeeping requirements under the SWDA.

8301. NONCOMPLIANCE MONITORING AND REPORTING. An installation operating a public water system shall report to the appropriate EPA regional office or State agency when there are instances of noncompliance with primary national standards, variances, or exemptions, including failure to comply with sampling and monitoring requirements. Non-

compliance conditions shall also be reported to all persons served by the public water system. The timing and means for all notifications shall be as prescribed in EPA regulations (40 CFR 141, subpart D) or applicable State and local regulations. The CMC (LFL) shall also be notified of such noncompliance.

8302. DRINKING WATER SYSTEM OPERATOR CERTIFICATION. Marine Corps water system operators shall meet the certification requirements of the State in which the system is located. The job requirements for new water system operators shall require a State certificate or license as a condition of employment in compliance with the Federal Personnel Manual (Supplement 271-1, subchapter 3-4). Licenses and credentials are necessary at all facilities where State certification requirements are applicable.

8303. PROHIBITION OF USE OF LEAD PIPE, SOLDER, AND FLUX. The use of lead pipe, solder, or flux in the installation or repair of any public water system or plumbing in residential or nonresidential facilities providing water for human consumption is prohibited (40 CFR 141.43). Solders and fluxes are considered to be lead-free if they contain less than 0.2 percent lead; pipes and fittings are considered to be lead-free if the lead content is less than 8.0 percent (SDWA, sec.1417(c)(2)).

8304. OPERATION AND MAINTENANCE OF POTABLE WATER SUPPLY DISTRIBUTION SYSTEMS

1. All applicable Marine Corps water systems shall be operated and maintained to meet the requirements of the SDWA regulations.

2. When water mains, wells, and storage tanks become contaminated during repair and construction,

CHAPTER 8

DRINKING WATER SYSTEMS AND WATER CONSERVATION

SECTION 3: REQUIREMENTS

8300. GENERAL

1. Safe Drinking Water Act regulations are set forth in 40 CFR 141-149. For water systems in the United States, potable water sampling and analyses must be conducted on schedule and for such contaminants as required by SDWA regulations, or as modified by the State. The regulations applicable to Federal facilities are summarized below:

a. National Primary Drinking Water Regulations (40 CFR 141) specify MCL's for six categories of contaminants:

- (1) Inorganic chemicals.
- (2) Organic chemicals.
- (3) Turbidity.
- (4) Microbiological contaminants.
- (5) Natural radioactivity.
- (6) Manmade radionuclides.

Requirements for analytical methods, monitoring frequency, sampling location, reporting, public notification, recordkeeping, and use of noncentralized treatment devices are also included. Monitoring for organic chemicals, sodium, and corrosivity characteristics, as well as prohibitions on the use of lead pipes, solder, and flux for new or repaired drinking water

systems, are contained in this part. Results of tests, analyses, and measurements required for compliance shall be forwarded within prescribed times to the appropriate EPA regional office or State agency, as applicable (40 CFR 142). The specific reporting schedule may vary depending on the State, but reports are generally due within the first 10 calendar days of each month.

b. National Secondary Drinking Water Regulations (40 CFR 143) establish secondary MCL's for 13 contaminants that may affect the taste, odor, or appearance of drinking water delivered to the users of a public water system, as well as specific requirements for monitoring.

c. The UIC Program (40 CFR 144) prohibits any underground injection of fluids, except as authorized by permit or rule. The program divides injection wells into five classes:

(1) Class I wells are used by cities and industries to dispose of hazardous waste beneath the lowermost aquifer containing an underground source of drinking water.

(2) Class II wells are used for residual fluids from oil and gas production, such as the injection of brine or fresh water to enhance the recovery of oil or natural gas.

(3) Class III wells are used for extracting minerals.

decontamination procedures shall be followed before these systems are placed in service. Temporary and/or mobile supplies of potable water must be delivered in compliance with the Manual of Naval Preventive Medicine (NAVMED P5010).

3. Air gap separation is required between potable waterlines and all nonpotable sources of water. Backflow prevention devices are required at all interconnections with nonpotable sources that cannot be eliminated or protected by an air gap. Reduced pressure-type backflow preventers must always be used where the possibility of a health hazard could arise from a backflow condition.

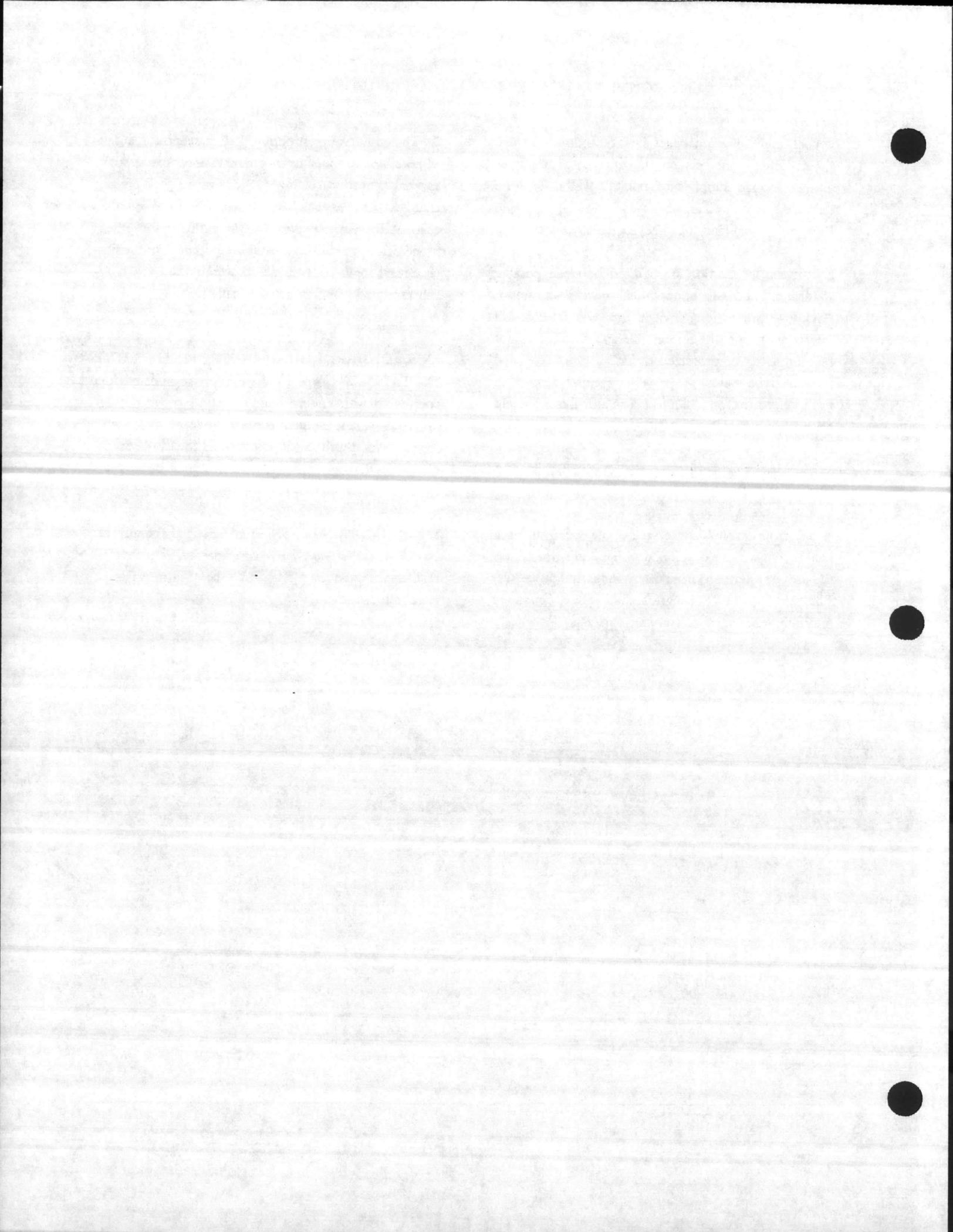
8305. WATER CONSERVATION PROGRAM

1. A program for conservation of water at each installation shall be developed with initial emphasis on the use of water in Marine Corps industrial processes. The priorities of the program shall reflect economic feasibility and water conservation needs.

2. The conservation program shall concentrate, as far as possible, on the simpler conservation aspects such as work procedural changes, minor valving and piping changes, and cascade water use (i.e., use of the effluent from one process as the influent for other processes and metering). Major equipment or facility changes should be considered where they are fully substantiated as being economically feasible.

8306. UNDERGROUND INJECTION CONTROL. Marine Corps installations are responsible for complying with underground injection provisions of the SDWA and should contact Federal and State regulatory authorities for guidance on the most recent requirements.

8307. TECHNICAL ASSISTANCE. The cognizant NAVFACENCOM EFD is available for technical assistance upon request from the Marine Corps installations.



CHAPTER 9

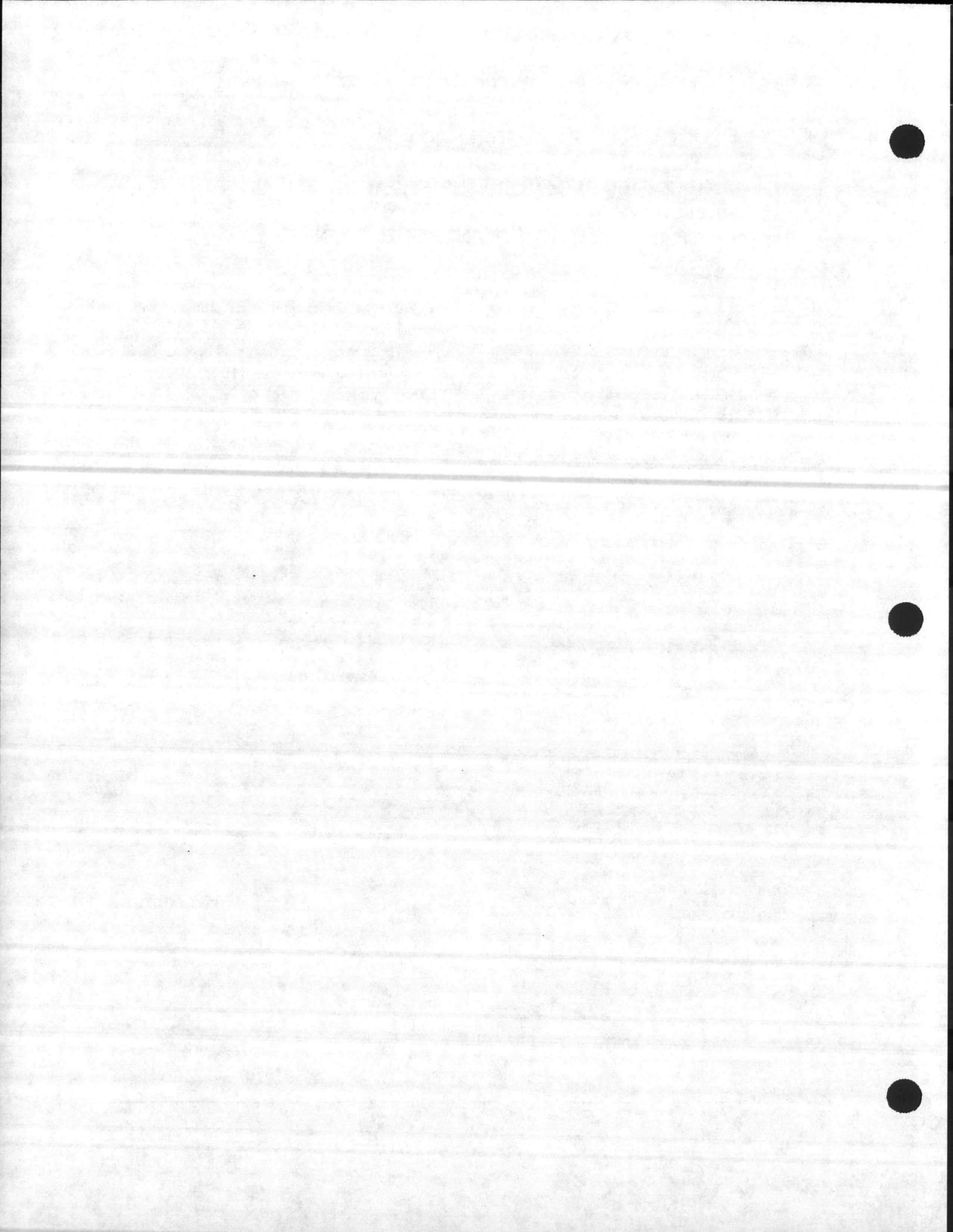
HAZARDOUS MATERIALS/HAZARDOUS WASTE

SECTION 1: INTRODUCTION

9100. PURPOSE

1. This chapter identifies the requirements and responsibilities applicable to the prevention and control of HM/HW at Marine Corps installations within the United States in order to ensure protection of human health and the environment. Information regarding requirements associated with HS spills is discussed in chapter 11. Appendices G and H detail sources of additional information and assistance.

2. Although this chapter deals primarily with the management of HM/HW, occupational safety and health policies and regulations must be integrated into the management and control of HM/HW to attain an effective program.



CHAPTER 9

HAZARDOUS MATERIALS/HAZARDOUS WASTE

SECTION 2: FEDERAL STATUTES

9200. RESOURCE CONSERVATION AND RECOVERY ACT

1. RCRA was enacted as Public Law 94-580 in 1976 as an amendment to the Solid Waste Disposal Act (SWDA). RCRA has since been amended by several public laws, including the Used Oil Recycling Act (UORA) of 1990, and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The act provides for assistance to State and local agencies; prohibits open dumping; regulates the management of HW; encourages recycling, reuse, and treatment of HW; provides guidelines for solid waste management; and promotes beneficial solid waste management, resource recovery, and resource conservation systems. RCRA provides for "cradle to grave" tracking of HW, from generator through transporter, treatment, storage, and ultimate disposal.

a. The EPA may delegate authority to a State to manage a RCRA program in lieu of part or all of the Federal HW program.

b. All HW installations in a State with final authorization are subject to the State program, which must be equivalent to and may be more stringent than the Federal program. A few States have also been granted certain oversight authority for HSWA. States that have received final authorization to manage some or all aspects of RCRA/HSWA are identified in Appendix G, and additional resources for assistance are identified in appendix F.

2. RCRA Subtitle C: Hazardous Waste Management

a. Subtitle C provides the statutory basis for EPA to promulgate the regulations contained in 40 CFR 260-272. Specifically, subtitle C (sec. 3001-3007) addresses the following:

(1) Identification and Listing of HW.

(2) Standards for Generators of HW.

(3) Standards for Transporters of HW.

(4) Standards for Treatment, Storage, and Disposal Facilities.

(5) Permitting Requirements.

b. **Section 3004(d) Land Disposal Restriction (LDR) Program.** As required by HSWA, EPA has promulgated regulations in 40 CFR 268 that prohibit the land disposal of hazardous wastes, including underground injection, by specific dates. EPA sets treatment standards (constituent concentrations or methods of treatment) for each waste that substantially reduce the toxicity or likelihood of migration of the waste. Wastes that meet the treatment standards, or can demonstrate that there will be no migration of hazardous constituents for as long as the wastes remain hazardous, are not prohibited and may be land disposed. Several categories of waste are covered by the land disposal restrictions regulations:

(1) **F Wastes:** Wastes from nonspecific sources, such as wastewater treatment sludge from electroplating operations.

(2) **K Wastes:** Wastes from specific sources, such as wastewater treatment sludges from the manufacturing and processing of explosives.

(3) **D Wastes:** Characteristic hazardous wastes, such as ignitable, corrosive, reactive, and toxicity characteristic wastes (TC Wastes) as determined by the toxicity characteristic leachate procedure (TCLP) test.

(4) **P Wastes:** Acutely hazardous commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products.

(5) **U Wastes:** Toxic commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products.

c. Section 3004(u), Continuing Releases at Permitted Facilities, and Section 3004(v), Corrective Action Beyond Facility Boundary

(1) All treatment, storage, and disposal facilities must satisfy new requirements, including the following:

(a) Identifying all Solid Waste Management Units (SWMU) at the facility.

(b) Identifying releases of HW or constituents that have occurred from those units.

(c) Performing corrective action for those releases.

(2) These provisions apply to all regulated facilities (inactive and closed, as well as operating units). All Federal facilities are subject to the same

extensive corrective action requirements as any facility owned-or-operated by private parties.

(3) Every permit application to operate a Treatment, Storage, and Disposal Facility (TSDF) submitted under RCRA must include "corrective action (40 CFR 264.101) for all releases of HW or constituents" from any SWMU at the facility as a component of the part B application, regardless of when the waste was placed there. The permit applicant thus must provide full disclosure of all wastes within the facility's boundaries since the site was originally opened, and must provide for action to abate any damage that any release of this material has caused.

(4) Section 3004 also requires Federal agencies to operate under the same propertywide definition of "facility" (40 CFR 260) as any nongovernmental entity. This definition includes the entire site under control of the owner or operator involved in HW management. In 1986, EPA interpreted ownership to refer not to the United States as a whole, but rather to individual Federal departments, agencies, and instrumentalities (51 Federal Register 7722 (1986)).

d. Section 3007 Inspections

(1) Section 3007(c) states that the administrator will annually inspect all Federal agency HW treatment, storage, and disposal facilities located in States without an authorized program under RCRA. The administrator may also inspect facilities in States with an authorized program.

(2) Facilities must, upon written request from the State, compile, publish, and submit information relating to onsite waste storage and disposal that have taken place before permits were required. Specifically, the amount, nature, and toxicity of such waste must be ascertained, and any resulting health or environmental hazards must be assessed for each HW site inventory reporting these requirements.

e. Section 3016 Biennial Inventory of Federal Agency Hazardous Waste Facilities

(1) Section 3016 requires that each Federal agency submit to EPA an inventory of the sites that it owns or operates, or previously owned or operated, where HW is or was stored, treated, or disposed of at any time. The inventory should include the following information:

- (a) Location of the site.
- (b) Amount and toxicity of the waste.
- (c) Extent of environmental contamination.
- (d) Current status of site.
- (e) List of disposal sites at the facility and monitoring reports.
- (f) Response actions.
- (g) Identification of wastes treated, stored, or disposed.
- (h) Name and address of the responsible Federal agency for each site.

(2) If a facility does not provide adequate information, the administrator shall notify the chief official of that agency. If after 90 days an inventory has not been developed, the administrator shall carry out the inventory. EPA guidance for developing this inventory is issued on even-numbered years.

(3) In addition, Section 3016 requires EPA to annually inspect Federal facility HW activities.

3. RCRA Subtitle D: State or Regional Solid Waste Management Plans

a. Subtitle D directed EPA to encourage and develop methods for the environmentally sound disposal of solid waste as well as for the maximization of the conservation, reuse, recycling, and recovery of valuable resources. These objectives are to be accomplished through the development of State or regional Solid Waste Management Plans.

b. The criteria to meet these objectives are contained in 40 CFR 257 and set specific standards for solid waste disposal facilities. Facilities that fail to meet these criteria are considered open dumps and are banned.

c. The criteria include guidelines for the protection or consideration of eight environmental issues: floodplains, endangered species, surface water, groundwater, land application, disease, air, and safety.

d. Section 4010 of subtitle D directed EPA to revise existing criteria to regulate "Solid Waste Facilities which may receive household hazardous waste or hazardous waste from small quantity generators" under section 3001(d). As a result, EPA promulgated the regulations contained in 40 CFR 258 impacting municipal solid waste landfills. These regulations contain permitting requirements.

e. Solid waste management requirements are detailed in chapter 10 of this Manual.

4. RCRA Subtitle F: Federal Facilities

a. Section 6001 is a comprehensive waiver of sovereign immunity from applicability of RCRA to Federal facilities. It states: "Each department... of the Federal Government (1) having jurisdiction over any solid waste management facility or disposal site, or (2) engaged in actions resulting or which may result in the disposal or management of solid waste or

hazardous waste shall be subject to, and complying with, all... requirements, both substantive and procedural... respecting control or abatement of solid waste or hazardous waste disposal in the same manner and to the same extent as any person is... subject to such requirements...." This provision includes permitting requirements. It also states that "neither the United States nor any agent, employee or officer thereof shall be immune or exempt from any process or sanction... with respect to enforcement of any such injunctive relief."

b. Therefore, the requirements of RCRA with respect to Federal installations subject them to Federal, State, and local requirements just as any nongovernmental entity. The President may exempt any solid waste management facility or department, if it is "in the paramount interest" of the United States. An exemption may be granted for 1 year.

c. **Section 6002.** Section 6002, Federal Procurement, states that each procuring agency must select those items made of the highest percentage of recovered materials practicable unless such items are unreasonable, fail to meet performance standards, or are available only at an unreasonable price.

d. **Section 6003.** Section 6003, Cooperation with the EPA, states that Federal agencies must make available all information required by the administrator concerning past or present waste management practices and past or presently owned, leased, or operated solid waste or HW facilities.

e. **Section 6004.** Section 6004, Applicability of Solid Waste Disposal Guidance to Executive Agencies, states that executive agencies must comply with solid waste management regulations where the agency:

(1) Has jurisdiction over real property or the operation of a facility that is involved in solid waste management.

(2) Generates solid waste and which, if conducted by a person other than the agency, would require a permit or license to dispose of the waste.

5. RCRA Subtitle I: Regulation of Underground Storage Tanks. Subtitle I of RCRA directs EPA to promulgate standards for the management, control, and closure of underground storage tanks (see chapter 13 of this Manual).

6. RCRA Subtitle J: Demonstration Medical Waste Tracking Program. Subtitle J of RCRA establishes a medical waste tracking demonstration program. Congress included Federal facilities in demonstration States in the program under section 11006 in the same manner and to the same extent that they are compelled to comply with any other requirements of RCRA. Congress is currently debating whether to extend the demonstration program for an additional 2 years.

9201. HAZARDOUS MATERIAL TRANSPORTATION ACT. The Hazardous Material Transportation Act, which is administered by the DOT, regulates the shipping, marking, labeling, placarding, and recordkeeping requirements for HM (49 CFR part 172.101). Marine Corps installations that ship HM must comply with DOT regulations.

9202. COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT NOTIFICATION OF RELEASE REQUIREMENTS. Pursuant to Section 103 of CERCLA, EPA has promulgated regulations at 40 CFR 302 that require notification to the National Response Center whenever there is a release of a reportable quantity of any HS. Release into the environment is interpreted broadly to mean release into the water or air or onto the land. If a release is contained within a building or closed facility, it does not need to be reported under these regulations. The regulations specify reportable

quantities as listed in table 302.4 of 40 CFR 302 (also see chapter 11 of this Manual).

9203. OCCUPATIONAL SAFETY AND HEALTH ACT. The OSH Act provides the principal means for protecting the health and safety of workers engaged in hazardous or potentially hazardous activities, or working with hazardous or potentially hazardous materials.

1. The OSHA Safety and Health Standards (29 CFR 1910) governs storage and handling of HM. Even though not considered strictly as environmental regulations, they are described in this chapter because they are considered to be an integral part of an effective HM/HW management program.

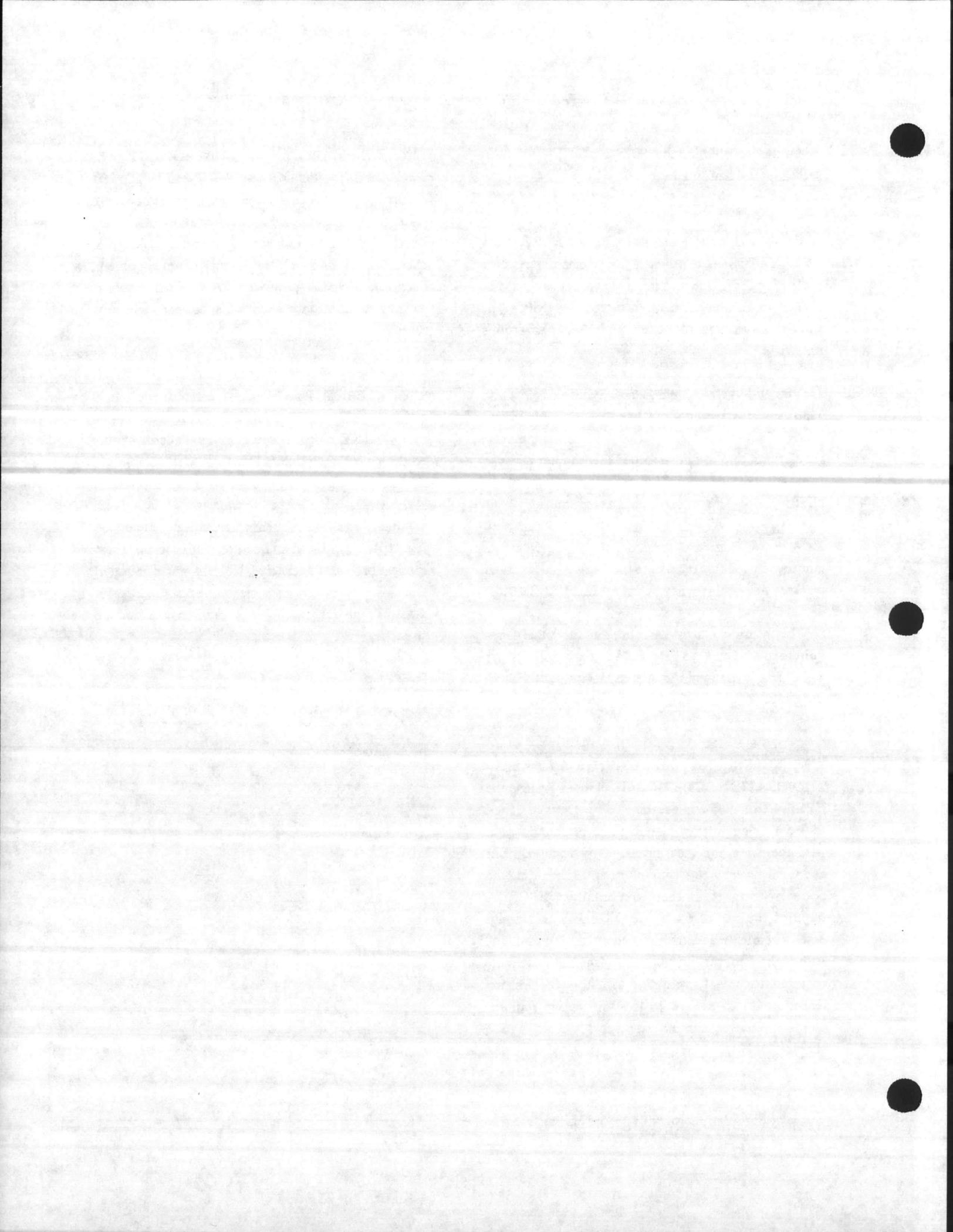
2. A more detailed description of the requirements and responsibilities relative to the health and safety of workers and visitors may be found in 29 CFR 1910.

3. The Marine Corps has adopted the OSHA requirements relative to HM/HW in their entirety per MCO 5100.8, Ground Occupational Safety and Health Program.

9204. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III. Under SARA, the EPCRA of 1986 was passed. This act was designed to promote emergency planning and preparedness at both the State and local levels. It provides citizens and local governments with information regarding the potential hazards in their community. EPCRA requires the use of emergency planning, and designates chemicals and toxins used in the community. Although Federal installations are not currently required to comply with title III, it is the Marine Corps policy to adhere to the substantive requirements to the maximum extent practicable. (See chapter 11 of this Manual for details.)

9205. TOXIC SUBSTANCES CONTROL ACT. The TSCA of 1976 (Public Law 94-469), 15 U.S.C. 260, requires EPA to regulate and control harmful chemical and toxic substances in commercial use. Congress enacted TSCA to reduce unreasonable risks from chemicals to human health and the environment. Section 6 of TSCA provides EPA with the authority to regulate hazardous chemical substances and mixtures.

9206. CLEAN AIR ACT. CAA, established in 1970 and amended in 1977 and 1990 (Public Law 91-604 and 42 U.S.C. 7401 et seq.), is the Federal statute governing air pollution. The CAA amendments of 1970 required EPA to establish NESHAP's (40 CFR 61). In 1971, EPA listed asbestos as a hazardous air pollutant and subsequently established emission standards for the manufacture, fabrication, spray application, waste packaging, labeling, and disposal of asbestos. The act also establishes standards for asbestos emissions during renovation and demolition projects.



CHAPTER 10

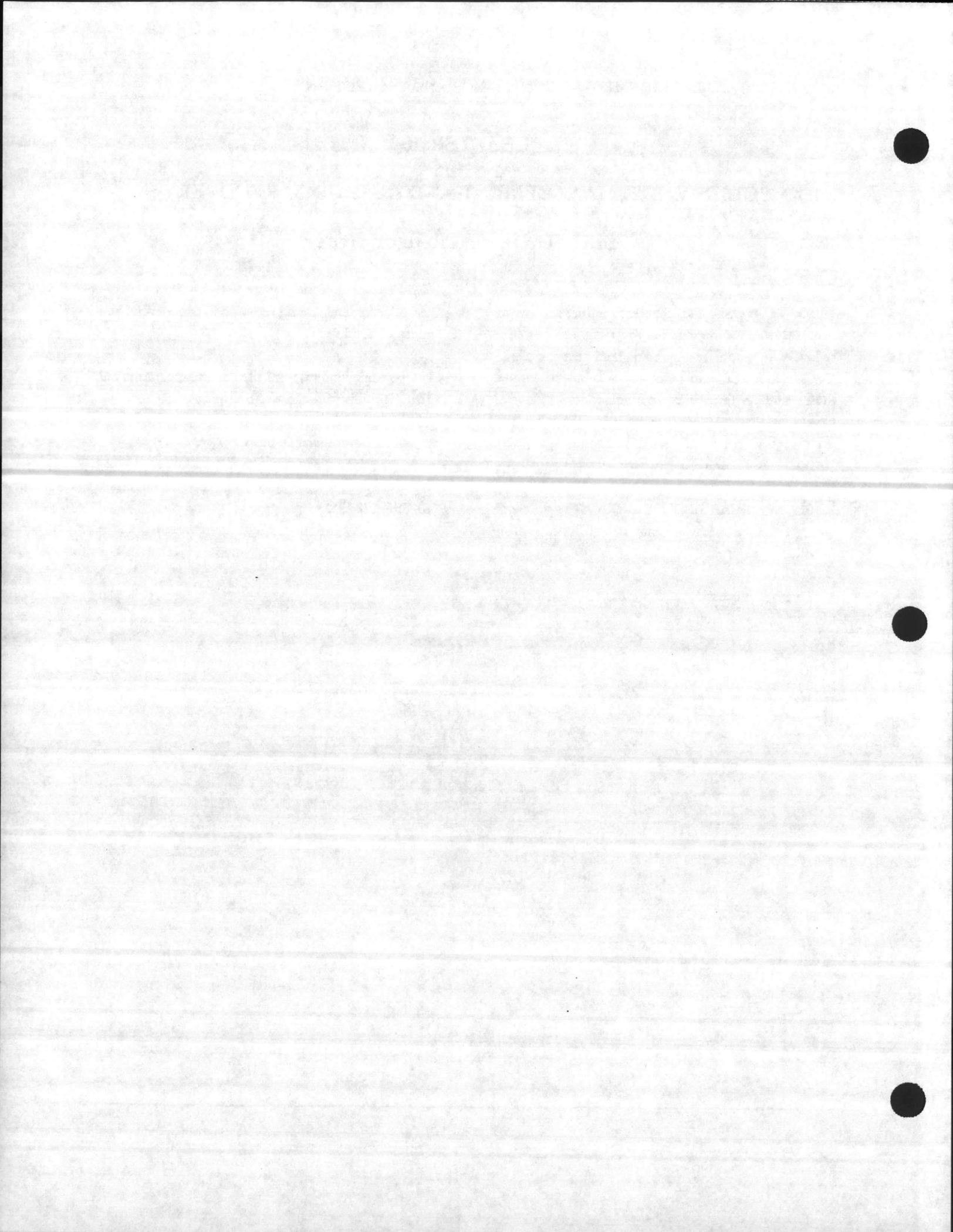
SOLID WASTE MANAGEMENT AND RESOURCE RECOVERY

SECTION 1: INTRODUCTION

10100. PURPOSE. This chapter identifies solid waste disposal, waste minimization, recycling, and resource recovery requirements, policies, and responsibilities for Marine Corps installations within the United States and its territories and possessions. Marine Corps installation requirements in foreign countries are discussed in section 4 of this chapter.

10101. APPLICABILITY OF RCRA. The following types of facility operations may be subject to subtitle D solid waste rules:

1. Thermal processing of more than 50 tons per day of municipal-type solid waste.
2. Collecting and storing residential, commercial and industrial solid waste.
3. Operating land disposal sites or using commercial offsite landfills for solid waste disposal.
4. Selling beverage containers.
5. Purchasing products that contain recycled materials (40 CFR 248-253).



CHAPTER 10

SOLID WASTE MANAGEMENT AND RESOURCE RECOVERY

SECTION 2: FEDERAL STATUTES

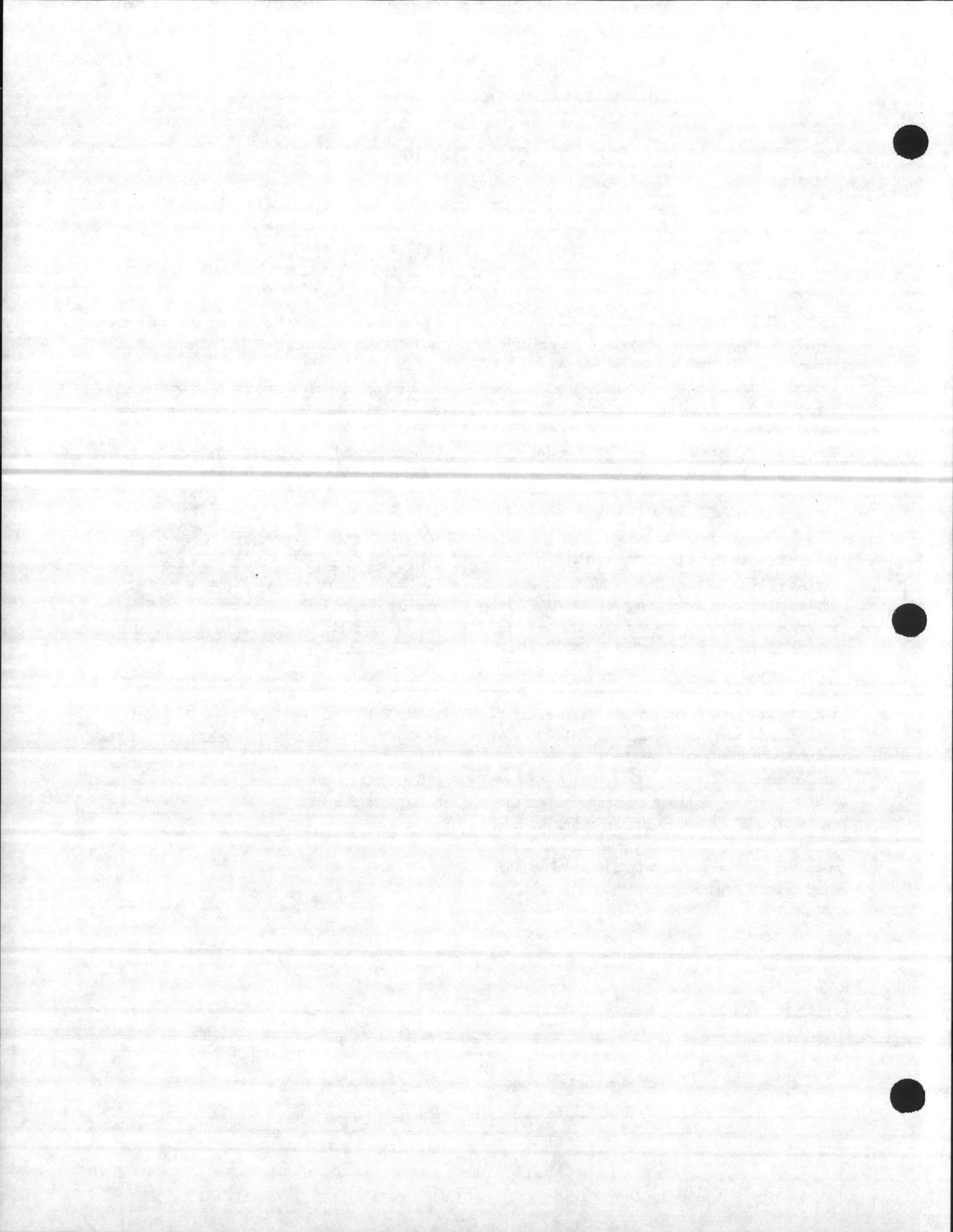
10200. SOLID WASTE DISPOSAL ACT. The SWDA of 1965, as amended by the RCRA of 1976, requires that Federal installations comply with all Federal, State, interstate, and local requirements concerning the disposal and management of solid waste. These requirements include permitting, licensing, and reporting. The SWDA encourages beneficial reuse of waste through recycling and burning for energy recovery.

10201. RESOURCE CONSERVATION AND RECOVERY ACT. The RCRA of 1976 has had a substantial effect on the handling of solid waste. The act defines solid wastes that are hazardous and sets strict requirements for the handling of HW. Disposal of many liquids and sludges formerly deposited at solid waste disposal facilities is banned by RCRA. The act encourages the conservation and recycling of solid waste with residual value. Subtitle D of RCRA establishes Federal standards for management of nonhazardous solid waste. The primary goals of subtitle D are to encourage environmentally sound solid waste management practices, recycling of waste material, and resource conservation. Subtitle D has mandatory technical standards for nonhazardous solid waste disposal facilities.

10202. CLEAN AIR ACT. Section 112 of the CAA of 1970 gives authority to the EPA to set emission standards for hazardous air pollutants. In 1973, a standard for control of asbestos fiber was issued as part of the National Emissions Standards for Hazardous Air Pollutants. Regulations addressing asbestos disposal in solid waste landfills are included in the CAA, section VI, Special Pollutants.

10203. MILITARY CONSTRUCTION CODIFICATION ACT. Section 6 of the Military Construction Codification Act (Public Law 97-214; 10 U.S.C. 2577) contains a provision that allows net proceeds from the sale of recyclable materials to be used by Marine Corps installations for certain purposes.

10204. FEDERAL PROPERTY AND ADMINISTRATIVE SERVICES ACT. Section 203 of the Federal Property and Administrative Services Act of 1949 (10 U.S.C. 484) contains provisions on the sale of recyclable materials.



CHAPTER 11

OIL AND HAZARDOUS SUBSTANCES
POLLUTION CONTINGENCY PLANNING

SECTION 2: FEDERAL STATUTES

11200. COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT. CERCLA, as amended by SARA, requires the EPA to promulgate revisions to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NCP establishes the process for determining appropriate removal and remedial action for the Nation's most serious (Superfund) HW sites. Additionally, the NCP establishes the national framework for planning and response to oil discharges and HS releases. The NCP assigns responsibilities for contingency planning and response to various Federal agencies, including DoD, and outlines State and local government and public and private interest group participation in these areas. The NCP also specifies notification procedures for certain oil discharges and HS releases.

11201. RESOURCE CONSERVATION AND RECOVERY ACT. RCRA, enacted in 1976 as Public Law 94-580 and amended several times since, was promulgated to protect human health and the environment from the hazards associated with HW generation, transportation, treatment, storage, and disposal. Subtitle C of RCRA requires the owners and operators of HW facilities to develop comprehensive HW management plans that address spill prevention and cleanup for these facilities. Under RCRA, this spill contingency planning requirement constitutes a facility plan distinct from the comprehensive oil and hazardous substance spill contingency management plans required by CERCLA, the CWA, and Oil Pollution Act (OPA) of 1990.

11202. CLEAN WATER ACT. The CWA is a major Federal statute addressing protection of the Nation's water resources. Section 311 of the CWA deals with the prevention and response to oil discharges and HS releases at the national, regional, and local levels.

11203. EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT. This act, promulgated along with SARA in 1986, was designed to promote emergency planning efforts at State and local levels and to provide citizens and local governments with information concerning potential chemical hazards in their communities. The act, known as SARA title III, imposes requirements for facilities to provide emergency hazardous chemical release notification, chemical inventory reporting, and toxic chemical release reporting. State emergency response commissions and local emergency planning committees have been appointed within each State to receive this information and to use it for chemical emergency preparation and community awareness.

11204. OIL POLLUTION ACT OF 1990. OPA is a comprehensive statute establishing a liability and compensation regime for oil discharges in the marine environment. OPA amends the CWA to require, among other specifications, contingency planning for "worst case" discharges and demonstrated response capabilities through planning, equipment, training, and exercises. The OPA does not preempt States' rights for establishing planning requirements.

11205. STATE PROGRAMS. Most State regulatory programs contain provisions for OHS pollution contingency planning and notification of State and local authorities of OHS spills. In general, because States are integrated into the national response network through regional response teams (RRT), State regulations complement the Federal OHS spill response and contingency planning efforts rather than duplicate them. Some States, however, have established regulations for both spill contingency planning and spill response, which are more stringent than the Federal requirements specified in the NCP and the OPA.

CHAPTER 11

OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLANNING

SECTION 3: REQUIREMENTS

11300. UNITED STATES AREAS. Under the Oil and Hazardous Substances NCP, the OPA and various State laws, the Marine Corps as a potential spiller has responsibilities to develop OHS spill contingency plans, to notify appropriate authorities of OHS spills, and to mitigate environmental impacts for Marine Corps spills. DoD, as well, has issued policy requiring individual DoD components to prepare for and respond to component spills.

11301. CONTINGENCY PLANNING

1. The NCP predesignates DoD as the Federal On-Scene Coordinator (OSC) for HS releases from DoD facilities and ships. Since DoD does not provide Federal OSC's for DoD component HS releases, the individual services predesignate and provide their own Federal OSC's. Each Marine Corps installation's CG/CO is the Federal OSC for Marine Corps HS releases. This authority may not be delegated. For oil releases, the Federal OSC is the U.S. Coast Guard (USCG) (coastal zone releases) or the U.S. EPA (inland zone releases). Under the NCP, Federal OSC's are required to develop OSC spill contingency plans and to coordinate these plans with adjacent or overlapping Federal OSC plans. DoD also requires DoD components to prepare installation OHS spill contingency plans.

2. Thus, the Marine Corps is required to prepare contingency plans to fulfill their role as Federal OSC for Marine Corps HS releases. The Marine Corps is also required to prepare installation OHS spill contin-

gency plans. There is no requirement for these plans (Federal OSC plans and installation plans) to be separate.

11302. OIL AND HAZARDOUS SUBSTANCE SPILL RESPONSE

1. The NCP requires spillers to take all necessary actions to mitigate environmental damages and to clean up OHS spills. The NCP also predesignates Federal OSC's to direct or coordinate the Federal response effort to OHS spills.

2. The Marine Corps is responsible for cleaning up Marine Corps spills and for restoring or replacing natural resources damaged by these spills. For Marine Corps oil discharges, the Marine Corps shall respond to the discharge and coordinate response efforts with the Federal OSC. The EPA is the predesignated Federal OSC in the inland zone, and the USCG is the Federal OSC in the coastal zone. For Marine Corps oil discharges, either EPA or the USCG as the Federal OSC will monitor the response efforts of the Marine Corps and advise the Marine Corps of appropriate actions. The Federal OSC may direct or take charge of response efforts if the Marine Corps response is determined to be adequate, though the Marine Corps as the spiller remains financially responsible for oil spill cleanup and damage costs.

3. For Marine Corps HS releases, the Marine Corps is also required to mitigate and clean up the spills. Also, as the Federal OSC for HS releases, the Marine

Corps is required to direct the Federal response effort, including coordination with concerned Federal, State, and local authorities.

11303. NOTIFICATION FOR OIL AND HAZARDOUS SUBSTANCE POLLUTION INCIDENTS

1. CERCLA (40 CFR 302) and the CWA (40 CFR 355.40) specify that all reportable quantity OHS spills (40 CFR 116) occurring within U.S. waters be immediately reported directly to the National Response Center at USCG Headquarters at 1-800-424-8802 or 202-267-2675 by voice communication (see appendices K and L of this Manual). Notification shall also be sent to the CMC (LFL). This reporting requirement has been assigned Report Control Symbol DD-5090-10.

2. NRC notification must not be delayed for lack of information. Immediate voice notification to the NRC fulfills Federal notification requirements and ensures that the predesignated EPA or USCG Federal OSC will be notified. If the NRC cannot be reached by voice immediately, then the individual who is either causing the spill or finding the spill is required to immediately notify the closest EPA office or USCG station (33 CFR 153).

3. Reportable quantity OHS spills, as specified by 40 CFR 117 and 302, must be reported to applicable State regulatory authorities in addition to the NRC. In all cases that result in serious environmental harm or that may generate significant adverse publicity, the CMC (LFL) should be notified by telephone as follows:

a. During working hours: to the CMC (LFL), Commercial: 703-696-0866 AUTOVON: 226-0866.

b. After working hours: HQMCCCommandCenter Commercial: 703-695-7366 AUTOVON: 225-7366.

4. OHS spills occurring outside the United States shall be reported by message to the CMC (LFL), using the format in appendices K and L, via the appropriate chain of command. Also, under international oil pollution laws, marine spills that impact, or have the potential to impact, the shoreline of any coastal country must be immediately reported to proper authorities in that country.

5. For spills involving Marine Corps commands that are tenants of another service or agency or under the operational command of another service (e.g., COMNAV Base Norfolk), reporting shall be accomplished by the host or senior officer present. For Marine Corps commands on Marine Corps property, even when these commands are under the operational command of another service at the time of the spill, reporting shall be as described above. This also includes spills as described by 33 CFR 153-157 for fueling operations.

6. Message reports shall be in the format illustrated in appendices K and L. A routine precedence will be used except for significant oil releases in which case a priority precedence shall be utilized.

7. State laws require that OHS spills be reported to State environmental authorities. Additionally, Federal law (40 CFR 370) requires that reportable quantity HS releases be reported to SERC's and LEPC's.

8. The Toxic Chemical Release Reporting Emissions Inventory (40 CFR 372) establishes the reporting system for notifying the EPA of toxic chemical releases from designated SIC Code facilities.

9. For UST releases, refer to chapter 13 of this Manual.

11304. NON-DOD SPILLS. The DoD also has certain responsibilities to assist in the response to non-DoD spills. As shown in figure 11-1, the DoD is

1 of 14 Federal agencies that constitute the National Response Team (NRT). As a participating NRT member, the DoD and its component services are obligated to provide any assistance they can in responding to OHS spills of national concern, to the extent that DoD participation does not impair DoD mission capabilities. Additionally, the Naval Sea System Command's Supervisor of Salvage (SUPSALV) is highlighted within the DoD component of the NCP as one of the Nation's Federal response assets. For large offshore or salvage-related pollution incidents, SUPSALV expertise may be requested by the USCG as the Federal OSC. To facilitate mobilization and funding of SUPSALV equipment and personnel for a non-DoD spill, SUPSALV and USCG have established an Interagency Agreement for Pollution Response.

2. Refer to MCO P11000.11 for further guidance regarding mutual-aid agreements for fire departments.

11305. MARINE CORPS NATURAL RESOURCE TRUSTEE RESPONSIBILITIES. The NCP assigns responsibilities to Federal agencies for protection of natural resources that are held in trust by the Federal Government for the U.S. public. Responsibilities for natural resources protection are primarily divided between the U.S. Department of the Interior and the U.S. Department of Commerce's National Oceanic and Atmospheric Administration. However, for natural resources located on Marine Corps-owned or -leased property, the Marine Corps is responsible for protection of natural resources from any environmental damage, including OHS spills.

CHAPTER 11

OIL AND HAZARDOUS SUBSTANCES POLLUTION CONTINGENCY PLANNING

SECTION 4: MARINE CORPS POLICY

11400. EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

1. While Federal facilities are required to conform with only the substantive parts of SARA title III, the following management recommendations are designed to facilitate quick and effective emergency response:

a. Compile and maintain an inventory of the hazardous chemical substances present at the facility. The inventory should include reportable quantities and TPO's of each HS listed. This is a valuable aid for assessing the applicability of SARA title III regulations.

b. Contact the local fire department to coordinate and exchange information about facility operations, chemical inventories and chemical locations.

c. Designate a facility representative to participate in the local emergency planning process if there are EHS's on site.

2. Marine Corps installations may find that much of this information is already being shared with the local community emergency services units as a common sense approach to agency disaster planning.

11401. MARINE CORPS ORGANIZATION FOR PLANNING AND RESPONSE

1. The Marine Corps shall fully prepare for OHS pollution incidents, and where such incidents do

occur, shall undertake immediate, direct action to minimize the harmful effects on the environment. The Marine Corps OHS pollution contingency planning and response organization has been established to carry out this policy. This organization satisfies the requirement and intent of Federal and State regulations. The Marine Corps will also coordinate response with other DoD commands as appropriate.

2. Figures 11-2 and 11-3 show the Marine Corps Oil and HS pollution response organizations. Installation commanders shall establish OHS pollution contingency planning and response policies in their areas consistent with this order.

3. Installation commanders shall act as the Federal OSC for HS releases originating on, or from, their installations to include the movement of HS from their installation until it reaches its destination.

4. Marine Corps installations that possess OHS spill risks shall have a fully trained On-Scene Operations Team (OSOT) to control, contain, and clean up OHS spills. An alternative to this requirement is for an installation to have OHS pollution response contracts or arrangements to access such contracts with trained, ready response contractors that can rapidly respond to any possible installation spill. All such contracts shall be coordinated with the OSC.

CHAPTER 12

PETROLEUM, OIL AND LUBRICANT MANAGEMENT

SECTION 2: FEDERAL STATUTES

12200. WATER QUALITY IMPROVEMENT ACT.

The water Quality Improvement Act of 1974 is the primary Federal law governing the discharge of oil into navigable waters. This law prohibits the discharge of harmful quantities of oil into navigable waters. 40 CFR 110, Protection of Environment--Discharge of Oil, defines "harmful quantities" as those discharges that will cause a sheen or discoloration on the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.

12201. RESOURCE CONSERVATION AND RECOVERY ACT. The 1984 amendments to RCRA also include provisions under subtitle I for UST's (chapter 13). RCRA outlines a comprehensive regulatory program for UST's that store petroleum, petroleum byproducts, and substances defined as hazardous under CERCLA, sections 101-14.

12202. FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972

1. Enacted in 1956 and amended in its entirety in 1972, the act was extensively amended by the CWA of 1977 and its reauthorization in 1987. The intent of the CWA is to restore and protect the integrity of the Nation's waters by controlling discharges of pollutants into those waters. The CWA regulates wastewater

discharge directly to navigable or surface waters and indirect discharges to publicly-owned treatment works. The CWA established the NPDES, which prohibits the direct discharge of a pollutant from a point source into U.S. waters except by special permit (chapter 7). Regulations on oil spill prevention and runoff control from OHS storage areas were also developed through the requirement for SPCC plans.

2. 40 CFR 112, Oil Pollution Prevention NonTransportation-Related Onshore and Offshore Facilities, was developed pursuant to section 311(j)(1)(c) of the FWPCA amendments of 1972. This regulation requires that operators of facilities that have discharged, or because of their location could reasonably be expected to discharge, oil into or onto the navigable waters of the United States, to prepare on SPCC plan. This SPCC plan must address the use of pollution prevention equipment, spill response training of operating personnel, the use of secondary containment, and an oil spill contingency plan.

3. "Oil" is defined in 40 CFR 122.2 as oil of any kind or in limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredge spoil.

12203. MILITARY CODIFICATION ACT. Section 6 of the Military Codification Act, Public Law 97-214 (10 U.S.C. 2577) contains a provision that allows net proceeds from the sale of recyclable materials (including used oil) to be used by Marine Corps installations for certain purposes.

12204. STATE AND LOCAL LEGISLATION. Many States and some major metropolitan and regional planning agencies have developed legislation and implemented regulations that closely parallel the Federal statutes. Some, however, may differ in important ways (e.g., differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in State and local regulations).

CHAPTER 12

PETROLEUM, OIL AND LUBRICANT MANAGEMENT

SECTION 3: REQUIREMENTS

12300. GENERAL. The CWA requires Federal installations to comply with applicable requirements concerning the control of oil pollution. These requirements include all applicable Federal, State, interstate, and local requirements, DoD 4140.25-M and DoD 5030.41D and Defense Environmental Quality Program Policy Memorandum 79-3.

12301. OIL STORAGE FACILITIES. Many Marine Corps operations store and transfer oil products. Large oil storage facilities are classified as either transportation related or nontransportation related. Transportation-related facilities primarily involve bulk fuel oil transfer to and from vehicles that are not exclusively used on site (e.g., highway tank trucks, railroad tank cars) and are subject to current DOT (49 CFR 100-199) and USCG (33 CFR 153-157) regulations. The 33 CFR 153-157 regulations, Control of Pollution by Oil and Hazardous Substance, Discharge Removal, prescribes notification and other requirements to the USCG of the discharge of oil or HS as required by the CWA. These reporting requirements may be in addition to those required under CERCLA or RCRA. These regulations, which apply to all components of the DoD, address aspects of the design and operation of onshore and offshore facilities that are engaged in the transfer of bulk oil to and from vessels. Nontransportation-related facilities primarily involve bulk fuel transfer to onsite vehicles or fixed facilities (e.g., pipelines and storage tanks). If it can be reasonably expected that a discharge from nontransportation-related oil storage facilities would reach navigable waters, such facilities are required to

implement measures to prevent spills and to develop measures to counteract the effects of spills that do occur. These are known as SPCC plans.

12302. SPILL PREVENTION CONTROL AND COUNTERMEASURES PLANS

1. Nontransportation-related facilities shall have an SPCC plan that provides a history of oil spill events, the potential for discharge of oil and containment procedures, and equipment to prevent oil spills into or upon navigable waterways or shorelines of the United States. An SPCC plan must initially be certified by registered professional engineer and must be reviewed, updated, and recertified by a registered professional engineer at 3-year intervals.

2. SPCC plans are not required if the installation has an aggregate unburied storage capacity of 1,320 gallons or less of oil, provided no single container capacity exceeds 600 gallons; has a total underground storage capacity of 42,000 gallons or less; and could not reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines because of the location of the activity.

3. SPCC plans will be maintained at installations and will be available to EPA regional administrators or their designated representatives and State and local agencies for onsite review during normal working hours.

12303. TRAINING. 40 CFRs 264.16 and 265.16 defines requirements for spill response training of personnel working on, or in close proximity to, OHS spill sites. In addition, Marine Corps installation response personnel shall have training complying with 29 CFR 1910.120.

12304. DOD MEMORANDA AND DIRECTIVES. DoD policy memoranda and directives instruct military departments to maximize the segregation, recycling, and reuse of used oils and to comply with RCRA regulations. DoD 4140.25 describes procedures for the management of petroleum products on military installations. DoDD 5030.41 addresses requirements for compliance with the National Oil and Hazardous Substance Pollution Contingency Plan. The management of recoverable and waste liquid petroleum products is addressed in DEQPPM 79-3.

12305. USED OIL FUELS BURNED FOR ENERGY RECOVERY

1. The EPA and in some instance, State and local agencies, must be notified in the following cases:

- a. HW fuel is transported or burned in an industrial or utility boiler.
- b. Specification used oil fuel is burned in a nonindustrial, industrial, or utility boiler.
- c. Off-specification used oil fuel is burned in an industrial or utility boiler.

2. Specification used oil fuel must be tested or otherwise proven to meet the specification standards. The EPA or authorized State must be notified by the supplier or burner that the fuel is specification used oil fuel. Records of the analysis or testing shall be kept for 3 years (40 CFR 266.44).

3. Manifests, invoices/vouchers, or records are required (40 CFR 266.44) of HW fuels and off-specification used oil fuels in transportation and when burning in either industrial or utility boilers not currently regulated under 40 CFR 264 subpart o or 40 CFR 265 subpart o.

4. Industrial and utility boilers must submit a new or revised RCRA part A application to the EPA if used oil will be burned for energy recovery.

5. Generators, transporters, and operators of either industrial or utility boilers using HW fuel are subject to storage standards if the fuel is stored for more than 90 days; otherwise less stringent storage requirements apply.

6. Used oil space heaters, diesel engines burning specification and off-specification fuels and small-quantity recycled oil generators are exempt from the regulations as provided above.

7. The EPA must be notified when producing, marketing, or burning HW fuels, specification used oil fuel, and off-specification used oil fuel. The transfer of regulated fuels between various DoD installations is not considered marketing. The sale of regulated fuels is considered marketing by the DRMO.

12306. PROHIBITED USES OF USED OIL. Used oils shall not be used for environmentally unacceptable purposes such as weed control, insect control, road surfacing, dust control, or open pit burning. However, used oil may be used in firefighting pits.

CHAPTER 12

PETROLEUM, OIL AND LUBRICANT MANAGEMENT

SECTION 4: MARINE CORPS POLICY

12400. OIL STORAGE FACILITIES. Where applicable, Marine Corps policy shall be to meet USCG regulations pertaining to transportation-related facilities.

12401. USED OIL RECYCLING

1. Used oil shall be collected, segregated, and recycled to ensure maximum economic reuse. The determination of whether used oils should be reclaimed will depend upon local economic factors. Where used oils are determined to be in excess to Marine Corps needs, they shall be transferred to the DRMO for final disposition.

2. The generating installation must properly classify its used oil and recovered fuels to avoid liability for improper handling, storage, shipment, or disposal.

3. Maximize the recovery and collection of used POL's by:

a. Identifying the product not being recovered and instituting new procedures to recover this additional POL.

b. Encouraging voluntary participation of military/civilian employees who change the crankcase

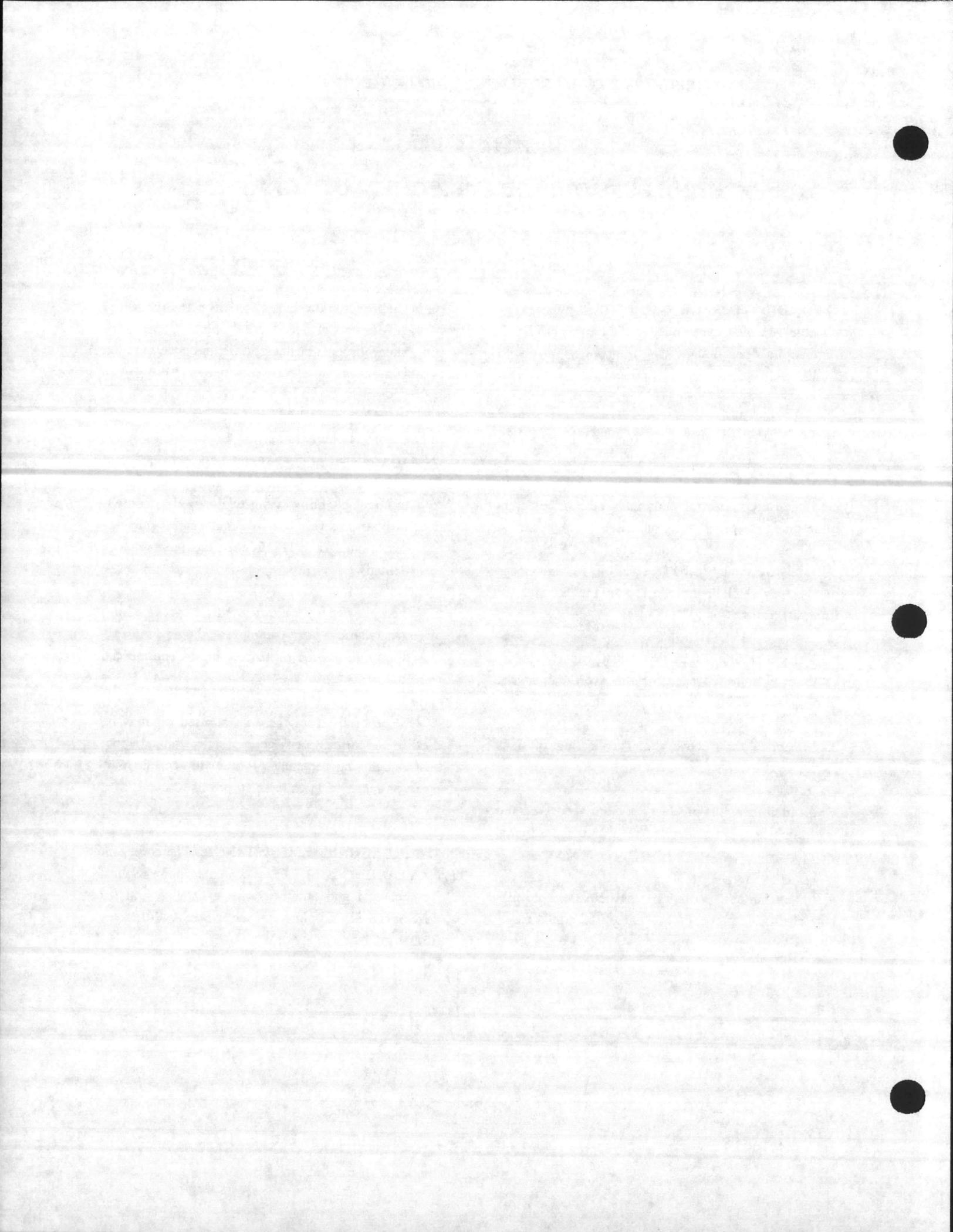
oil in their personal vehicles to deliver the recovered oil to a Marine Corps collection point. Cooperative programs with local business, civic and governmental organizations might also be considered.

4. If recycling used lube oil is unfeasible for economic reasons, the lube oil may be burned (40 CFR 266.44) as a fuel or fuel supplement provided that appropriate chemical and economic analyses are made to determine suitability of burning as well as compliance with air pollution control requirements (chapter 6 of this Manual) and HW regulations (chapter 9 of this Manual).

5. When allowed by military used oil specifications, large installations or complexes should consider closed-loop, used lube oil re-refining by commercial re-refiners.

6. Net proceeds from the sale of used oil may be used by a Marine Corps generating installation that has a qualifying recycling program for certain purposes as specified in chapter 10 of this Manual.

12402. TECHNICAL ASSISTANCE. The cognizant NAVFACENCOM EFD is available upon request for technical and administrative assistance and for developing SPCC plans. (See NEESA 7-030 for format guidance.)



CHAPTER 13

UNDERGROUND STORAGE TANKS

SECTION 2: FEDERAL STATUTES

13200. HAZARDOUS AND SOLID WASTE AMENDMENTS

1. The HSWA of 1984 extended and strengthened the provisions of the SDWA of 1965 as amended by RCRA of 1976 (43 U.S.C. 6901 et seq.). Subtitle C of the RCRA regulates UST's that contain HW. Subtitle I of the HSWA provides for the development and implementation of a comprehensive regulatory program for UST's containing hazardous substances and petroleum products and releases of those substances into the environment. HS regulated under subtitle I includes any substance listed in section 101(14) of CERCLA of 1980.

2. The HSWA requires that Federal installations comply with all Federal, State, and local requirements regarding UST, including paying registration fees and permit fees when such fees are not taxes.

3. Federal regulations outline procedures by which the EPA may approve State programs to replace the Federal UST requirements, if those State programs have standards that are no less stringent than the Federal requirements and provide adequate enforcement of compliance with those standards. States with an approved UST program shall have primary enforcement responsibility in their States. Currently, most States have UST regulatory programs in place. Until the EPA approves a State program, installations must comply with all applicable provisions of both the Federal and State UST programs.

13201. RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) AMENDMENTS

1. The 1984 amendments to the RCRA included provisions to prevent leaks from UST's, mandating a comprehensive regulatory program for UST's that store petroleum, petroleum byproducts (e.g., gasoline and crude oil), or substances defined as hazardous under CERCLA, section 101(14). A UST is defined as any combination of tank and underground pipes where 10 percent or more of the volume of the tank is beneath the ground surface (including associated underground piping).

2. Section 9002 of RCRA bars installing unprotected tanks after 7 May 1985. All new UST's must meet corrosion protection requirements. In addition, the EPA or designated State agency must be notified of the presence of existing regulated UST's.

3. Provisions in the new UST program required the EPA to develop regulations for new tanks including design, construction, installation, release detection, and compatibility standards. This rule was promulgated 23 September 1988 and became effective 22 December 1988 (40 CFR 280, Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks).

13202. THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT

Section 205 of SARA of 1986 amended the SDWA by defining the term "petroleum" to mean petroleum, including crude oil or any fraction thereof, that is

liquid at standard conditions of temperature and pressure (60° F and 14.7 pounds per square inch absolute (psia)). Also, section 205 of SARA added provisions related to State UST inventories and financial responsibility for UST owners (i.e., EPA - State authority for corrective actions, EPA/State cost recovery for remedial actions (RA's) and State/political subdivision rights to adopt and enforce more stringent requirements than Federal requirements on USTs.

CHAPTER 16

PCB MANAGEMENT

SECTION 1: INTRODUCTION

16100. PURPOSE

1. This chapter identifies the requirements and responsibilities applicable to the prevention and control of pollution from PCB's at Marine Corps installations within the United States. Marine Corps installations in foreign countries are not, in general, subject to specific requirements of this chapter, as the requirements are based upon U.S. laws and regulations. Nevertheless, PCB's must be properly managed to ensure protection of human health and the environment. Additional information regarding requirements of HM/HW are discussed in chapter 9 of this Manual. Information regarding requirements associated with HS spills into U.S. waters is discussed in chapter 11 of this Manual.

2. Although this chapter deals primarily with the management of PCB's; occupational safety and health policies and regulations must be integrated into the management and control of PCB's and asbestos to attain an effective program.

CHAPTER 16

PCB MANAGEMENT

SECTION 2: FEDERAL STATUTES

16201. TOXIC SUBSTANCES CONTROL ACT. The Toxic Substances Control Act of 1976 (Public Law 94-469), 15 U.S.C. 260, requires EPA to regulate and control harmful chemical and toxic substances in commercial use. Congress enacted TSCA to reduce unreasonable risks from chemicals to human health and the environment. Section 6 of TSCA provides EPA with the authority to regulate hazardous chemical substances and mixtures. EPA has promulgated regulations on the manufacturing, processing, and distribution in commerce and use of PCB's (40 CFR 761). EPA promulgated regulations on storage and disposal of PCB's on 21 December 1989.

16202. RESOURCE CONSERVATION AND RECOVERY ACT. RCRA was enacted as Public Law 94-580 in 1976 as an amendment to the SWDA. RCRA has been amended by several public laws, including HSWA. HSWA requirements include the prohibition on land disposal of hazardous wastes containing PCB's (for liquids with concentrations greater than 50 parts per million (ppm) and for nonliquids with concentrations of halogenated organic compounds (HOC), including PCB's, at concentrations greater than 1,000 ppm).

CHAPTER 16

PCB MANAGEMENT

SECTION 3: REQUIREMENTS

16300. MANAGEMENT OF SPECIFIC HAZARDOUS/TOXIC SUBSTANCES

1. Certain substances, because of their extremely hazardous nature to the public and increasing scientific concern regarding their widespread introduction into the environment, have had special legislation and regulations directed toward their control. Of particular concern are PCB's.

2. PCB's. PCB requirements of TSCA, as implemented by EPA regulations, are applicable to Federal facilities.

a. Use, Management, and Disposal of PCB's. The following requirements (40 CFR 702 and 761) are applicable to the use, management, and disposal of PCB's:

(1) PCB storage areas and transport vehicles will be marked with special labels (40 CFR 761.40).

(2) A report showing the disposition of PCB's and PCB items will be developed annually by 31 January covering the calendar year and kept on hand for review by EPA. Additional recordkeeping requirements exist for storage and disposal facilities, PCB dielectric analyses, and inspections of PCB transformers and PCB-contaminated transformers (40 CFR 761, subpart J).

(3) PCB articles or PCB containers, as defined by EPA, stored for disposal will be disposed of within 1 year of the date that storage commenced. PCB's and PCB items designated for disposal will be stored in facilities that comply with specific design criteria

listed in 40 CFR 761.65. The facilities will be operated, maintained, and inspected per EPA requirements.

(4) Nonleaking PCB articles and equipment, or leaking PCB items if they are placed in nonleaking containers with absorbent, may be put into temporary storage facilities (those that do not meet the requirements of a permanent facility) for up to 30 days. Containers with nonliquid PCB-contaminated soil, rags, or debris from spills and PCB containers with 50 to 500 ppm liquid PCB (as determined by a laboratory) may also be stored in temporary facilities. However, EPA requires that the date of removal from service be attached to all items in temporary storage. A SPCC plan must be prepared for the temporary storage area if it is used to store containers holding between 50 and 500 ppm PCB-contaminated liquids (40 CFR 761.65).

(5) PCB transformers, PCB liquids, PCB containers, nonliquid PCB, and PCB items, if stored more than 30 days while awaiting disposal, must be stored in a permanent storage facility. The date removed from service must be marked on all items in the storage facility. PCB items may be stored for up to 1 year (or less if required by HW regulations) in a permanent PCB storage facility provided it meets the applicable, minimum criteria (40 CFR 761.65).

(6) For PCB fluids containing more than 500 ppm of PCB's, disposal is generally via high-temperature incinerators permitted by EPA. PCB-contaminated mineral oil (less than 500 ppm PCB) may be burned in high-efficiency boilers provided specific EPA requirements are met, and EPA and appropriate State and local approval is obtained. HW landfills,

approved by EPA for PCB disposal, may be used for disposal of specific PCB items such as transformers, large capacitors, and debris from PCB spills (40 CFR 761.60).

(7) The use and storage for reuse of PCB transformers or electromagnets that pose an exposure risk to human food or animal feed is prohibited. PCB transformers or electromagnets in use, or in storage for reuse, will be visually inspected for leaks at least once every 3 months. Specific inspection and maintenance records will be maintained at least 3 years after disposal of transformers. Cleanup and repair of leaks will be initiated within 48 hours of discovery. All leaking PCB transformers must be inspected daily until the leak has been repaired. In situations where transformers have 100 percent secondary spill containment, or contain less than 60,000 ppm (>1.36 kg) PCB, visual inspections may be reduced to once every 12 months (40 CFR 761.30).

(8) The use and storage for reuse of large PCB capacitors that pose an exposure risk to human food or animal feed is prohibited. Exposure risk may be defined if PCB's released in any way have a potential pathway to human food or animal feed. If there is no exposure risk, use of these capacitors is prohibited unless the capacitor is used within a restricted-access electrical substation or a restricted-access indoor installation.

(9) Fire-related incidents involving PCB transformers must be immediately reported via telephone to the National Response Center (NRC). The telephone number is 1-800-424-8802. Fires involving PCB's generate extremely toxic reaction products. The building must be evacuated immediately. It may not be reoccupied prior to an assessment.

(10) Installations are prohibited from installing PCB transformers in, or near, commercial buildings. This includes PCB transformers that have been placed into storage for reuse.

(11) All PCB transformers (including pole-mounted PCB transformers and those stored for reuse) must be registered with the fire department and shall be labeled per EPA requirements.

(12) Installations will not store combustible materials within 5 meters of any PCB transformer or its enclosure.

(13) As of 1 October 1990, installations may no longer use network PCB transformers with secondary voltages equal to or greater than 480 volts, including 480/277 volt systems in, or near, commercial buildings. Such PCB transformers will be converted to either PCB-contaminated or non-PCB status through appropriate PCB removal processes, or removed/replaced and placed into storage for disposal.

(14) As of 1 October 1990, all radial PCB transformers and lower secondary voltage network PCB transformers (i.e., secondary voltages below 480 volts) used in, or near, commercial buildings will be equipped with electrical protection to avoid transformer failures caused by high-current faults. In addition to this protection, all radial PCB transformers with higher secondary voltages (i.e., 480 volts and above, including 480/277 volt systems) used in, or near, commercial buildings will have electrical protection to avoid transformer failures caused by sustained low-current faults. Radial transformers described above that are not provided with electrical protection must have been removed from service by 1 October 1990. Lower secondary voltage network transformers described above that are not provided with electrical protection must be removed from service by 1 October 1993.

b. **Notification of PCB Waste Activity.** As a result of notification of HW activity, installations that generate PCB wastes must notify EPA and obtain an EPA identification number if they do not already have one. It is unlawful for a PCB waste generator to process, store, dispose of, transport, or offer for

transportation PCB wastes without having obtained an EPA identification number. PCB generators that first engage in PCB waste handling after 4 February 1990 must notify EPA of such activities by filing EPA Form 7710-53 (40 CFR 761.202). Generators that do not store PCB's or PCB items for over 30 days and that do not operate a PCB storage facility subject to the requirements of 40 CFR 761.65 (b) or (c)(7) are exempted from notifying EPA. Exempt generators will use the generic identification number (40 CFR 761) or a number assigned to the activity by EPA or a State under RCRA.

c. PCB Spills

(1) PCB's are a HS under TSCA and the Department of Transportation. A spill of a reportable quantity (RQ, 1 lb) of PCB must be reported as required by regulation. (See chapter 11 of this Manual.) Releases of a mixture containing PCB's must be reported only where the amount of the PCB component released exceeds the RQ. If the concentration of PCB's is unknown, then the total amount of the release should be compared to the RQ for PCB's (40 CFR 761.125).

(2) PCB's and PCB items manufactured in the United States may be shipped back to CONUS for disposal. Foreign-manufactured items containing PCB's may not be imported into the United States.

d. **PCB Recordkeeping.** Each owner or operator of a facility that uses or stores at any one time at least 45 kg (99.4 lb) of PCB's in PCB containers, one or more PCB transformers, or 50 or more large PCB capacitors is required to maintain annual records and a written annual document log of PCB waste disposal activities. These records and the log must be retained for 3 years after the facility ceases using or storing PCB's and PCB items in quantities described above. The first annual document log covered the period 1 January 1989 to 5 February 1990 and must have been completed by 1 July 1990. Thereafter, the annual

document log must be completed by 1 July for the previous calendar year. Annual records must include all signed manifests for the calendar year and all certificates of disposal. The annual document log must contain specific inventory information for each type of PCB item as listed in EPA regulations (40 CFR 761.108).

e. **Manifesting PCB Wastes.** A generator who relinquishes control over PCB wastes for commercial offsite disposal will prepare a manifest using EPA Form 8700-22, or the appropriate State manifest. If the generator uses an independent transporter to ship the waste and the generator does not receive a signed copy of the manifest from the disposer or commercial storer within 35 days of shipment, then the generator will contact the transporter and/or disposer to determine the disposition of the waste. If the generator does not receive a manifest from the disposal facility within 45 days of shipment, then the generator must file an exception report with the EPA regional office. Copies of the manifests must be retained by the generator for at least 3 years after the facility ceases using or storing PCB's or PCB items in quantities described in previous paragraphs (40 CFR 761.207).

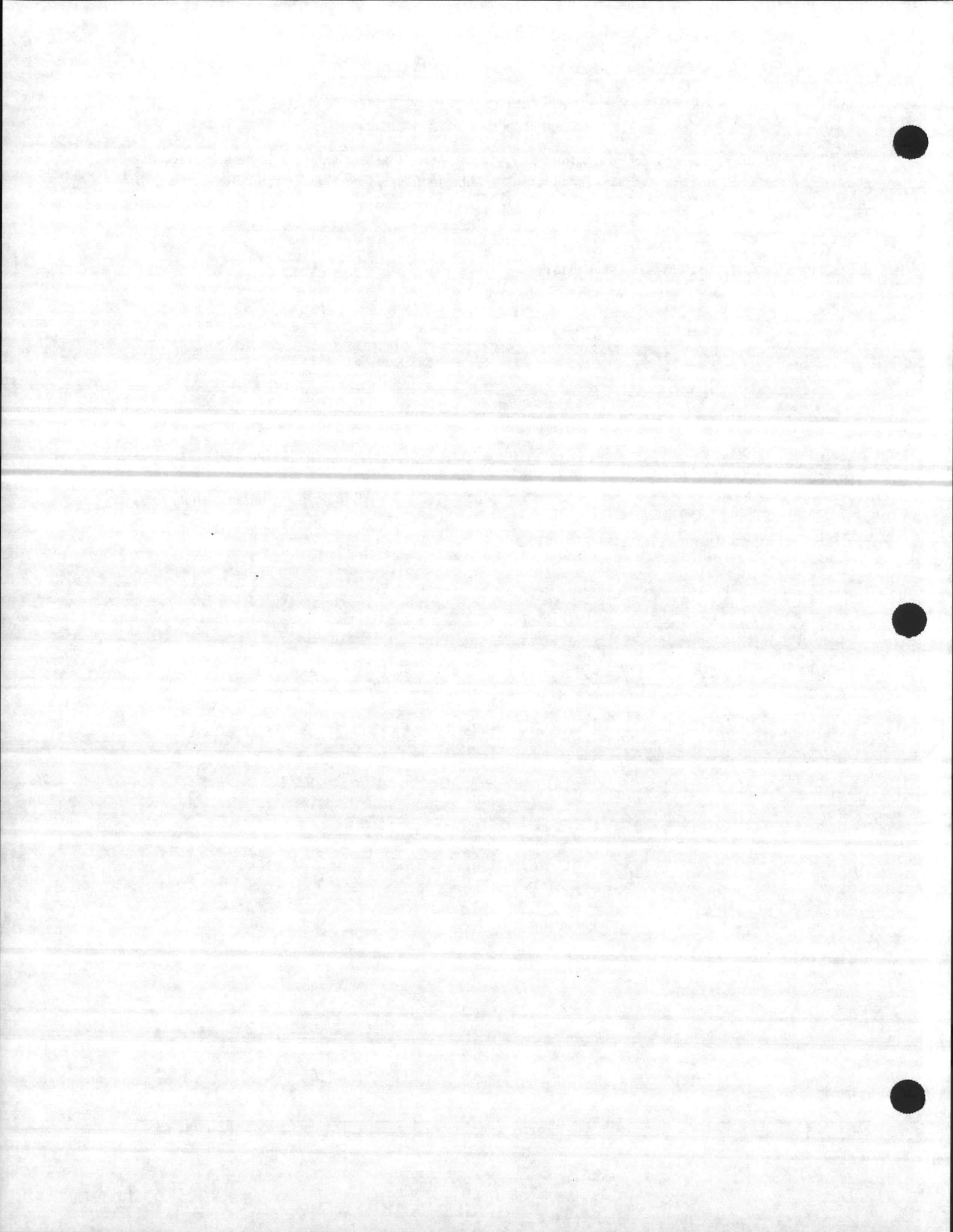
f. **Certificates of Disposal and One-Year Exception Reports.** For each shipment of manifested PCB waste, the disposer is obligated to prepare a certificate of disposal that must be sent to the generator within 30 days of the date of disposal (40 CFR 761.218). A generator who manifests PCB's or PCB items to a disposer of PCB waste must submit a One-Year Exception Report to the EPA Regional Administrator whenever the following criteria are met (40 CFR 761.215):

(1) The generator transfers the PCB's or PCB items to the disposer within 9 months from the date of removal from service.

(2) The generator has not received a certificate of disposal within 13 months from the date of removal from service.

(3) The generator receives a certificate of disposal for a disposal date more than 1 year after the

date of removal from service. The disposer is responsible for filing a One-Year Exception Report for PCB wastes received more than 9 months after removal from service.

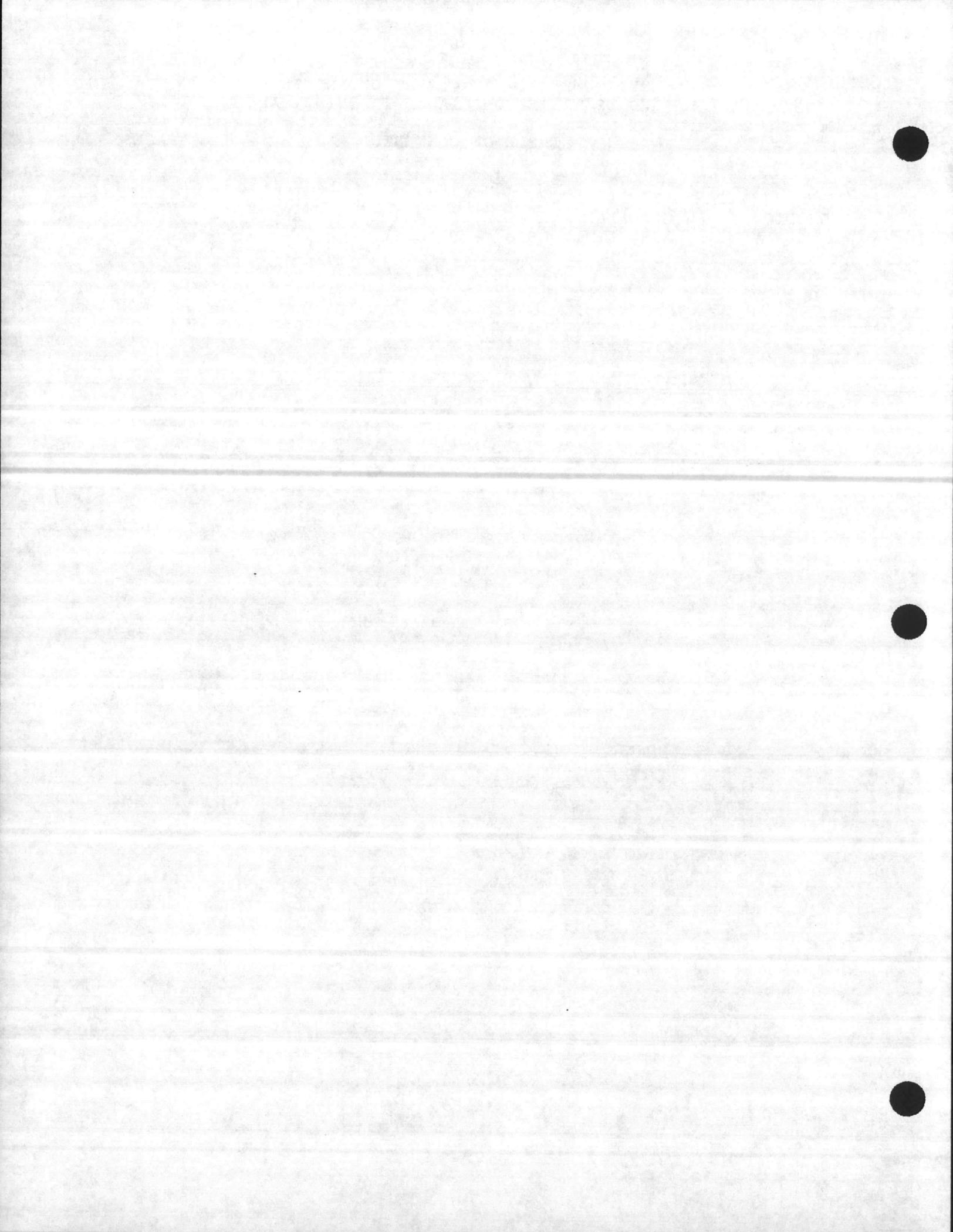


ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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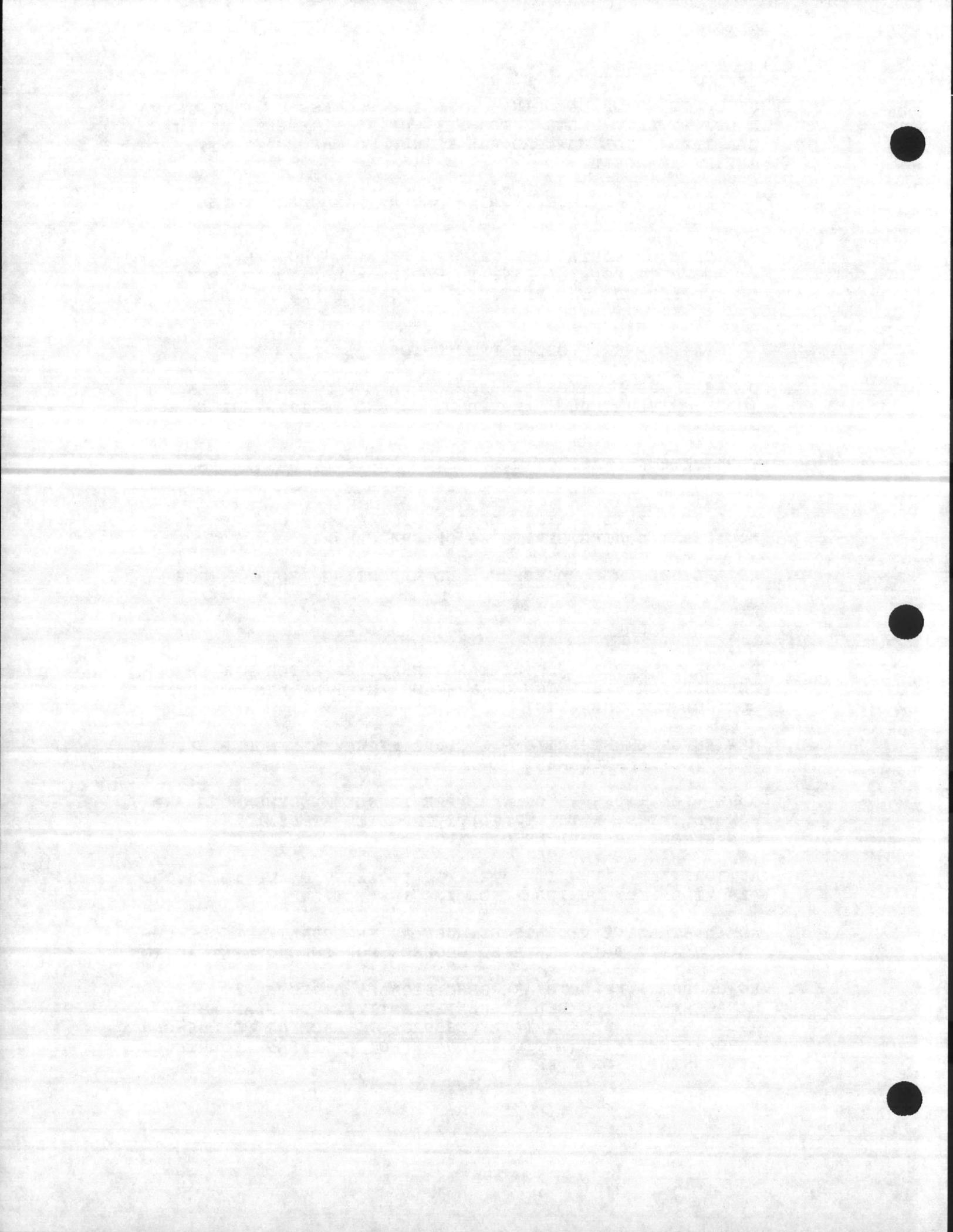
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CAMP LEJEUNE OZONE DEPLETING SUBSTANCES INSTRUCTIONS

CHAPTER 1

BACKGROUND AND POLICY

1000. SCOPE. These instructions implement ozone depleting substance (ODS) regulations promulgated by the U.S. Environmental Protection Agency and Marine Corps Directives. They establish guidelines for Camp Lejeune on the use, reduction, and final disposition of ODSs. This chapter provides definitions, chemical classifications, and basic policies regarding ODSs.

1001. DEFINITIONS

1. Mission critical applications of ODSs include:

a. CFC-12 and CFC-114 used in ship and aircraft environmental control systems, ground and tactical vehicles, and for automotive air conditioning. CFC-12 is also used as a propellant for spray paint and some other aerosol can products.

b. Halon 1211 used in flight line fire protection, ship and shorebased crash, fire, and rescue vehicles, and limited use for firefighter training.

c. Halon 1301 used in for fire protection and found in portable fire extinguishers, aboard firefighting vehicles in stationary fire suppression equipment, and aboard some tactical vehicles and aircraft.

d. Essential CFC-113 uses in the manufacturing process for ordnance where no compatible approved substitute exists. Uses include contact cleaners, corrosion prevention, degreasers, and as a solvent in cleaning electronic circuit boards.

2. Ozone-depleting substance - a substance that, when emitted to the atmosphere, has the potential to deplete stratospheric ozone.

3. Chlorofluorocarbon (CFC) - fully halogenated substance used as coolant in refrigerators, freezers, water coolers, building air conditioning, and as contact cleaners and degreasers. Other uses include hydraulic fluid testing, chemical analysis, and as aerosol propellants in spray can products.

4. Hydrochlorofluorocarbon (HCFC) - partially halogenated substance used as coolant in refrigerators, freezers, water

coolers, building air conditioning, and as contact cleaners and degreasers.

5. Ozone-depletion potential - a factor established by the U.S. Environmental Protection Agency to reflect the ozone-depletion potential of a substance on a mass per kilogram basis, as compared to chlorofluorocarbon-11.

6. Small appliance - air conditioning or refrigeration equipment containing less than five pounds of charge during normal operations. Equipment containing less than five pounds of charge includes household refrigerators, household freezers, dehumidifiers, vending machines, and water coolers.

7. Technician - any person who performs a maintenance, service, or repair to air conditioning or refrigeration equipment that could reasonably be expected to release CFCs or hydrochlorofluorocarbons (HCFCs) into the atmosphere, e.g., installers, contractor employees, in-house service personnel, and in some cases, owners. Technician also means any person disposing of air conditioning or refrigeration equipment except for small appliances.

8. Hazardous Material Disposal Coordinator (HMDC) - the individual assigned to assist the Hazardous Material Disposal Officer (HMDO) with all matters pertaining to hazardous waste. Acts as the point of contact for Commands aboard Camp Lejeune, and the Marine Corps Air Station (NR) on matters dealing with hazardous waste.

9. Recover - to remove refrigerant in any condition from a system without necessarily testing or processing it in any way.

10. Recycle - to clean refrigerant for reuse by oil separation and filtering to reduce moisture, acidity, and particulate matter. This term usually applies to procedures implemented in the field or at a service shop.

11. Motor vehicle - any vehicle which is self-propelled and designed for transporting persons or property on a street or highway, including but not limited to passenger cars, light duty vehicles, and heavy duty vehicles. This definition does not include a vehicle where final assembly of the vehicle has not been completed by the original equipment manufacturer.

12. Motor vehicle air conditioner - mechanical vapor compression refrigeration equipment used to cool the driver's or passenger's compartment of any motor vehicle. This definition is not intended to encompass the hermetically sealed refrigeration systems used on motor vehicles for refrigerated cargo and the air conditioning systems on passenger buses using HCFC-22 refrigerant.

1002. OZONE DEPLETING SUBSTANCE CLASSIFICATION. The ODS

classification scheme developed by the U.S. Environmental Protection Agency has been adopted for these instructions. ODSs are grouped into two classes. Table 1-1 lists the Class I and II substances along with the ozone depletion potential of each. In general, these substances are defined as follows:

1. Class I Substances. Those chemicals that have been found to cause or contribute significantly to harmful effects on the stratospheric ozone layer; including all chemicals that have an ozone depletion potential of 0.2 or greater.
2. Class II Substances. Those chemicals that are anticipated to contribute to harmful effects on the ozone layer, but have a lower ozone depletion potential than Class I substances.

1003. ODS PROCUREMENT AND ACQUISITION. To be completed upon issuance of Marine Corps orders.

1004. ODS RESERVE. To be completed upon issuance of Marine Corps orders. It is expected that the reserve will bank Class I ODSs for use in mission-critical applications.

CHAPTER 2

PRACTICES FOR SERVICING AND DISPOSING OF MOTOR VEHICLE AIR CONDITIONERS

2000. SCOPE. This section establishes instructions for the handling of ODS refrigerants used in motor vehicle air conditioners for all non-mission critical applications.

2001. SERVICING REQUIREMENTS

1. Intentional release of any Class I or Class II refrigerant during service or repair of any motor vehicle air conditioner is prohibited.

2. No person repairing or servicing motor vehicles may perform any service on a motor vehicle air conditioner involving the refrigerant for that air conditioner unless the person is properly trained, uses adequate refrigerant recovery equipment and is certified by an EPA-approved technician certification program.

2002. DISPOSAL REQUIREMENTS

1. No person may dispose of any motor vehicle air conditioner unless the refrigerant has been removed by a certified technician using approved recovery equipment.

2. If the refrigerant is removed from the motor vehicle air conditioner by someone other than the person disposing of the motor vehicle air conditioner, the person disposing of it must obtain a signed statement that the refrigerant was removed in compliance with EPA regulations. The statement must also contain the name and address of the person removing the refrigerant and the date the refrigerant was removed.

2003. REFRIGERANT RECOVERY AND RECYCLING EQUIPMENT. All refrigerant recovery and recycling equipment used in servicing motor vehicle air conditioners must be certified by the manufacturer to meet EPA requirements, and must meet EPA specifications stated in reference (c). A determination of the acceptability of the equipment may be obtained by contacting EPA at the following address: Motor Vehicle Air Conditioning (MVAC) Recycling Program Manager, Stratospheric Ozone Protection Branch (6202-J), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, DC 20460, or by calling the Ozone Hot Line at 1-800-296-1996, between the hours of 10 a.m. and 4 p.m. eastern standard time.

2004. TRAINING AND CERTIFICATION

1. All persons servicing motor vehicle air conditioners must receive training and certification through an EPA approved program.
2. Contact the Camp Lejeune Environmental Management Department for details on available training and certification programs.
3. The cognizant Hazardous Material Disposal Coordinator (HMDC) will maintain training/certification records.

2005. REPORTING REQUIREMENTS

1. A MOTOR VEHICLE AIR CONDITIONER RECOVER/RECYCLE OR RECOVER EQUIPMENT CERTIFICATION FORM must be submitted initially to certify to the EPA that present recover/recycle equipment is certified to meet EPA standards, and that all technicians are properly trained and certified. New equipment purchases must be certified when obtained. Figure 2-1 may be reproduced in quantities as required. The cognizant HMDC will forward completed forms to the Assistant Chief of Staff, Environmental Management Department, for submission to the EPA.
2. The cognizant HMDC will submit an annual report of ODSs purchased, disposed of, in storage, and in use to the Assistant Chief of Staff, Environmental Management Department, at the end of each calendar year for compilation and preparation of the Base ODS Report for Headquarters, Marine Corps. Figure 2-2, ANNUAL REPORT OF OZONE DEPLETING SUBSTANCES, USE/STORAGE, may be reproduced in quantities as required. Figure 2-3, provides an example of a completed Annual Report.

2006. RECORDKEEPING REQUIREMENTS

1. The cognizant HMDC of any facility that services motor vehicle air conditioners must keep records of the name and address where recovered refrigerant is sent, if the refrigerant is sent to another location.
2. Any facility that services vehicle air conditioners must retain records demonstrating that all persons authorized to operate the equipment are properly certified. Training and certification records will be reviewed periodically by EMD and /or Federal and State regulatory officials for completeness and accuracy.
3. Inventory records of ODS refrigerants must be maintained for submittal in the report described in 2005.2. These records include:
 - a. Pounds of ODS purchased (by type).
 - b. Pounds of ODS processed for disposal (by type).

- c. Current inventory of ODS in storage (by type).
- d. Current CFC inventory in use in machines (by type).

4. Records required by 2006.1 and 2006.2 must be maintained by the cognizant HMDC or his designee and be available for review by EMD and State or Federal regulators.

5. The cognizant HMDC will ensure that all records required to be kept are maintained on-site for three years.

CHAPTER 3

PRACTICES FOR SERVICING AND DISPOSING OF NON-MOTOR VEHICLE AIR CONDITIONING AND REFRIGERATION EQUIPMENT

3000. SCOPE. This section establishes instructions for the handling of ODS refrigerants in non-vehicle air conditioning and refrigeration equipment for all non-mission critical applications.

3001. SERVICING REQUIREMENTS

1. Intentional releases of Class I or Class II refrigerants during the service or repair of any air conditioning or refrigeration equipment is prohibited.
2. No person may perform any service on any air conditioning or refrigeration system without properly using EPA approved refrigerant recovery equipment.
3. All persons opening air conditioning or refrigerant equipment, must evacuate refrigerant to the levels specified by the EPA, which depends upon the type of equipment being evacuated and the date of manufacture of the recovery or recycling machine. Table 3-1 provides EPA standards for recovery and recycling equipment.
4. After November 15, 1994, no person may perform service on air conditioning or refrigeration equipment involving the opening of the refrigerant system unless that person has obtained EPA approved certification.

3002. DISPOSAL REQUIREMENTS

1. No person may dispose of any air conditioning or refrigeration equipment unless the refrigerant has been removed using EPA approved recovery equipment.
2. If the refrigerant from a small appliance is removed by someone other than the person disposing of a small appliance, the person disposing of the appliance must obtain a signed statement certifying that the refrigerant was removed in compliance with EPA regulations. The statement must also contain the name and address of the person removing the refrigerant and the date the refrigerant was removed.

3003. TRAINING AND CERTIFICATION

1. After November 15, 1994, all technicians servicing air conditioning or refrigeration equipment must receive training and certification through an EPA approved program.
2. Contact the Camp Lejeune Environmental Management Department for details on available training and certification programs.

3004. REFRIGERANT RECOVERY AND RECYCLING EQUIPMENT. All refrigerant recovery and recycling equipment used in servicing non-motor vehicle air conditioning and refrigeration equipment must be certified by the manufacturer to meet EPA requirements and must meet the evacuation levels specified in Table 3-1.

3005. REPORTING REQUIREMENTS

1. The cognizant HMDC will ensure that an initial report is submitted to the Assistant Chief of Staff, Environmental Management, Marine Corps Base, for forwarding to the EPA, certifying that the servicing of air conditioning and refrigeration equipment is being conducted using proper equipment. New equipment purchases must be certified when obtained. Figure 3-1, may be reproduced as required.
2. The cognizant HMDC will submit a report of ODSs purchased, disposed of, in storage, and in use in machines, which must be submitted to the Assistant Chief of Staff, Environmental Management Department, Marine Corps Base, at the end of each calendar year for compilation and preparation of the Base Annual ODS Report for Headquarters, Marine corps. Figure 3-2, may be reproduced as required.

3006. RECORDKEEPING REQUIREMENTS

1. The cognizant HMDC will ensure that inventory records of ODS refrigerants are maintained for submittal in the report described in 3005.1 and 3005.2. This information includes:
 - a. Pounds of ODS purchased (by type).
 - b. Pounds of ODS processed for disposal (by type).
 - c. Current inventory of ODS in storage (by type).
 - d. Current CFC inventory in use in machines (by type).
2. Records required by 3006.1 and 3006.2 are kept by the cognizant HMDC or his designee.
3. The cognizant HMDC will ensure that all records required to be kept must be maintained on-site for three years.

**MVAC RECOVER/RECYCLE OR RECOVER EQUIPMENT
CERTIFICATION FORM**

Name of Establishment

Street

City, State, Zip Code

(Area Code) Telephone Number

SEND COMPLETED FORM TO:

Commanding General
(ATTN AC/S EMD/EPD)
Marine Corps Base
VIA: HMDC (Tenant Commands)

2. _____
Name of Equipment Manufacturer Model Number

Serial Number Date of Purchase Date of Manufacture

3. I certify that I have acquired approved recover/recycle or recover equipment under Section 609 of the Clean Air Act. I certify that only properly trained certified technicians operate the equipment and that the information given above is true and correct.

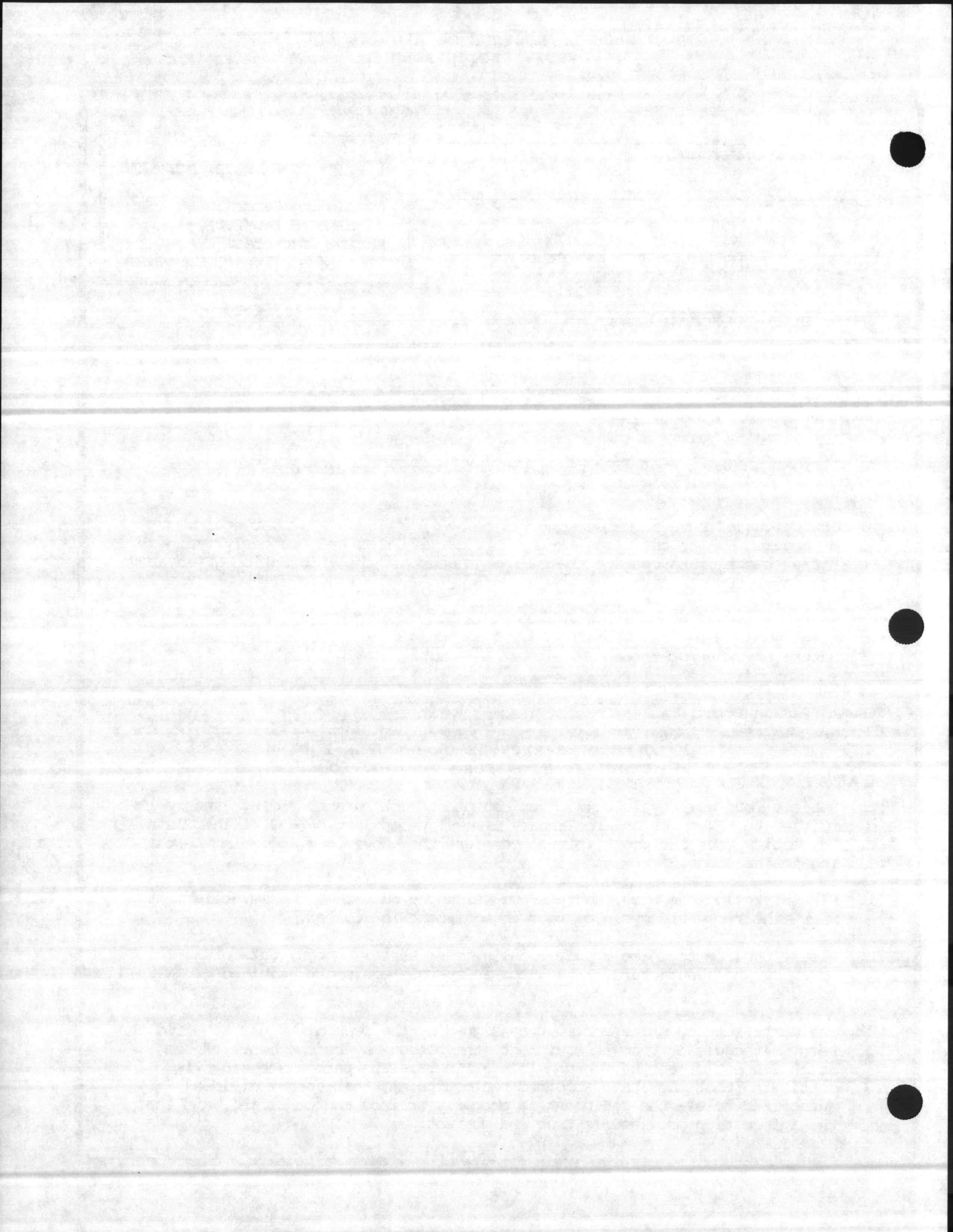
Signature of Owner/Operator Date

Name (Please Print) Title

**MVAC RECOVER/RECYCLE OR RECOVER EQUIPMENT
CERTIFICATION FORM INSTRUCTIONS**

Motor vehicle recover/recycle or recover equipment must be acquired by January 1992 and certified to EPA on or before January 1, 1993 under Section 609 of the Clean Air Act. To certify your equipment, please complete the above form according to the following instructions.

1. Please provide the name, address and telephone number of the establishment where the recover/recycle or recover equipment is located.
2. Please provide the name brand, model number, serial number, date of purchase and manufacture of the recover/recycle equipment acquired for use at the above address.
3. The certification statement must be signed by the person who has acquired the recover/recycle or recover equipment (the person may be the owner of the establishment or another responsible officer). The person who signs is certifying that they have acquired the equipment, that each individual authorized to use the equipment is properly trained and certified, and that the information provided is true and correct.



Phaseout of Ozone Depleters Accelerated

President Bush has announced that the United States will phase out most ozone depleting substances five years ahead of international deadlines and called on other nations to agree to an accelerated schedule. Current U.S. production is already more than 40 percent below levels allowed by the Montreal Protocol and more than 20 percent ahead of Europe's non-aerosol production phasedown. The announcement came as recent scientific findings indicated faster, more widespread ozone depletion than was previously known.

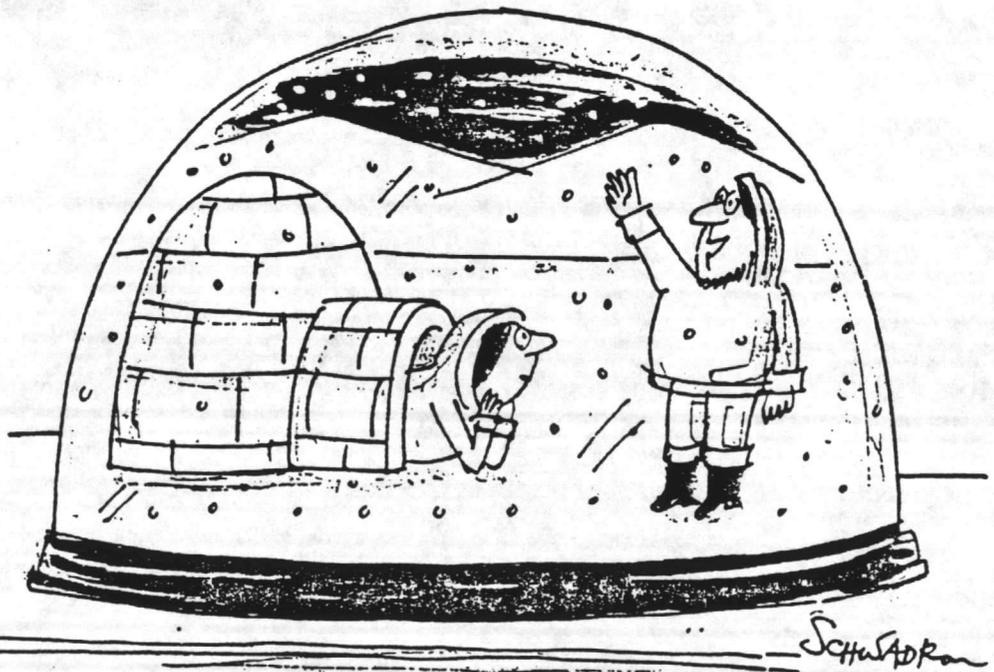
The Washington Post reported: "... The president's pledge to halt production of chlorofluorocarbons (CFCs) by Dec. 31, 1995, commits the United States to a faster phaseout schedule than most of the industrialized nations that signed the Montreal Protocol—an international treaty that sets a deadline of 2000 for elimination of the chemicals, which are widely used in consumer products.... The CFC explosion of the past 20 years has put so much of the chemicals into the atmosphere that there is no way of stopping continued depletion of the ozone shield. Even with the faster phaseout, the protective layer is not expected by scientists to be restored to its 1970s condition until the middle of the next century.

Last week, NASA scientists reported that a converted spy plane flying over New England and eastern Canada recorded the highest level of ozone-threatening chlorine compounds ever measured anywhere in the world. The level was 50 percent higher than previously seen over Antarctica, where an ozone hole was first discovered in 1985.... The Montreal Protocol of 1987, signed by 71 nations, provides for regular reevaluations of whether a faster phaseout is warranted. A working group is scheduled in April to set an agenda for a full meeting of signatories in November. Germany has pledged to eliminate CFCs by Jan. 1, 1995, and one of the most popular substitutes by 2000. The European Community is committed to a deadline of July 1997...."

The Wall Street Journal commented: "... The action, which comes in the wake of data showing that

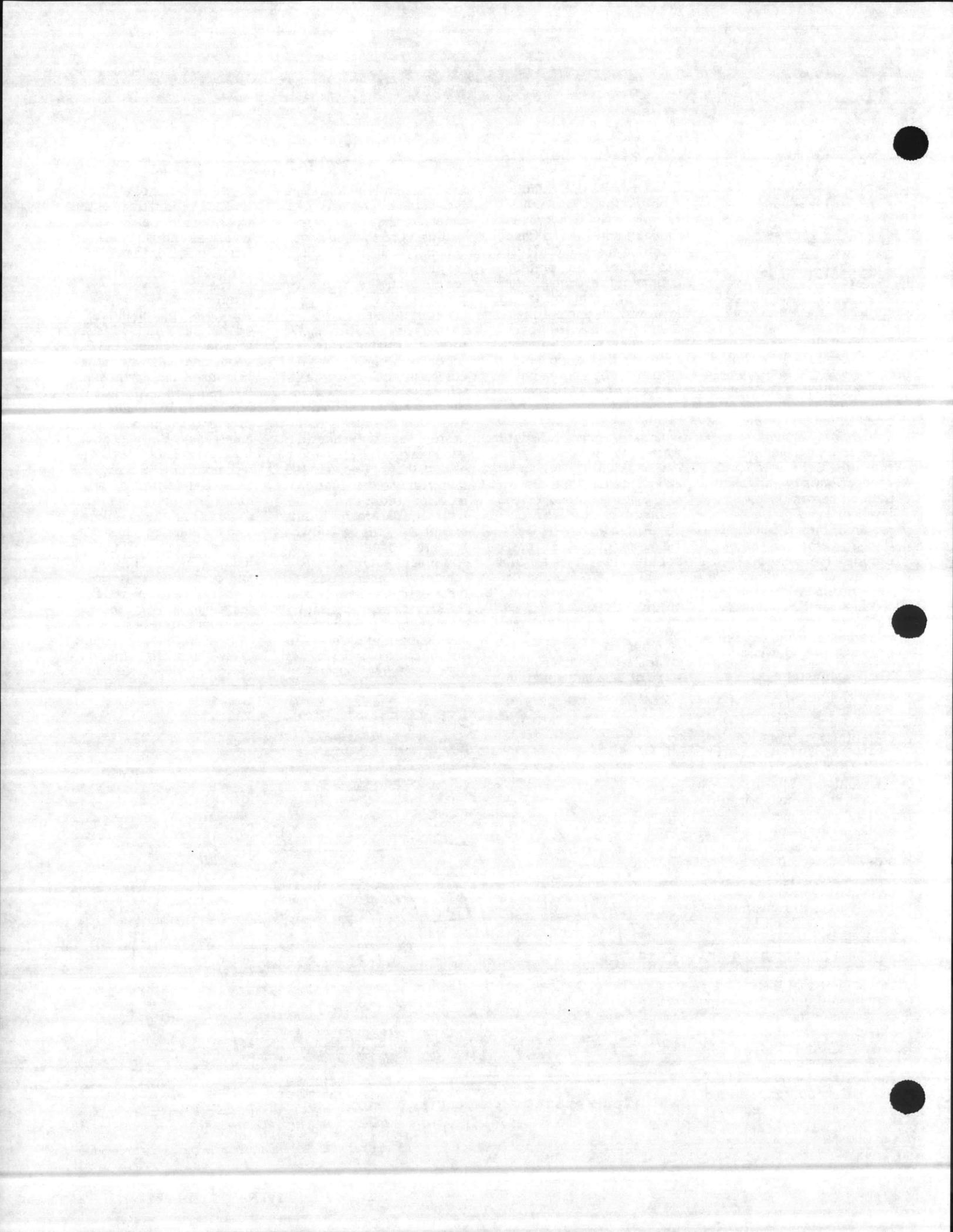
the problem is worse than was believed, reflects a timetable that producers and users of the substances generally accept. 'We think we can live with it,' said Joseph McGuire, senior vice president of the Air Conditioning and Refrigeration Institute. 'We think it's doable.' U.S. production of chlorofluorocarbons, CFCs, which are widely used in refrigerants and solvents, and other chemicals that destroy the stratospheric ozone layer, will have to be eliminated by Dec. 31, 1995, four years sooner than required under an international treaty. Limited exceptions will be allowed for certain medical equipment such as dose inhalers for asthmatics and other essential uses and for the servicing of existing equipment. The president also is urging producers to cut output to 50 percent of 1986 levels by year end.

Partly because of a U.S. tax on CFC production, output is 42 percent below 1986 levels, as industry has found it easier than expected to come up with safer substitutes.... Environmental groups supported the president's action, but said it falls short of what is needed. Liz Cook, ozone campaign director at Friends of the Earth, said, 'We're glad the president recognized the ozone problem is a global emergency. But we think the crisis is so dire that we will continue to press for the U.S. to eliminate all ozone-depleting chemicals sooner than the deadline.' The accelerated phaseout applies to major CFCs, halons, methyl chloroform, and carbon tetrachloride. Under the 1990 revisions to the Clean Air Act, the administration has authority to accelerate the phaseout of these chemicals when data indicate a need to do so...."



"BUT ON THE POSITIVE SIDE, MUGWAMP, IT DOES PROTECT US AGAINST ANY HOLES IN THE OZONE LAYER."

Harley Schwadron. Reprinted with permission.





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

IN REPLY REFER TO:

6280/6
BEMD

6 APR 1993

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: LEAD IN DRINKING WATER BROCHURES

Ref: (a) NCDEHNR ltr 04-67-041 of 2 Mar 93
(b) NCDEHNR ltr 04-67-042 of 2 Mar 93

Encl: (1) Lead in Drinking Water Brochures

1. Marine Corps Base, Camp Lejeune, North Carolina completed its first monitoring period for lead and copper in drinking water systems in December 1992 as required by the National Primary Drinking Water Regulations. Lead action levels at the 90th percentile level were exceeded for the Hadnot Point and Marine Corps Air Station New River water systems during the first monitoring period. In order to provide public awareness regarding lead in the drinking water and the ways to reduce lead exposure to the public, we are required to implement a public education program consisting of several required actions. The enclosed public material provides introductory information regarding the health effects of lead, how lead exists in the drinking water and ways that the public can help to reduce the risks of lead exposure. This information is being provided in hopes that you will join our efforts to better inform the public regarding lead in drinking water and the ways to reduce the associated risks.

2. Respectfully request that you place the provided public education materials in a conspicuous location in order to comply with the written public education requirements of the National Primary Drinking Water Regulations, and comply with references (a) and (b).

3. The point of contact in this matter is Mr. Brynn T. Ashton, Director, Environmental Planning Division, Environmental Management Department, at extension 5063.

ROBERT L. WARREN
By direction

Distribution:

CO, NAVHOSP (4)
Dir, HUMSVC (FamSvcCtr)
AC/S, Fac (Family Housing)
AC/S, MWR (Child Development Services)
Camp Lejeune Dependent Schools
NAVCARE

INTRODUCTION

The United States Environmental Protection Agency (EPA) and Marine Corps Base, Camp Lejeune are concerned about lead in drinking water from the Camp Lejeune Water Systems. Although most homes have very low levels of lead in their drinking water, some homes and buildings in the community have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/l). Under Federal law, we are required to have a program in place to minimize lead in your drinking water by July 1, 1995. This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace each lead service line that we control after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give the Environmental Management Department a call at (919) 451-5063. This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

HEALTH EFFECTS OF LEAD

Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery porcelain, pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination - like dirt and dust that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

STEPS YOU CAN TAKE IN THE HOME TO REDUCE EXPOSURE TO LEAD IN DRINKING WATER

Despite our best efforts mentioned earlier to control water corrosivity and remove lead from the water supply, lead levels in some homes or buildings can be high. To find out whether you need to take action in your home, have your drinking water tested to determine if it contains excessive concentrations of lead. Testing the water is essential because you cannot see, taste, or smell lead in drinking water. Some local laboratories that can provide this service are listed at the end of this booklet.

If a water test indicated that the drinking water drawn from a tap in your home contains lead above 15 ppb, then you should take the following precautions:

- (A) Let the water run from the tap before using it for drinking

more than six hours. The longer water resides in your home's plumbing, the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one or two gallons of water and the cost to the water system is minimal per month. To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible use the first flush water to wash the dishes or water the plants.

- (B) Try not to cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove.
- (C) Remove loose lead solder and debris from the plumbing materials installed in newly constructed homes, or homes in which the plumbing has recently been replaced, by removing the faucet strainers from all taps and running water from 3 to 5 minutes. Thereafter, periodically remove the strainers and flush out any debris that has accumulated over time.
- (D) If your copper pipes are joined with lead solder that has been installed illegally since it was banned in 1986, notify the plumber who did the work and request that he or she replace the lead solder with lead-free solder. Lead solders look dull gray, and when scratched with a key looks shiny. In addition, notify your State Public Water Supply Section about the violation.
- (E) Determine whether or not the service line that connects your home or apartment to the water main is made of lead. The best way to determine if your service line is made of lead is by either hiring a licensed plumber to inspect the line or by contacting the plumbing contractor by checking the building record maintained in the files of the Marine Corps Base Camp Lejeune Public Works' Division. A licensed plumber can at the same time check to see if your home's plumbing contains lead solder, lead pipes, or pipe fittings that contain lead. The public water system that delivers water to your home should also maintain records of the materials located in the distribution system, if the service line that connects your dwelling to the water main contributes more than 15 ppb to drinking water, after our comprehensive treatment program is in place, we are required to replace the line. If the line is only partially

controlled by the water system, we are required to provide you with information on how to replace your portion of the service line, and offer to replace that portion of the line at your expense and take a follow-up tap water sample within 14 days of the replacement. Acceptable replacement alternatives include copper, steel, iron, and plastic pipes.

- (F) Have an electrician check your wiring. If ground wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

The steps described above will reduce the lead concentrations in your drinking water. However, if a water test indicates that the drinking water coming from your tap contains lead concentrations in excess of 15 ppb after flushing, or after we have completed our actions to minimize lead levels, then you may want to take the following additional measures:

- (A) Purchase or lease a home treatment device. Home treatment devices are limited in that each unit treats only the water that flows from the faucet to which it is connected, and all of the devices require periodic maintenance and replacement. Devices such as reverse osmosis systems or distillers can effectively remove lead from your drinking water. Some activated carbon filters may reduce lead levels at the tap, however all lead reduction claims should be investigated. Be sure to check the actual performance of a specific home treatment device before and after installing the unit.
- (B) Purchase bottled water for drinking and cooking.

You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about health effects of lead. State and local government agencies that can be contacted include:

- (A) The Marine Corps Base Camp Lejeune Environmental Management Department (EMD) at telephone number 451-5063 can provide you with information about your community's water supply, and a list of local laboratories that have been certified by EPA for testing water quality.
- (B) The Naval Hospital Camp Lejeune, Occupational Health and Preventive Medicine Department at telephone number 451-5707 can provide you with information about the health effects of lead and how you can have your child's blood tested.

(C) The Marine Corps Base Camp Lejeune Public Works Division at telephone number 451-5950 can also provide you with information about building permit records that should contain the names of plumbing contractors that plumbed your home.

The following is a list of some State approved laboratories in your area that you can call to have your water tested for lead.

Southern Testing and Research Laboratories, Inc. at
(919) 237-4175

Industrial and Environmental Analysts at (919) 677-0090

The above standard information is required to be provided by Federal and State laws due to the Marine Corps Air Station New River and the Hadnot Point Water Systems exceeding lead action levels in the drinking water. The standard notice requires the following specific clarifications applicable to the New River and the Hadnot Point water systems.

- 1) All single family homes served by the Hadnot Point water system (those located in the old hospital area) were sampled and found to have lead concentrations below the EPA action level.
- 2) The Holcomb Boulevard water system which serves all housing areas except Hadnot Point, MCAS New River, Courthouse Bay and the Rifle Range satisfactorily met the EPA lead action levels during the first sampling period. Results from the second sampling period are not currently available.
- 3) Single family homes served by the MCAS New River water system did not meet the sampling site selection criteria dictated by the EPA and were not sampled. The home plumbing systems at MCAS New River have or are under the process of being replaced with copper pipes and lead free solder as part of the whole house renovations that have been underway for several years.
- 4) A materials evaluation conducted on the Hadnot Point, MCAS New River and Holcomb Boulevard water systems indicated that there are not any known lead water service lines at any home or building locations. The information presented in the Standard Public Education Materials regarding lead water service lines and their replacement does not apply to homes or buildings at Marine Corps Base, Camp Lejeune.



Lead Cleanup in the Midwest

Lead poisoning of children is considered by many to be a national epidemic. EPA estimates that 15 percent of the children in the United States have elevated blood lead levels—i.e., levels above 10 micrograms per deciliter of blood (10 µg/dl). The U.S. Public Health Service has said that poor, minority children in inner cities, who are already disadvantaged by inadequate nutrition and other factors, are particularly vulnerable to lead poisoning. (See story on lead page 42.)

As part of an Agency-wide effort to rank environmental problems according to their effects on human health and the environment, EPA's Chicago office conducted a comparative risk study of the region and selected lead exposure as one of its priority concerns. The resultant Project LEAP (Lead Education and Abatement Program) is designed to prevent and abate lead exposure in six states—Illinois, Michigan, Wisconsin, Minnesota, Ohio, and Indiana.

Project LEAP has four components: data analysis and targeting, pollution prevention, education and intervention activities, and abatement. The targeted population is children under seven years and women of child-bearing age (as surrogates for the fetus). Sixty Metropolitan Statistical Areas (MSAs)—representing 83 cities—are included. The project will take three years to complete.

The first component of Project LEAP (data analysis and targeting) has recently been completed. Computer

modeling was used to estimate the percentage and number of children in each city who are expected to have elevated blood lead levels based on a combination of real and estimated contamination levels in air, drinking water, food, soil, and household dust. The computer model primarily used for this work is called the Lead Uptake Biokinetic Model. Geographic Information Systems technology was also used to analyze demographic data.

The table lists and ranks those 10 cities in the six-state region estimated to have the highest numbers of children under age seven with elevated blood lead levels. In addition to the percentage and number of children in each city anticipated to have excess lead in the bloodstream, the table shows how many of these children are estimated to be either African American or Hispanic.

As the table shows, Chicago is estimated to have the greatest number of children with blood lead levels over 10 µg/dl: 40,370, considerably more than half being either African American or Hispanic. In Chicago, projected lead exposures come primarily from contaminated soil and dust; lead levels measured in Chicago's drinking water and ambient air are low.

By far the greatest estimated percentage of children with elevated blood lead levels is the estimated 85 percent projected for the small city of Eau Claire, Wisconsin. Wisconsin was found to differ from the other states in the region in that several communities, including Eau Claire, had high measured levels of lead in drinking water. Thus, in Eau Claire, lead in drinking water occurred in conjunction with high estimated soil and dust concentrations associated with older housing, resulting in a very high percentage estimate of children with blood lead levels of concern. Eau Claire is something of an anomaly in that so few of the children estimated to be at risk are minorities.

In the 83 cities under study, the total population of children under age seven was 1,429,000 in 1988. EPA's analysis indicates that 12 percent of these children, or 166,000, could have blood lead levels of concern. This includes 56,000 African American and 12,000 Hispanic children.

In addition to community education and intervention initiatives to reduce risks to children from lead exposure, EPA's Chicago office will be proceeding with pollution prevention and lead abatement activities under Project LEAP.

Top 10 Midwest Cities by Number of Children with Elevated Blood Levels

City	%	Children (All Groups) < 7 Years Old	African American Children < 7 Years Old	Hispanic Children < 7 Years Old
Chicago, IL	13	40,370	18,712	7,888
Detroit, MI	14	19,142	12,409	555
Milwaukee, WI	20	13,878	4,225	781
St. Paul, MN	13	12,152	785	138
Cleveland, OH	15	9,396	4,022	360
Cincinnati, OH	13	5,415	1,939	41
Indianapolis, IN	7	5,223	1,740	52
Minneapolis, MN	15	4,611	379	59
Toledo, OH	12	4,515	1,157	182
Eau Claire, WI	85	3,650	ε	13

Note: Percentages and numbers of children with blood lead levels greater than 10 µg/dl are computer-generated estimates.

LEAD: EXAMPLE OF THE JOB AHEAD

Inner City Children Suffer Most

by Joel Schwartz and
Ronnie Levin

To some extent, everyone is exposed to lead because industrialized society has widely contaminated the environment with it. Sophisticated geochemical analyses show that lead contamination in the United States is hundreds of times higher than in pre-industrialized times. Moreover, lead contaminates every part of the environment—air, surface and ground water, soil—and each medium serves as a potential pathway of human exposure. Current body burdens of lead, on the average, are estimated to be 1,000 times higher than in prehistoric humans. Lead exposure and uptake are particularly problematic in children, who may suffer irreversible effects, including learning impairment, as a result.

But while everyone is exposed to some lead, lead has a very skewed

(Schwartz is a Senior Scientist with EPA's Office of Policy, Planning, and Evaluation. Levin is Chief of the Water Staff, Office of Technology Transfer and Regulatory Support, in the Office of Research and Development.)

profile of exposure and uptake by race and social class—probably more so than any of the other major pollutants to which the general population is exposed. Lead also differs from most pollutants in another, more positive respect: In the last two decades, we've made the greatest progress in reducing overall lead exposure. Still, while exposures have been reduced overall, minority and lower income children retain a higher risk of elevated blood lead levels, a disparity that has been in evidence for decades.

In the Second National Health and Nutrition Examination Survey (NHANES II), conducted between 1976 and 1980, the average blood lead level for children aged 6 and under was found to be 16 micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dl}$)—which is the most commonly used standard

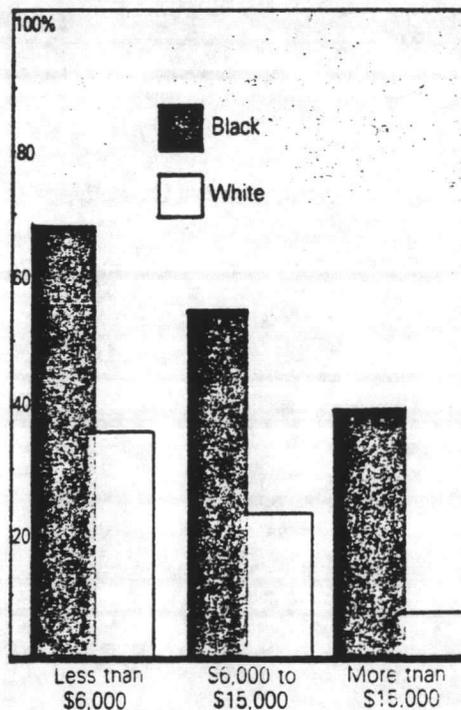
measure of blood lead concentrations. For black children, however, the average blood lead level was 21 $\mu\text{g}/\text{dl}$; for children in the lowest fifth of family income, 20 $\mu\text{g}/\text{dl}$. Blood lead levels were notably elevated for children living in inner city areas. Poor black children in the inner city had an average blood lead level of 23 $\mu\text{g}/\text{dl}$.

To put this latter figure in perspective, consider that the Centers for Disease Control recommended in the 1980s that any child with a blood lead level of 25 $\mu\text{g}/\text{dl}$ or higher be given a full-day test to determine whether hospitalization was needed. An even more dramatic comparison: Recently, a child with a blood lead level of 144 $\mu\text{g}/\text{dl}$ died from massive brain damage. In other words, poor black children in inner city neighborhoods in the 1970s had average blood lead concentrations amounting to over 15 percent of a potentially fatal dose. For no other toxic substance in modern times has the average exposure for a large group been so close to the fatal dose.

Fortunately, a great deal of progress has been made in reducing blood lead levels in the United States, due in no small part to restrictions on lead in gasoline. More than half of the average blood lead level in U.S. children in the 1970s was attributable to lead in gasoline emissions. When unleaded gasoline was introduced and the amount of lead limited in leaded gasoline, those emissions declined dramatically. Lead in gasoline today is less than half a percent of what it was at its maximum, and it will be banned entirely in 1996.

Other actions to reduce lead exposures have also had a significant impact, and continued improvements are expected. For example, the Food and Drug Administration (FDA) has taken steps to substantially reduce the use of lead solder in canned food.

Urban Children 0.5-5 Years Old with Elevated Blood Levels, by Race and Income





Normal hand-to-mouth activity of small children can poison them.

Lead Free Kids photo.

... a significant source of lead exposure. At present, average blood lead level in American children is estimated to be under 6 $\mu\text{g}/\text{dl}$, considerably lower than found in NHANES II.

In addition, EPA recently issued rules requiring water suppliers to make their water less corrosive. Lead contaminates drinking water when the water corrodes the materials of the public water system and the plumbing within the home; also when lead is leached from the lead solder used to join copper pipes, from lead pipes and connections, and from faucets and other plumbing fixtures. Therefore, reducing the corrosivity of the water is expected to significantly reduce lead levels in drinking water.

To date, the overall improvement has been dramatic in that blood lead levels in every age, race, sex, and income category have decreased throughout the country. Ironically, however, the general decline appears to have increased the disparity in blood lead levels by race and social class. While income and especially race have always been important variables of exposure, we expect that the continuing decline in the blood lead levels in the general population

will make race and income even better indicators now than previously of the likelihood of elevated blood lead levels.

The obvious question is, Why? Gasoline, of course, was a lead exposure source that affected the entire population. Most of the lead particles emitted from car tail pipes are quite small, and their distribution across urban areas is relatively uniform. Everyone breathes the air, and everyone benefitted when lead was curtailed in gasoline. Similarly, most of the population benefitted when the use of lead solder in canned food was eliminated.

In contrast, exposure to lead paint, a major remaining exposure pathway, is much less uniform. Housing built before 1950 is most likely to contain paint with high concentrations of lead. After 1950, the lead content of paint declined substantially, and the use of lead paint for houses was banned in the 1970s. Survey data from the U.S. Department of Housing and Urban Development (HUD) indicate that 90 percent of housing built before 1940 contains some lead paint, as does 62 percent of housing built between 1960 and 1979. The survey assumes that virtually no housing built after 1980

contains lead paint.

Furthermore, older houses tend to have paint with higher lead concentrations: 75 percent of the pre-1940 housing had paint lead at concentrations higher than 2 mg/cm^2 (double the level commonly defined as indicating the presence of lead paint), compared to only 18 percent of houses built between 1960 and 1979.

Therefore, the presence of lead paint—and the concentration of lead in the paint—varies widely from house to house.

But the mere presence of lead paint or even the concentration of lead in the paint does not tell the whole story. For one thing, the condition of the paint is critical. Lead paint that is well covered with non-lead paint, and in good condition, results in much lower lead exposures than exposed paint in poor condition. Everyone knows about children being poisoned by eating lead paint chips. But that's not really common. In fact, most cases of lead paint poisoning seem to occur from the ingestion of common household dust that has been contaminated with lead. The normal hand-to-mouth activity of small children results in their ingesting enough contaminated dust to raise their blood lead levels and even to poison them.

In homes with lead paint in deteriorated condition, the concentrations of lead in the dust are likely to be high. Adults as well as children are exposed to dust—dust that settles on plates and glasses, dust that contaminates carpets and furnishings, dust that we breathe, etc. More dust can mean higher lead exposures. Simply put, for the same presence of lead paint on the wall, the degree of risk presented can vary widely depending on how much exposure there is—how deteriorated the paint is, how much lead infiltrates the house dust, how much dust is present, and what the activity patterns

What's Known, What's Not

For no other toxic substance in modern times has the average exposure for a large group been so close to the fatal dose.

are for children and other family members.

For all these reasons, exposure to lead from paint, unlike lead from gasoline, is highly variable. Some houses have lead paint; some don't. Some buildings have lead paint in poor condition. The more dilapidated the housing, the higher the lead exposures are likely to be. Housing condition is largely a function of income.

Lead-contaminated soil is another source of exposure, but again the degree of potential exposure is highly variable. Decades of lead emissions from gasoline now contaminate urban soils, along with some deposition from other sources of lead. In older residential areas, more than a century's use of lead in exterior house paint has raised soil lead levels.

Soil contaminated by lead can be a significant exposure source, especially for children. And once more, the exposure of poor and minority children is likely to be higher, both because lower income and minority groups are more heavily concentrated in older urban areas and because their yards are more likely to have exposed soil—in other words, less likely to have ground cover, lawn furniture, swing sets, or other barriers to the soil. So, again, even for the same contamination level in the soil, lower income children are likely to have higher actual exposures. Of course, higher lead levels in soils and more exposed soil also increase the likelihood of introducing lead into interior house dust, another pathway for lead exposure.

There are still other lead exposure sources that disproportionately affect lower income and minority groups. One is occupational exposure. Several surveys suggest that both groups are heavily represented in jobs at risk of having high occupational lead exposures. These occupations include construction, primary and secondary

smelting, automobile repair, welding, and salvage work. Occupational exposures in adults are often linked with elevated lead levels in other family members, especially children. Unfortunately, occupationally exposed workers have not shown the same overall decrease in blood lead levels that has been seen in the general population over the past 15 years.

Certain consumer products also represent exposure sources that are likely to affect specific ethnic groups. Several studies have indicated that some traditional medicines, cosmetics, and foods from a range of cultures can contain high levels of lead. These goods, along with ethnic and handmade potteries that leach h.g. lead levels, can all be sources of increased lead exposure and even toxicity. Brass and especially bronze are used for cooking and eating utensils in several cultures; both alloys can contain and leach high levels of lead.

It is important to note that while FDA has been successful in working with the U.S. food processing industry to eliminate the use of lead solder in cans produced domestically, imported cans are not currently regulated in this way. Some ethnic groups consume significant quantities of imported canned foods, and they are at risk of higher lead exposure from this source.

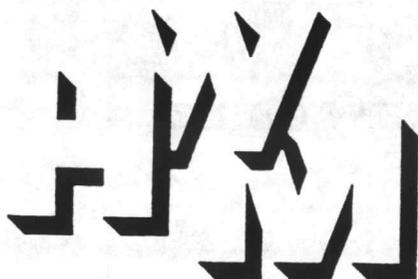
These last points raise a difficult issue. Children or adults may have elevated blood lead levels both because of higher environmental exposures and because of behavior patterns that increase intake. The use of certain traditional remedies or canned foods with lead is one such behavior pattern. The degree of hand-to-mouth activity or the frequency of hand washing can modulate exposures. Many other factors can also affect a child's exposure to and uptake of lead from the environment, including nutritional status, eating habits, adult-to-child

ratio, etc. To be fully effective, successful intervention programs must target behavior as well as the physical environment.

Because of the factors discussed in this article, we expect that blood lead levels have probably fallen by a smaller than average percentage in poor inner city neighborhoods and among certain ethnic racial groups. Equity considerations are a major concern with lead exposure, in part because such exposure is associated with increased risk of compromised cognitive development and abilities and resulting substandard school performance. The inequity of imposing such a burden on children of lower socio-economic status and or children from disadvantaged ethnic or racial groups is obvious: It compounds their burden by leaving them with fewer skills to overcome the disadvantages that face them.

By design, EPA regulations and programs have thus far aimed primarily to reduce the general population's exposure to lead. The Centers for Disease Control and other federal agencies are now developing a nationwide strategy to address lead paint exposure, which is currently the most important exposure source. This strategy specifically targets lead exposures predominantly affecting children who are already disadvantaged.

EPA is participating in the development and implementation of the strategy in several ways: by helping to design training programs for lead paint abatement workers, by conducting research on innovative approaches that can reduce the cost of lead paint abatement, and by providing technical assistance to CDC and HUD in designing their programs. If fully implemented, these initiatives should reduce the disparity in lead exposures among the U.S. population. □



HAZARDOUS WASTE MANAGEMENT

UNDERGROUND STORAGE TANKS

The Hazardous and Solid Waste Amendments of 1984 (HSWA) were signed into law on November 8, 1984. These amendments extended and strengthened the provisions of RCRA. One of the new RCRA provisions, Subtitle I, initiated a program to control hazards created by underground storage tanks. A new Part 280 was designated as Underground Storage Tanks.

An underground storage tank is defined as any tank (including connecting underground pipes) which contains a regulated substance, and which is 10 percent or more beneath the surface of the ground.

There are two categories of regulated substances. The first is petroleum and petroleum products. The second is any hazardous substance as defined by CERCLA. Hazardous wastes are excluded because hazardous waste tanks are regulated elsewhere under RCRA.

On September 23, 1988, a new Part 280 was designated to replace the interim provisions of the original Part 280. It was called Technical Standards for USTs. Also, at the same time, a new Part 281 was finalized. It is titled Approval of State Underground Storage Tank Programs.

Notification Forms

On November 8, 1985, EPA published a notification form to be used to provide information about underground storage tanks. This form, revised in September 1988, can be found in Appendix I to Section 280.

However, the regulation specifies that designated state or local agencies, not EPA, receive the notification. EPA has provided in Part 280, Appendix II a list of these agencies. Owners of underground storage tanks are advised to consult this list to determine:

1. To whom the notification must be sent, and
2. Whether the state in which the underground tank is located requires the use of the EPA form or an alternate state form for notification purposes.

Notification Requirements

On or before May 8, 1986, every owner of an underground storage tank was required to submit notice of the existence of the tank to the appropriate agency.

Tanks taken out of service after January 1, 1974 must have a notice sent by May 8, 1986 (unless the tank has been removed from the ground).

Any owner who brings into use an underground tank after May 8, 1986 has 30 days to submit a notice of the tank's existence.

To ensure that the UST requirements become as widely known as possible, there is a non-owner obligation. After October 24, 1988, any person who sells a UST must notify the purchaser of the owner's notification obligations under this regulation. The form provided in Part 280, Appendix III may be used to comply with this requirement.

Interim Prohibitions For Deferred UST Systems

No underground storage tanks under deferral (wastewater treatment systems, holding radioactive material, etc.) may be installed for the purpose of storing regulated substances unless such tank:

1. Will prevent releases due to corrosion or structural failure for the life of the tank;
2. Is designed to prevent the release of any stored substance (e.g., is cathodically protected, constructed of noncorrosive material, or steel clad with a noncorrosive material); or
3. The material used in the construction or lining of the tank is compatible with the substance to be stored.

HAZARDOUS WASTE MANAGEMENT GUIDE

Performance Standards For New UST Systems

In order to prevent releases due to structural failure, corrosion, or spills and overfills, new UST systems must meet the following requirements.

Tanks: Each tank must be properly designed and constructed, and meet national standards in one of the following construction methods.

1. Fiberglass-reinforced plastic
2. Steel construction and cathodically protected
3. Steel-fiberglass-reinforced-plastic composite
4. Metal without additional corrosion protection measures, when feasible.

Pipings: Similar to tanks, pipings must be properly designed and constructed, and meet national standards, using one of the following methods of construction.

1. Fiberglass-reinforced plastic
2. Steel construction and cathodically protected
3. Metal without additional corrosion protection measures, when feasible.

Spill and overflow prevention equipment: Equipment must be used that will prevent spilling and overflowing when a product is transferred to the UST system. Alternatives to this may be used if they can be shown to be as effective at protecting human health and the environment.

All tanks and pipings must be properly installed. Owners/operators must ensure that one of the six methods of certification, testing, or inspection (found in Section 280.20(e)) is used to demonstrate compliance by providing a certificate of compliance on the UST notification form.

Financial Responsibility For Petroleum USTs

EPA's financial responsibility rule for petroleum USTs became effective January 24, 1989. These financial responsibility requirements are applicable to owners or operators of "petroleum UST systems" with the following exceptions:

1. Federal or state entities that own or operate USTs containing petroleum; and
2. owners and operators of USTs excluded from the technical standards.

All owners or operators must maintain an annual aggregate of \$1 million or \$2 million depending on the number of USTs owned or operated.

In order to cover costs of corrective action and third party liability all owners and operators of USTs must obtain financial assurance in the following amounts:

\$1,000,000 per occurrence for facilities:

- 1) that produce, refine or market petroleum; and
- 2) whose USTs have an average monthly throughput of 10,000 gallons.

\$500,000 per occurrence for facilities:

- 1) that do not produce, refine or market petroleum; and
- 2) whose USTs have an average monthly throughput of less than 10,000 gallons.

UST owners or operators may satisfy the requirements using the following mechanisms: insurance or risk retention group coverage, surety bond, guarantee, letter of credit, financial test of self-insurance, trust fund, a state-required mechanism, or a state fund or other state assurance.

For further information on financial responsibility compliance dates, see Part 280.91 in this guide.

State UST Programs

Part 281 specifies the requirements that state programs must meet for approval under RCRA, and the procedures EPA will follow in approving, revising, and withdrawing approval of state programs.

WHAT ARE THESE REGULATIONS ABOUT?

The U.S. Environmental Protection Agency (EPA) has written regulations for many of the nation's underground storage tank systems. This booklet briefly describes the new technical requirements for these systems, which include tanks and piping. You can find the complete regulations in the Federal Register. Properly managed, underground storage tank systems -- often called USTs -- will not threaten our health or our environment.

Why Has EPA Written These New Regulations?

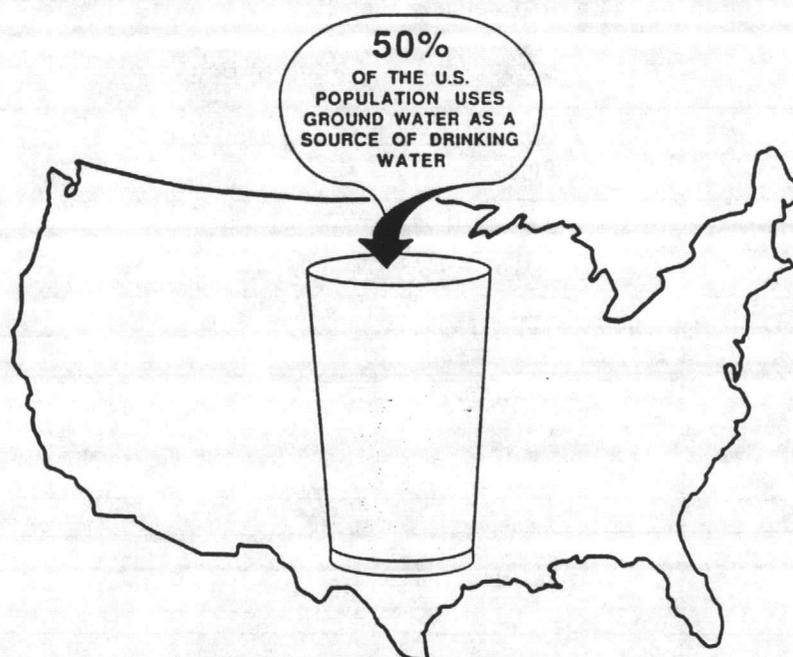
Several million underground storage tank systems in the United States contain petroleum or hazardous chemicals. Tens of thousands of these USTs, including their piping, are currently leaking. Many more are expected to leak in the future. Leaking USTs can cause fires or explosions that threaten human safety. In addition, leaking USTs can contaminate nearby ground water. Because many of us depend on ground water for the water we drink, Federal legislation seeks to safeguard our nation's ground-water resources.

Congress responded in 1984 to the problem of leaking USTs by adding Subtitle I to the Resource Conservation and Recovery Act (RCRA). Subtitle I requires EPA to develop regulations to protect human health and the environment from leaking USTs.

What Are The Goals Of The UST Regulations?

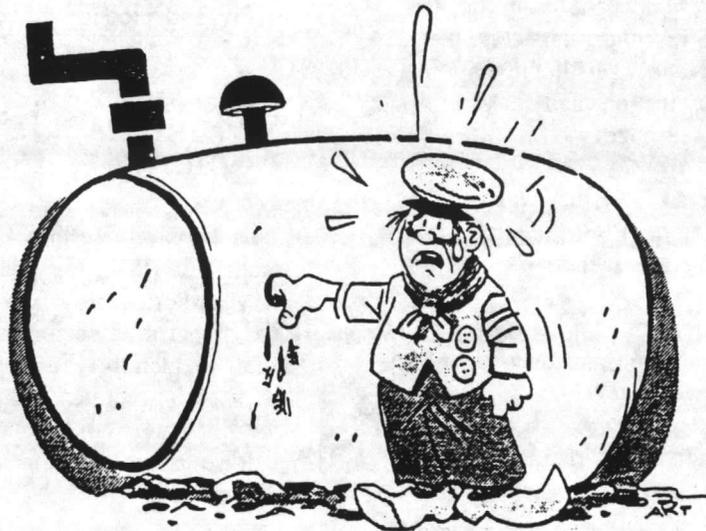
EPA has developed the UST regulations to make sure the following goals are reached:

- ◆ To prevent leaks and spills.
- ◆ To find leaks and spills.
- ◆ To correct the problems created by leaks and spills.
- ◆ To make sure that owners and operators of USTs can pay for correcting the problems created if their USTs leak.
- ◆ To make sure each State has a regulatory program for USTs that is as strict as or stricter than the Federal regulations.



WHY WORRY ABOUT LEAKS AND SPILLS?

◆ *Because your tank or its piping may leak.* As many as 25 percent of all underground storage tanks (USTs) may now be leaking. Many more will leak in the near future, possibly including yours. Your tank or its piping might be leaking right now. If a tank system is past its prime (over 10 years old), especially if it's not protected against corrosion, the potential for leaking increases dramatically. Newer tank systems (especially the piping) can also leak, and spills can happen anytime. Don't let your profits drain away.



◆ *Because it's in your best interest.* Leaking UST sites can be very costly to clean up. Imagine how much money you'd lose if your tank could not be used for weeks during lengthy cleanups or if local residents sued you for property damages. The costs can run into the thousands, perhaps as much as \$100,000 and more. Detect and clean up spills or leaks -- before they hurt you financially.

◆ *Because it's the law.* But it's the law for good reason. Much of our country depends on ground water for drinking water, and leaked or spilled petroleum can contaminate this vital resource. Explosions are another potential hazard. Many State and local governments, therefore, already require specific steps to prevent, detect, or clean up leaks and spills. Others will soon have similar requirements. Check with your local and State governments to learn what requirements apply to you.

◆ *Because it's for the good of the community and the environment.* Leaks and spills can have serious consequences. Petroleum can contaminate soil, drinking water supplies, and air. Petroleum and its resulting vapors can also accumulate in nearby confined spaces, such as septic tanks, sewers, and the basements of homes. These vapors are poisonous and can cause a fire or explosion.

How Will These Regulations Affect You?

The regulations describe the steps you -- the tank owner or operator -- need to take to help protect our health and environment. These steps will also help you avoid the high cost of cleaning up the environment and defending yourself in legal actions that can result if your tank or its piping leaks.

You should note the following major points of the UST regulations:

- ◆ If you install an UST after December 1988, it must meet the requirements for new USTs concerning correct installation, spill and overfill prevention, corrosion protection, and leak detection (see pages 7-11).
- ◆ If you have an UST that was installed before December 1988, it must meet two major requirements --
 - 1) Requirements for corrosion protection and spill and overfill prevention (see page 13).
 - 2) Leak detection requirements (see pages 14-15).
- ◆ You must take corrective action in response to leaks (see pages 19-20).
- ◆ You must follow closure requirements for tanks you temporarily or permanently close (see pages 23-24).
- ◆ You are financially responsible for the cost of cleaning up a leak and compensating other people for bodily injury and property damage caused by your leaking UST.

Although these points are discussed in the following sections, additional information appears in the "Technical Questions & Answers" section starting on page 31.

What's Your "Financial Responsibility" For Petroleum Leaks?

A complete explanation of your financial responsibility requirements will appear in the Federal Register and in an EPA brochure later in 1988.

In general, owners or operators of petroleum USTs must be able to demonstrate their ability to pay for damage that could be caused if their tanks leaked. These payments would need to cover the costs of cleaning up a site (see page 20) and compensating other people for bodily injury and property damage.

Who Is "The Regulatory Authority"?

This booklet describes EPA's basic requirements for USTs, but your State or local regulatory authority may have requirements that are somewhat different or more strict. You will need to identify your regulatory authority and its specific requirements for your USTs. If you are not sure who your regulatory authority is, call your local fire marshall for help.

What's An "UST"?

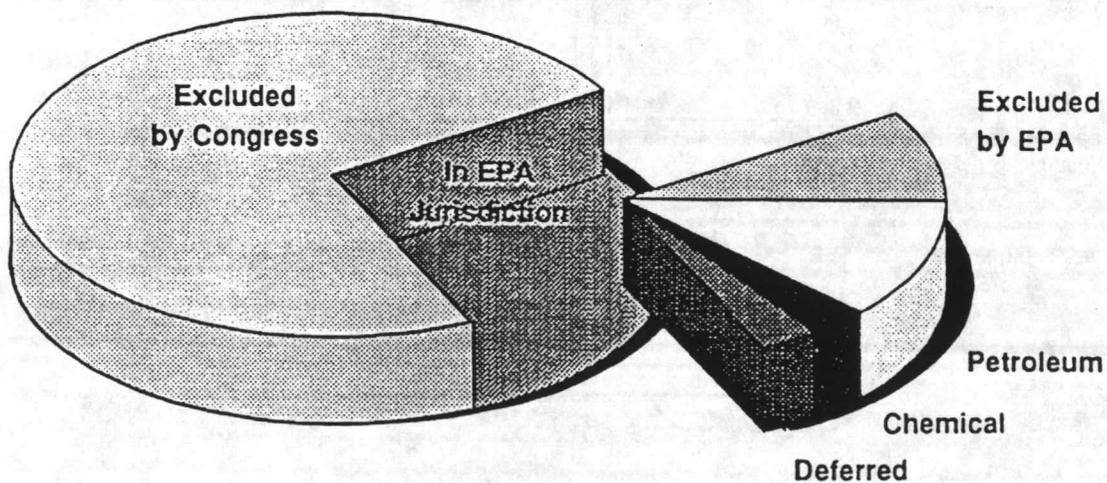
An UST is any tank, including underground piping connected to the tank, that has at least 10 percent of its volume underground. The regulations apply only to USTs storing either petroleum or certain hazardous chemicals.

The "For Chemical USTs Only" section starting on page 27 identifies hazardous chemicals and special requirements for chemical USTs. Generally, the requirements for both petroleum and chemical USTs are very similar.

Some kinds of tanks are not covered by these regulations:

- ◆ Farm and residential tanks holding 1,100 gallons or less of motor fuel used for noncommercial purposes.
- ◆ Tanks storing heating oil used on the premises where it is stored.
- ◆ Tanks on or above the floor of underground areas, such as basements or tunnels.
- ◆ Septic tanks and systems for collecting storm water and wastewater.
- ◆ Flow-through process tanks.
- ◆ Tanks holding 110 gallons or less.
- ◆ Emergency spill and overfill tanks.

Other storage areas that might be considered "tanks" are also excluded, such as surface impoundments and pits. Some "tanks," such as field-constructed tanks, have been deferred from most of the regulations. The regulations published in the Federal Register fully identify various tank types and which requirements apply to them.



UST Program Scope

Detecting Leaks From Tanks

You must check your tanks at least once a month to see if they are leaking.

You must use one (or a combination) of the following monthly monitoring methods:

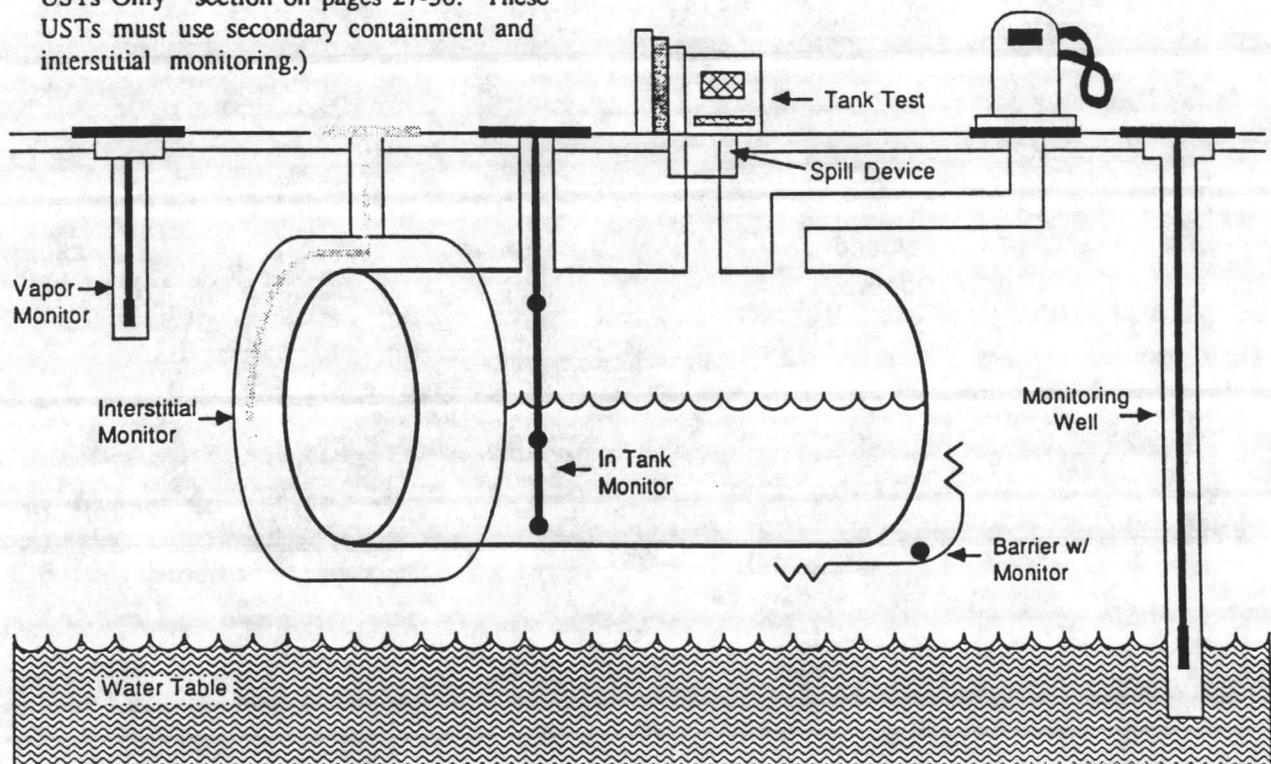
- ◆ Automatic tank gauging.
- ◆ Monitoring for vapors in the soil.
- ◆ Interstitial monitoring.
- ◆ Monitoring for liquids on the ground water.
- ◆ Other approved methods.

Information on these leak detection methods appears in the "Technical Questions & Answers" section on pages 34-35. (Special requirements for USTs containing hazardous chemicals are described in the "For Chemical USTs Only" section on pages 27-30. These USTs must use secondary containment and interstitial monitoring.)

For Young Tanks...

An Alternate Leak Detection Method

You have one additional leak detection choice, but only for 10 years after you install your UST. Instead of using one of the monthly monitoring methods noted above, you can check for leaks by combining monthly inventory control with tank tightness testing every 5 years. After 10 years, you must use one of the monthly monitoring methods listed above.



Detecting Leaks From Piping

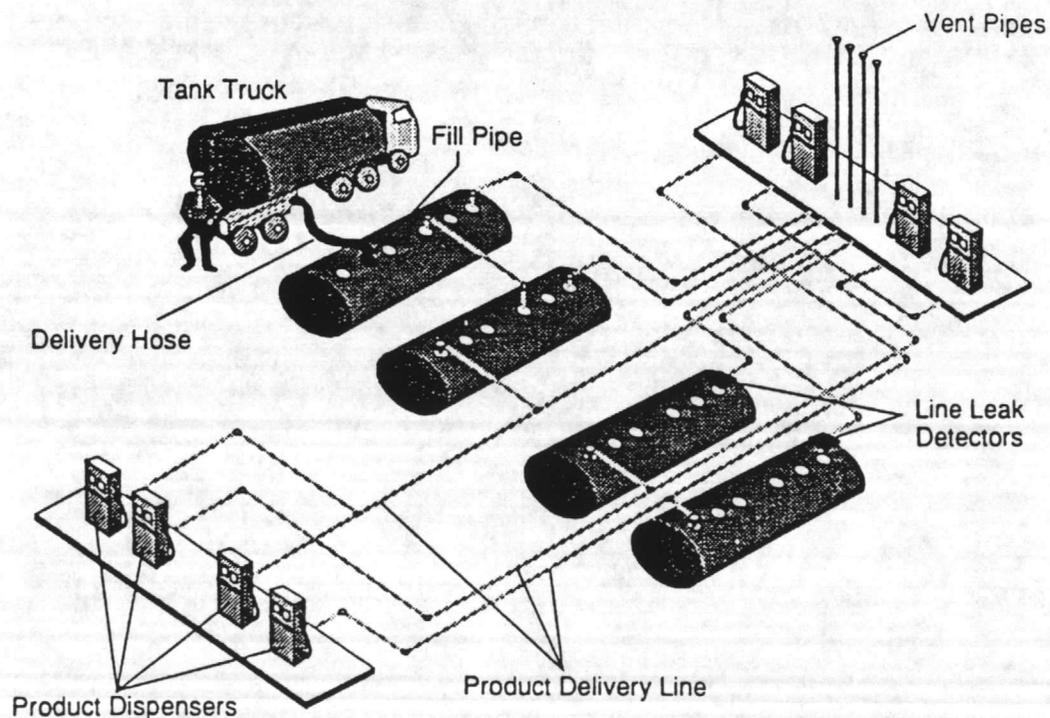
Because most leaks come from piping, your piping must have leak detection.

If your piping is **pressurized**, you must meet the following requirements:

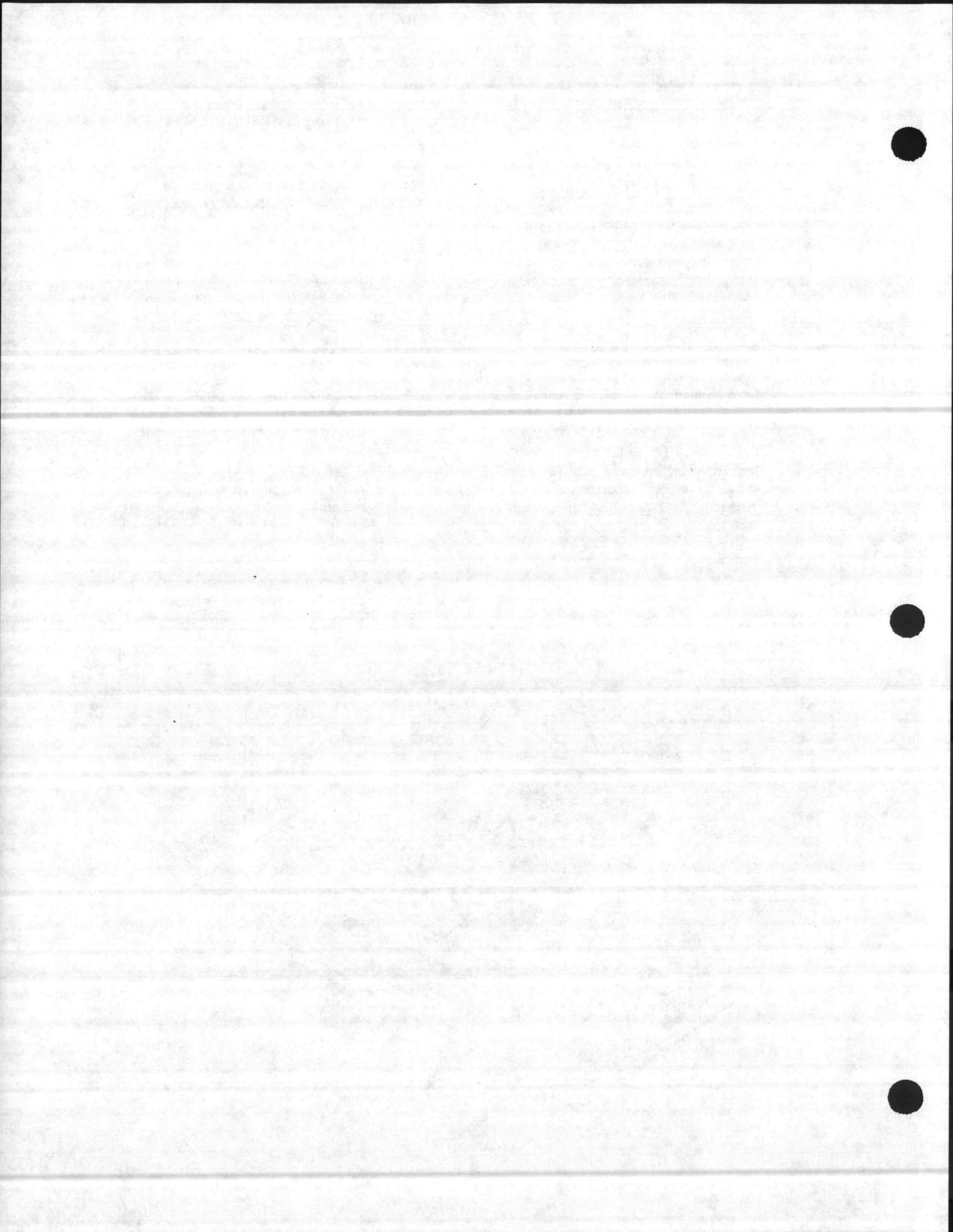
- ◆ The piping must have devices to automatically shut off or restrict flow or have an alarm that indicates a leak.
- ◆ You must either conduct an **annual** tightness test of the piping or use one of the following monthly methods noted above for tanks: vapor monitoring, ground-water monitoring, interstitial monitoring, or other approved monthly methods.

If your UST has suction piping, your leak detection requirements will depend on which type of suction piping you have:

- ◆ The most commonly used suction piping requires either monthly monitoring (using one of the four monthly methods noted above for use on pressurized piping) or tightness testing of the piping every 3 years.
- ◆ Another kind of suction piping is safer and does not require leak detection. This safer method has two main characteristics:
 - Below-grade piping is sloped so that the piping's contents will drain back into the storage tank if the suction is released.
 - Only one **check valve** is included in each suction line and is located directly below the suction pump.



A Typical Tank Facility



UST Leak Detection A 'Must' For Owners

Identifying the correct option or combination of options depends on a number of factors including cost, tank type, groundwater depth, soil and other variables.

By Camille M. Floyd

In the last few years, leak detection technology for underground storage tanks (USTs) has progressed from a wooden gauging stick to a complex system of probes and sensors centrally wired into a control console.

Sticking the tank can give the owner a manual reading of the amount of product in the UST. The newest technology not only monitors for leak detection, but with the addition of software, can check systems such as point-of-sale terminals, heating, ventilation and air conditioning and lighting.

Leak detection for USTs and piping is a must for tank owners. Federal, state and local regulations mandate measures to provide early warning of leaking tanks or pipes to prevent contamination of soil, drinking water supplies and air. Although the regulations offer a wide range of choices to meet compliance, the flood of new technology is making the decision much more difficult.

Technological Options

Rather than require specific technologies, the Environmental Protection Agency has identified a variety of methods that meet standards (40 CFR Part 280, "Underground Storage Tanks; Technical Requirements"). Original methods given approval by federal regulations include automatic tank gauging, monitoring for vapors in the soil, monitoring for liquids floating on the groundwater, and interstitial monitoring in double-walled USTs. Additional methods for piping include line tightness testing and automatic flow restrictors.

However, a number of factors in the marketplace have muddied the waters for the tank

owner.

Federal regulations were drawn up as a minimal compliance structure. Many states already had regulations in place, and many more have established their standards since the 1988 federal regulations were passed. If the local or state laws are stricter, they take preeminence. In Florida, for example, groundwater monitoring is required even if the tank owner already uses in-tank gauging. Some states are still tinkering with final regulations, including requiring secondary containment for tanks and piping. If additional requirements are in the pipeline, be forewarned and install equipment that will satisfy future mandates.

The second factor is price. Although price is a major consideration, the cheapest leak detection system may prove more expensive in the long run. Basic components that offer in-tank gauging, line leak detection or vapor/groundwater monitoring will do the job, but will they offer upgrade flexibility if site conditions change? In addition, it may be difficult to integrate pieces of equipment from more than one manufacturer if upgrades are needed.

Several major manufacturers of leak detection equipment offer premium systems at premium prices that manage the entire UST site, but their biggest selling point is the fact they can be upgraded and expanded easily. These systems combine in-tank testing, interstitial monitoring, vapor and groundwater monitoring and line leak detection in one package. They double as a business tool by generating a wide range of management reports and inventory control capabilities.

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Camille M. Floyd is a Rockville, Md.-based freelance writer and editor with several years experience in the petroleum industry. She provides editorial for three trade magazines in the industry covering environmental, regulatory and business-related topics on a regular basis.

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barrier detects leaking product. Interstitial monitoring methods range from a simple dip stick to a continuous automated vapor or liquid sensor permanently installed in the system.

- Automatic Tank Gauging Systems (ATGS) consist of monitors permanently installed in the tank and linked electronically to a nearby control device to provide information on product level and temperature. A tightness test must be performed each month. Federal guidelines state that in the "test mode," the tank is taken out of service and the product level and temperature are measured for at least one hour. However, new technology has shortened this time frame. ATGS also must meet federal performance standards of 0.2 gallon-per-hour leak rate at a 95 percent probability of detection and 5 percent probability of false alarm. In many cases, manufacturers are exceeding these requirements.

Combination Method

A combination method uses periodic tank tightness testing and a monthly inventory control. The tightness tests usually are performed by outside testing companies, while the monthly inventory control involves balancing the product volume between what is delivered and what is sold from the tank, with daily measurements of tank volume. EPA guidelines call for monthly monitoring on all tanks by 1998. In the meantime, frequency of the tank tightness tests depends on the age and condition of the tank.

Identifying the correct option or combination of options depends on a number of factors including cost, tank type, groundwater depth, soil type and other variables. For example, vapor detection devices work rapidly and most effectively in dry soils, while liquid detectors are most appropriate for areas with a high water table. In areas with high groundwater or a lot of rainfall, it may be necessary to select a secondary containment system that completely surrounds the tank to prevent moisture from interfering with the monitor.

ATGS require a shutdown period to conduct leak tests, which can prove

to be a disadvantage for 24-hour applications. However, a new technology called Continuous Statistical Leak Detection (CSLD) eliminates the need for tank shutdown and scheduled tests. During idle times, data is collected and combined with information from other idle periods to form a leak detection database. Statistical analysis techniques constantly evaluate new and existing information and perform leak tests only on the highest quality data. Test results are provided automatically every 24 hours so results are current.

Equipment parts also are in a state of constant refinement. Now sensors can discriminate between different types of liquid so the tank owner can tell if water or hydrocarbons are present. Sensors are being miniaturized to fit in smaller spaces and also are increasing in complexity.

Off-site Management

A technology called Statistical Inventory Reconciliation (SIR) has been added to the federal leak detection list of choices for compliance.

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Technology is moving so rapidly that equipment is outdated almost as soon as it is installed. Premium systems allow the tank owner to update on a regular basis. Some systems are modular in design and offer the tank owner the option of starting out small and adding modules on an "as needed" basis.

Finally, there is the liability issue. Clean-up costs can be so astronomical that the cost of a system offering the most deluxe menu of monitoring options pales in comparison. Although leak detection equipment can range from a few hundred to thousands of dollars, many tank owners would buy the more expensive systems with overlapping protection rather than face a leak situation. For example, although double-walled tanks and piping are required in some states, such as California, Massachusetts and Florida, many tank owners are investing in secondary containment whether it is mandated or not.

Leak Detection

How Does It Work?

Each of the leak detection methods has advantages and disadvantages. A brief description of how each method works may influence the selection of what technology would serve a site best.

- Groundwater monitoring senses the presence of liquid floating on the groundwater. This method requires installation of monitoring wells at strategic locations in the ground near the tank and along the piping runs. To discover if leaked product has reached groundwater, these wells can be checked periodically by hand or continuously with permanently installed equipment.

- Vapor monitoring detects and measures product "fumes" in the soil around the tank and piping to determine the presence of a leak. This method also requires installation of carefully placed monitoring wells, which can be checked manually or continuously.

- Secondary containment consists of placing a barrier — by using a vault, liner or double-walled structure — around the UST. An interstitial monitor located between the inner tank or piping and the outer

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Some states are still tinkering with final regulations. If additional requirements are in the pipeline, be forewarned and install equipment that will satisfy future mandates.

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SIR analyzes inventory, delivery and dispensing data collected over a period of time to determine whether a tank system is leaking. The tank manager measures the product level in the tank and keeps a written record of all withdrawals and deliveries. This information is sent to a SIR vendor who uses computer software to analyze the data and provides a test report of the results. The SIR method is allowable as monthly monitoring, if it can detect a leak at least as small as 0.2 gallon per hour, and meet the federal regulatory requirements regarding probabilities of detection and false alarm. To be allowable as a tank tightness test,

the method must be able to detect a leak at least as small as 0.1 gallon per hour and meet the requirements of detection and false alarm.

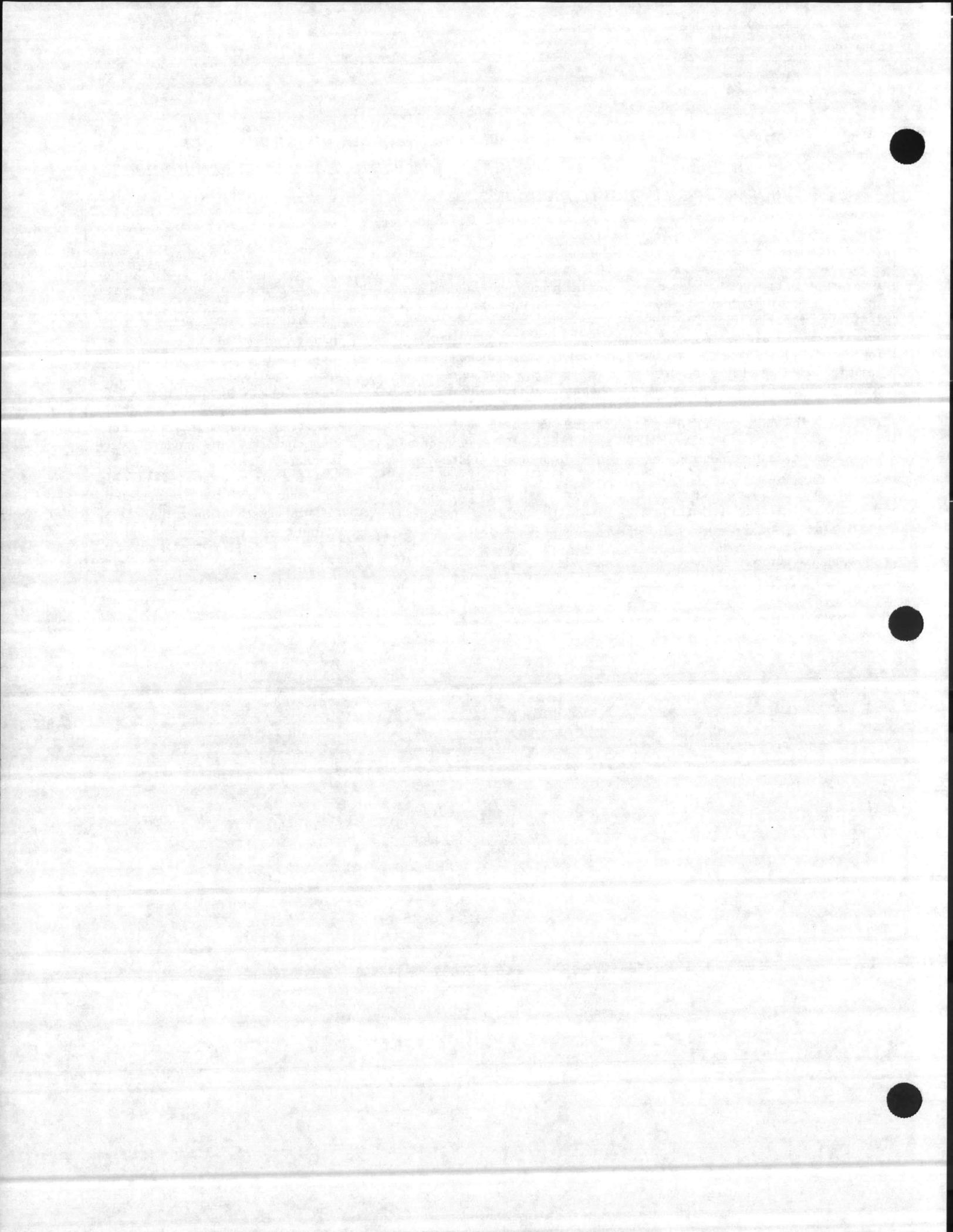
Buying Smart

Having a large menu of leak detection options allows tank owners to shop around for the best individualized protection, services and price. The EPA Office of Underground Storage Tanks, state environmental offices, and local regulatory agencies such as the fire department, can answer questions to help determine what technology will best serve a site. Contractors, jobbers and equipment suppliers can assist with site analysis and comparison of technolo-

gies. Environmental consultants, the Petroleum Equipment Institute and trade associations also are good resources.

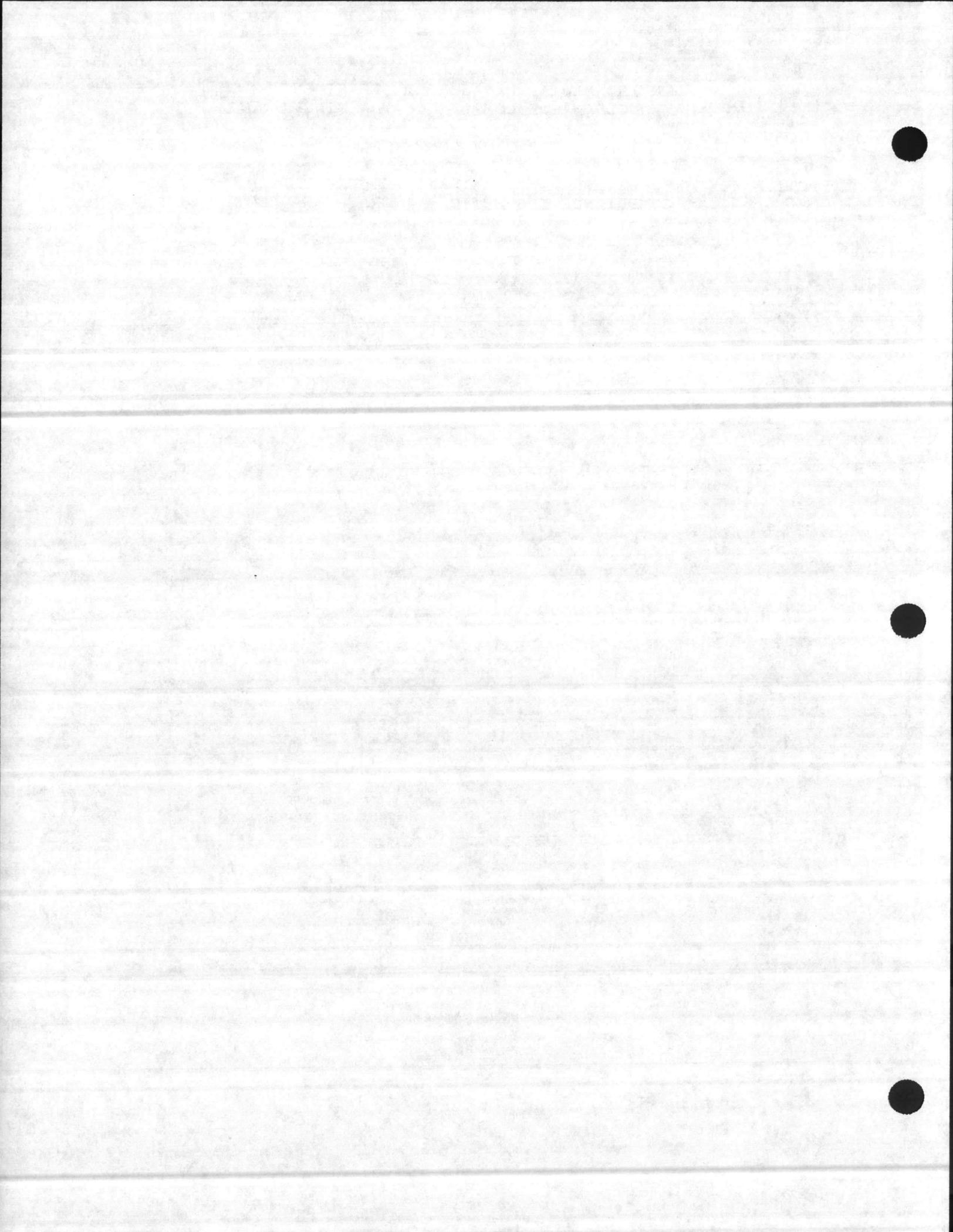
Recent laws require that UST monitoring systems be tested by an independent testing organization and certified to meet federal performance standards. In addition, line leak detection performance standards have been tightened and an annual functional test of the line leak detector added.

Manufacturers should provide documentation of leak detection performance. Remember, the federal deadline for leak detection installation is December 1993 and state deadlines may be sooner. 



ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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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).

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 (HWSOP) 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.

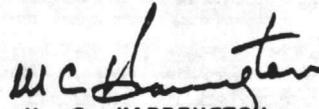
(6) Within 30 days of the date of this Order, and as requested thereafter, provide a current listing of Primary and Alternate HMDO's. The list shall contain name, rank, unit and phone number. The list will be provided to the Director, Natural Resources and Environmental Affairs Division, Marine Corps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

DISTRIBUTION: A
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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.

ENCLOSURE (1)

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 HWSOP. Questions not addressed by HWSOP 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)

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.

ENCLOSURE (2)

(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.

ENCLOSURE (2)

(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.

ENCLOSURE (2)

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.

ENCLOSURE (3)

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:

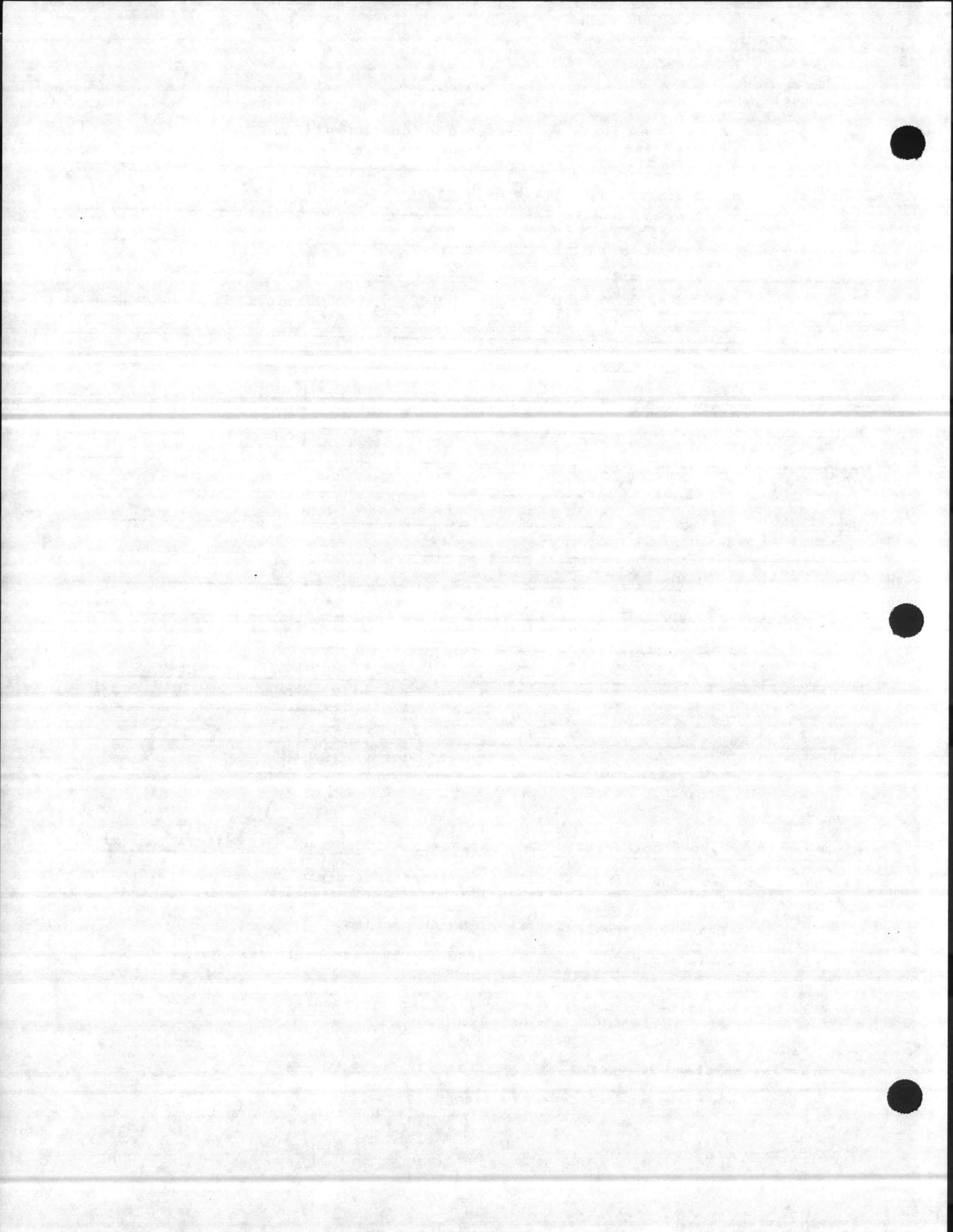
a. HMDC's will maintain records of HW training for HMDC's, HMDO's and alternate HMDC's and HMDO's within their cognizance.

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.

ENCLOSURE (3)





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

IN REPLY REFER TO:
5090
BEMD
10 MAY 1993

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: COMMAND ENVIRONMENTAL COMPLIANCE EVALUATIONS

Ref: (a) MCO P5090.2
(b) Executive Order 12088

1. The Resource Conservation and Recovery Act (RCRA) governs solid and hazardous wastes. An amendment to RCRA, the Federal Facility Compliance Act, has recently been signed into law by the President of the United States. This amendment further waives federal sovereign immunity and allows state and federal environmental regulatory agencies to seek fines and criminal prosecution to remedy violations of solid and hazardous waste laws.

2. Reference (a) contains the principle Marine Corps guidance concerning environmental compliance and is consistent with reference (b). These documents require that all Marine Corps installations comply with the provisions of RCRA. Further, Marine Corps Base, Camp Lejeune and Marine Corps Air Station, New River are subject to the provisions of the newly enacted Federal Facility Compliance Act. This most likely will result in more stringent enforcement actions when violations are found than was possible in the past.

3. This is an era of increased environmental awareness and increased regulatory scrutiny by agencies external to the Marine Corps. The primary vehicle for the Commanding General to enhance and enforce environmental compliance is through the Environmental Management Department (EMD). This organization provides technical environmental advice and education for this installation while ensuring that current laws and regulations are complied with.

4. To further this environmental compliance effort, EMD is preparing a Base Order consistent with reference (a). This order will list specific duties and responsibilities for all commands and will ensure that each command has sufficient knowledge to comply with current laws and regulations.

5. In order to be more pro-active in meeting the current environmental statutes and as part of an overall command inspection program, EMD has been instructed to perform environmental compliance evaluations at randomly selected commands aboard MCB and MCAS.

Subj: COMMAND ENVIRONMENTAL COMPLIANCE EVALUATIONS

These evaluations are designed to be similar to those that could be expected by state and federal regulatory agencies. EMD will make contact with the specific command to be evaluated prior to beginning the compliance evaluation. Any environmental violations noted will be thoroughly explained and EMD will provide guidance and assistance in resolving the particular problem. The knowledge and experience gained through these evaluations will assist this installation in meeting and maintaining compliance with increasingly stringent environmental standards.

6. The Environmental Management Department is available to provide information and assistance to organizations and commands aboard MCB and MCAS regarding the full range of environmental regulatory issues. Our point of contact is Mr. Robert L. Warren, Assistant Chief of Staff, Environmental Management, at extension 5003.



L. H. LIVINGSTON

Distribution: A

CHECKLIST

for

Environmental Regulatory Compliance Training

Item No.	Issue	Yes	No
I	What training is needed?	<input type="checkbox"/>	<input type="checkbox"/>
	● RCRA (40 CFR 264.16)	<input type="checkbox"/>	<input type="checkbox"/>
	● (40 CFR 265.16)	<input type="checkbox"/>	<input type="checkbox"/>
	● HCS (29 CFR 1910.1200)	<input type="checkbox"/>	<input type="checkbox"/>
	● SARA (29 CFR 1910.120:		
	40 hour	<input type="checkbox"/>	<input type="checkbox"/>
	32 hour	<input type="checkbox"/>	<input type="checkbox"/>
	24 hour	<input type="checkbox"/>	<input type="checkbox"/>
	8 hour	<input type="checkbox"/>	<input type="checkbox"/>
	● Additional state requirements	<input type="checkbox"/>	<input type="checkbox"/>
● Additional local requirements	<input type="checkbox"/>	<input type="checkbox"/>	
● <i>NEW DOT: HM-181, HM-126F</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
II	Who needs the training?		
	● Management	<input type="checkbox"/>	<input type="checkbox"/>
	● Production personnel	<input type="checkbox"/>	<input type="checkbox"/>
	● Site workers	<input type="checkbox"/>	<input type="checkbox"/>
	● Guards	<input type="checkbox"/>	<input type="checkbox"/>
	● Outside consultants	<input type="checkbox"/>	<input type="checkbox"/>
III	Is inter-regulatory training possible?	<input type="checkbox"/>	<input type="checkbox"/>
IV	Is a mechanism available for documentation and record keeping?	<input type="checkbox"/>	<input type="checkbox"/>
	● Are records current?	<input type="checkbox"/>	<input type="checkbox"/>
	● Is on-the-job training included?	<input type="checkbox"/>	<input type="checkbox"/>
	● Does system need revisions?	<input type="checkbox"/>	<input type="checkbox"/>
	● Is there a mechanism to trigger updates?	<input type="checkbox"/>	<input type="checkbox"/>
V	Training formats/aids		
	● Classroom lectures	<input type="checkbox"/>	<input type="checkbox"/>
	● Simulations	<input type="checkbox"/>	<input type="checkbox"/>
	● Demonstrations	<input type="checkbox"/>	<input type="checkbox"/>
	● Slide/cassettes	<input type="checkbox"/>	<input type="checkbox"/>
	● Pamphlets	<input type="checkbox"/>	<input type="checkbox"/>
● Other handouts	<input type="checkbox"/>	<input type="checkbox"/>	
VI	Schedule		
	● Offhours: evenings	<input type="checkbox"/>	<input type="checkbox"/>
	weekends	<input type="checkbox"/>	<input type="checkbox"/>
● During shifts: substitute workers	<input type="checkbox"/>	<input type="checkbox"/>	
shut down operations	<input type="checkbox"/>	<input type="checkbox"/>	
VII	Training delivery mechanism		
	● In-house personnel	<input type="checkbox"/>	<input type="checkbox"/>
	● Outside consultants	<input type="checkbox"/>	<input type="checkbox"/>
	● Train-the-trainer	<input type="checkbox"/>	<input type="checkbox"/>

OSHA Safety & Health MASTER TRAINING GUIDE

RCRA

	29 CFR																				40					
	1903	1904	1910 SUBPART															1910. 1200	1910. 120	240- 271						
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Z	HCS	Haz. Waste	RCRA
Who?																										
All Employees	X	X	X	X	X	X					X										X		X			
Select Employees Only							X	X	X	X	X	X	X	X	X	X	X	X				X		X		X
Supervisors									X																	
Select Employers				X		X															X	X				
When?																										
First Day	X	X	X	X							X	X												X		
Before Work w/o Supvn.					X	X	X	X					X			X	X		X							
Upon Assignment							X	X	X		X	X	X	X	X	X	X					X		X	X	X
Refresher												X										X				X
Other																										
What Kind?																										
Information	X	X	X	X	X	X		X	X	X	X										X	X	X	X	X	X
Concepts							X	X	X		X										X	X	X	X	X	X
Skills				X	X	X	X	X	X		X	X	X	X	X	X	X					X	X	X	X	X
Other																										
What Type?																										
Work Practice				X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Equipment				X	X					X	X	X	X	X								X	X	X	X	X
PPE									X	X											X	X	X	X	X	X
Emergency					X					X	X											X	X	X	X	X
RTK	X	X	X	X			X	X	X	X											X	X	X	X	X	X
Required				X	X	X	X	X	X	X	X	X		X	X	X		X			X	X	X	X	X	X
Recommended	X	X	X	X	X		X	X				X	X	X		X		X		X						

REQUEST FOR HAZARDOUS WASTE TRAINING
FROM ENVIRONMENTAL MANAGEMENT DEPARTMENT

(Submit as enclosure with official letter requesting training.)

Date _____

1. Major Command requiring training:
Name/rank of HMDC:
2. Name of specific Unit(Bn or Com, etc.) requesting training:
(Please use separate form for additional Units requiring training)
3. Point of contact at Unit (HMDO) and telephone extension:
4. Date and time preferred:
5. Location provided for class:
(EMD classroom or on site)
6. Is this for Initial Training or Annual Refresher Training?
7. Specify names/titles (eg. HMDCs, HMDOs, Site Managers, Handlers):
Specify approximate number of students and class title:
(Use separate sheet if necessary.)
8. Special subjects for training:
9. List all types of hazardous materials/ hazardous wastes
generated by unit:
10. For on-site training requests only, list your Audio-visual equipment
available for use by instructors:
(We require the following: Overhead Projector, VCR, TV, Slide Screen)
11. Other considerations or special requirements for this class:
12. Signature of requesting HMDC or HMDO _____

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS MATERIALS/HAZARDOUS WASTE
PROPERTY/DOCUMENT REJECTION NOTIFICATION

FROM:

DATE:

DTID NO:

NSN:

TO:

CORRECTIVE ACTION, IF REQUIRED, IS INDICATED BELOW

- ___ DD1348-1 IS BEING RETURNED FOR CORRECTION AS LISTED:
___ Incorrect document number
___ Incorrect number of copies
___ NSN lacking or incorrect
___ Incorrect DOT SHIPPING NAME/ITEM NOMENCLATURE
___ HM/HW as listed on document does not match
___ contents/labels on containers
___ Incorrect MSDS/HMIS
___ Incorrect Waste Material Profile Sheet
___ Other errors:
- ___ DD1348-1 IMPROPERLY SUBMITTED:
___ Materials in new condition, and should be returned
to supply unit
___ Property should be submitted as Hazardous Waste
(Document must be resubmitted)
- ___ CONTAINER CONDITION INAPPROPRIATE FOR PICKUP/DISPOSAL:
___ Contents of container(s) leaking; repackaging
is required
___ Condition of container unacceptable; eg, rusty,
worn, poor general condition, dented
___ DOT approved containers are required
- ___ LABELING ON CONTAINERS IS INAPPROPRIATE/INCOMPLETE:
___ Hazard label is required
___ Manufacturer/Address required
___ List of hazardous ingredients required
___ DOT labels required
- ___ HAZARDOUS MATERIALS/HAZARDOUS WASTE NOT AVAILABLE for
inspection: Document will be voided in EMD files
- ___ OTHER:

REMARKS:

SIGNATURE: (EMD Rep.)

DATE:

SIGNATURE: (Unit Rep.)

DATE:

TO: RESOURCE CONSERVATION AND RECOVERY BRANCH, ENVIRONMENTAL
MANAGEMENT DEPARTMENT, MARINE CORPS BASE, CAMP LEJEUNE
VIA: HAZARDOUS MATERIAL DISPOSAL COORDINATOR (HMDC)
SUBJ: REQUEST FOR HAZARDOUS WASTE DETERMINATION ASSISTANCE

1. Name/Complete Mailing Address of Organization having physical custody of the item(s) requiring identification:

2. Hazardous Material Disposal Officer (HMDO):

a. NAME: _____

b. TELEPHONE: _____

3. GENERATOR KNOWLEDGE OF THE MATERIAL:

a. Location of Material: _____

b. Common name/trade name/chemical name of material: _____

c. Is this the first time material has been generated? _____

d. Describe the process generating the material and the type, capacity and condition of containers holding wastes. Attach Material Safety Data Sheets, if available:

e. Rate of generation: _____ pounds per (check one):
Week _____, Month _____, Quarter _____, Other (specify) _____

f. Quantity of waste/material on hand: _____ pounds

4. Is generator failure to keep items properly packaged in legibly marked containers the reason assistance is required? _____

5. GENERATOR CERTIFICATION: The item(s) described above have been examined by the cognizant HMDO. The HMDO is unable to make a hazardous waste determination due to lack of and/or the reliability of available information.

SIGNATURE: _____

NAME (print): _____

TITLE: _____ DATE: _____

Enclosure (1)

**ENVIRONMENTAL MANAGEMENT DEPARTMENT
MARINE CORPS BASE, CAMP LEJEUNE**

**AUTHORIZATION TO OPERATE A HAZARDOUS
WASTE SATELLITE ACCUMULATION AREA (SAA)**

Building Number:

SAA LOCATION DESCRIPTION:

90 DAY HAZARDOUS WASTE ACCUMULATION AREA:

NAME OF WASTE STREAM:

RESPONSIBLE UNIT:

APPROVED BY (HMDO) _____ DATE _____

APPROVED BY (HMDC) _____ DATE _____

**APPROVED BY RESOURCE CONSERVATION RECOVERY BRANCH:
_____ DATE _____**

INSTRUCTIONS

1. The SAA storage container must be properly labeled. Leave accumulation start date blank.
2. The maximum permitted gallons are:
3. This permit is to be displayed at the container storage location within SAA so as to be visible to personnel placing waste in the container.
4. When the container reaches maximum permitted gallons:
 - a. Seal the container and enter accumulation start date on the container. Ensure that the container is properly labeled and marked.
 - b. Transfer the filled container to the designated 90 day hazardous waste accumulation area within 72 hours.
 - c. Complete a Hazardous Waste Worksheet and submit to Resource, Conservation and Recovery Branch, Environmental Management Department.

**ACKNOWLEDGEMENT _____ DATE _____
(SITE MANAGER)**

**EFFECTIVE DATE 12 MARCH 1993
(PREVIOUS EDITIONS OBSOLETE)
REVISED 5 NOV 1993**

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.
GENERATOR	3. Generator's Name and Mailing Address			A. State Manifest Document Number	
	4. Generator's Phone ()			B. State Generator's ID	
	5. Transporter 1 Company Name		6. US EPA ID Number	C. State Transporter's ID	
	7. Transporter 2 Company Name		8. US EPA ID Number	D. Transporter's Phone	
	9. Designated Facility Name and Site Address			E. State Facility's ID	
			F. 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.
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					
<p>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.</p> <p>Unless I am a small quantity generator who has been exempted by statute or regulation from the duty to make a waste minimization certification under Section 3002(b) of RCRA, I also 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 I have selected the method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment.</p>					
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	
FACILITY	19. Discrepancy Indication Space				
	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

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

TABLE OF CONTENTS

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SECTION 5.	DEFINITION OF SOLID WASTES, HAZARDOUS MATERIALS, AND RCRA CLASSES OF HAZARDOUS WASTES: CHARACTERISTIC AND LISTED	173-189
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ENVIRONMENTAL MANAGEMENT DEPARTMENT
GLOSSARY OF TERMINOLOGY IN BO 6240.5-

1. HAZARDOUS WASTE - (Sect 240.101) - A 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. HAZARDOUS MATERIAL - A material which has a hazardous or toxic constituent or characteristic. The material may be used, or when finished use, because it may be resold or recycled, is not a hazardous waste for disposal. All hazardous wastes were originally hazardous materials.
3. GENERATION SITE - Physical location within a Unit where Hazardous Waste is generated.
4. GENERATOR - The organization commander responsible for the function which generated the Hazardous Waste.
5. 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 Accumulation Start Dates.
6. LONG TERM STORAGE FACILITY - DRMO maintains the only long term storage facility at TP-451/TP-463 complex.
7. SATELLITE ACCUMULATION AREA - An area authorized by the CG, MCB, for the accumulation of hazardous waste over the standard permitted 90 days. The waste container must have a **WASTE NAME**, but no Accumulation Start Date will be placed on the label at this time. No larger than a 55 gallon drum is permitted in this area. When the container is filled, a date must be placed on the **DRUM**, and the drum removed to the 90 day storage area within 72 hours.
8. RECYCLED - A material is recycled if it is used, reused, or reclaimed.
9. WASTE OIL - Any used oil or related petroleum compound which has any contaminants or constituents which could render it a hazardous waste, ie. lead. In North Carolina, waste oil is not considered a hazardous waste, but a special waste, if it can be recycled or sold. Presence of solvents in waste or used oil will render it a hazardous waste.
10. LAND BAN (LAND DISPOSAL RESTRICTIONS) - 40 CFR 268 - RCRA LAND BANS - Prohibitions of specific toxic materials from disposal in landfills under RCRA. The entire set of restrictions are now in effect.

GLOSSARY OF HAZARDOUS WASTE TERMINOLOGY

11. 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.
12. WASTE STREAM - The process through which a material becomes a hazardous waste, either by contamination during use, or if a hazardous material, by being disposed of with no means for further use or reclamation.
13. EMPTY CONTAINER - A container, often a paint can, in which the contents have been used up. Only one inch or less of dried substance may remain, or the contents and propellant both have been completely discharged.
14. SPILL - The release of a hazardous substance or waste into the environment.
15. HAZARDOUS WASTE PROFILE SHEET - A document required for the disposal of hazardous waste by HQ DRMS. It contains information for the identification of physical, chemical, hazardous composition of disposal wastes. Analysis for TCLP (toxicity) also required where applicable.
16. TURN IN DOCUMENT DD-1348-1 - A form required by the Department of Defense for the turn in to DRMO of used, waste, hazardous, unwanted, surplus, etc. materials. DRMO then disposes of/recycles/sells the materials as appropriate.
17. MANIFEST (UNIFORM HAZARDOUS WASTE MANIFEST) - A form required by the EPA for the turn in and disposal of hazardous waste off site to an authorized disposal or treatment facility. A manifest is also required by Department of Transportation when hazardous wastes are hauled on a public highway.
18. SPILL CONTINGENCY PLAN - A plan which must be contained in the Desk Top Procedures and posted in the affected areas. It identifies the who, what, where and why of handling and reporting, and personnel authorized to work in the areas where hazardous wastes are generated. It is a requirement in RCRA.
19. MATERIAL SAFETY DATA SHEET - A form required by OSHA and "The Right to Know Act" which provides 10 different types of information on the composition, physical characteristics, hazards, health and safety precautions and toxicity characteristics of materials which have hazardous constituents. Must be provided along with a DD 1348-1 for the disposal of HM.

GLOSSARY

ACCUMULATION	The short term storage of hazardous waste, such as 90 days or less for most generators of hazardous waste.
BDAT	Best Demonstrated Available Technology.
CFR	Code of Federal Regulations. Title 40 covers Environmental Protection and Title 49 covers Transportation.
CAA	Clean Air Act.
CWA	Clean Water Act.
CERCLA	Comprehensive Environmental Response, Compensation, and Liabilities Act. Also known as SUPERFUND. Regulates uncontrolled sites contaminated with hazardous substances.
CLOSURE	The act of closing a hazardous waste management unit or UST system in accordance with the requirements of RCRA, 40CFR Parts 264 and 265.
DOT	Department of Transportation.
DISPOSAL	The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste, or hazardous waste into or on any land or water so that the solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into the waters, including ground waters. (40CFR Part 260.10).
EPA	Environmental Protection Agency.
FACILITY	All contiguous lands, structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste.

GENERATOR	Any person, by site, whose act of process produces hazardous waste identified or listed in 40 CFR Part 261 or whose act first causes a hazardous waste to become subject to regulation (40CFR Part 260.10).
HSWA	The Hazardous and Solid Waste Amendment.
HWM	Hazardous Waste Management. The systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste. (40CFR Part 260.10)
HAZARDOUS WASTE	A solid waste that is not excluded from regulation as a hazardous waste under 40CFR Part 261.4(b) and meets any of the following criteria: exhibits any of the characteristics identified in 40CFR Part 261 Subpart C; is listed in 40CFR Part 261 Subpart D; or is a mixture of a solid waste and a hazardous waste.
HAZARDOUS MATERIAL	Materials regulated by the Department of Transportation.
HAZARDOUS SUBSTANCE	Substances regulated by the Environmental Protection Agency.
LEACHATE	Any liquid, including any suspended components in the liquid, that has percolated through or drained from land-disposed waste.
MANIFEST	The shipping document that tracks hazardous waste from the generator to transporter(s) to the final treatment, storage, and disposal facility
OSHA	Occupational Safety and Health Administration.
POST-CLOSURE	The period following closure of a hazardous waste management unit in accordance with 40CFR Parts 264 and 265.

P & P Plan

Preparedness and Prevention Plan. (40CFR Part 264.30).

**SMALL QUANTITY
GENERATOR (SQG)**

A generator who generates less than 1000 kg. of hazardous waste in a calendar month. (40CFR Part 260.10)

STORAGE

The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

TSD FACILITY

Treatment, Storage , and Disposal Facility.

TCLP

Toxicity Characteristic Leaching Procedure. Testing procedure to replace the EP-Toxicity Test in determining whether a solid waste has the characteristic of toxicity.

TRANSPORTER

A person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water. (40CFR Part 260.10)

TREATMENT

Any method, technique, or process, including neutralization, designed to change the physical or biological character or composition of any hazardous waste, so as to neutralize such waste, or as to recover energy or material resources from the waste, or so render such waste non-hazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced by volume. (40CFR Part 260.10)

UST

Underground Storage Tank. Any one tank or combination of tanks (including underground pipes connected to them) used to contain an accumulation of regulated substances, the volume of which (including the pipes connected to them) is 10% or more beneath the surface of the ground. (40CFR Part 280.1)

USED OIL

Any oil that has been refined from crude oil, used, and as a result of such use, is contaminated by physical or chemical impurities. (40CFR Part 266.40)

HAZARDOUS CHEMICAL

OSHA

ANY CHEMICAL THAT PRESENTS A PHYSICAL, OR HEALTH HAZARD TO EMPLOYEES.

HAZARDOUS SUBSTANCE

DESIGNATED BY THE CLEAN WATER ACT/COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) TO INCLUDE ANY PRODUCT ENTERING A WATER WAY OR THE ENVIRONMENT WHEN RELEASED.

EXTREMELY HAZARDOUS SUBSTANCE

ANY PRODUCT THAT IS EXTREMELY HAZARDOUS TO THE COMMUNITY DURING AN EMERGENCY SPILL AND/OR RELEASE.

HAZARDOUS WASTE

LISTED BY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) IN CFR 40 PART 261.

HAZARDOUS MATERIAL

ALL OF THE ABOVE WHEN TRANSPORTED IN COMMERCE.

DANGEROUS GOODS

CANADIAN REGULATIONS

FIGURE 1
DEFINITION OF A SOLID WASTE

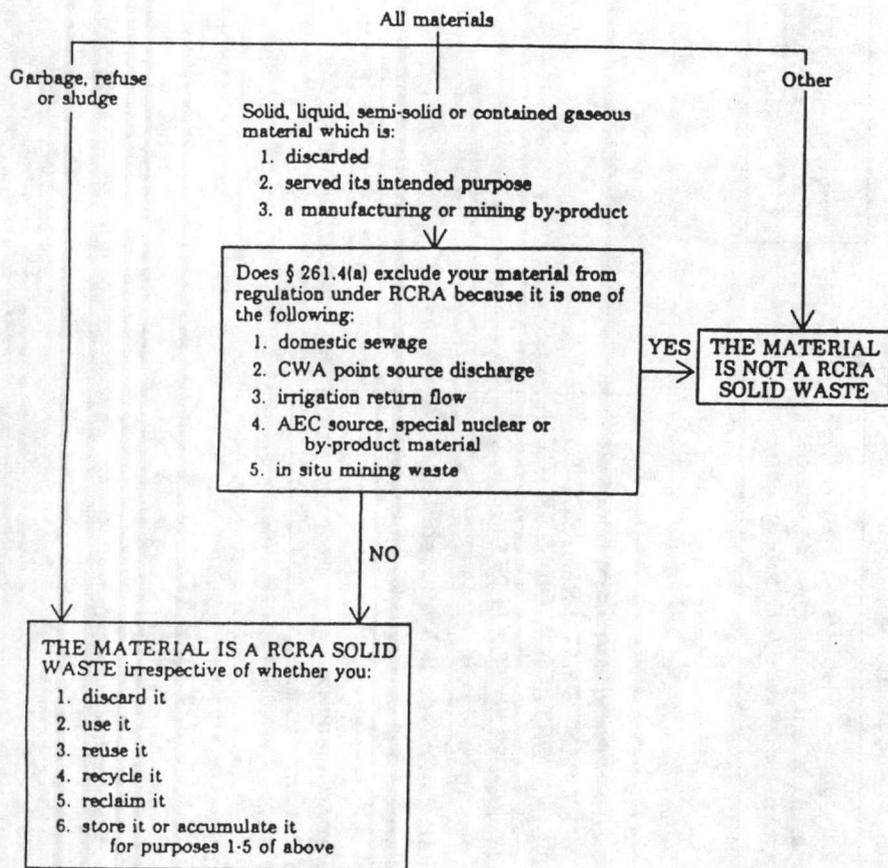


FIGURE 2
DEFINITION OF A HAZARDOUS WASTE

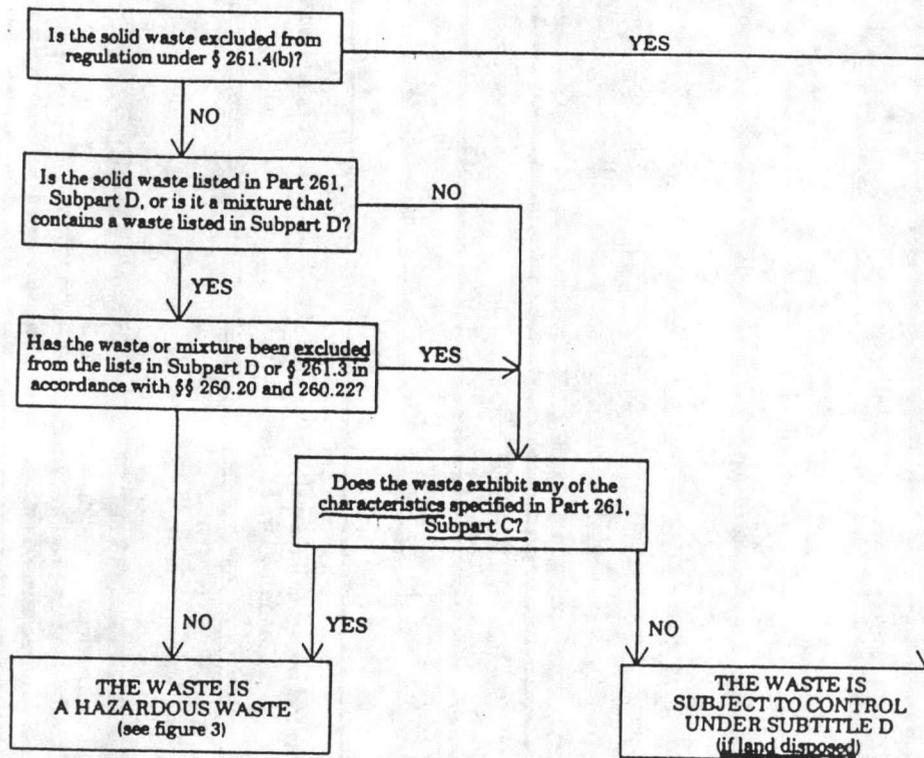
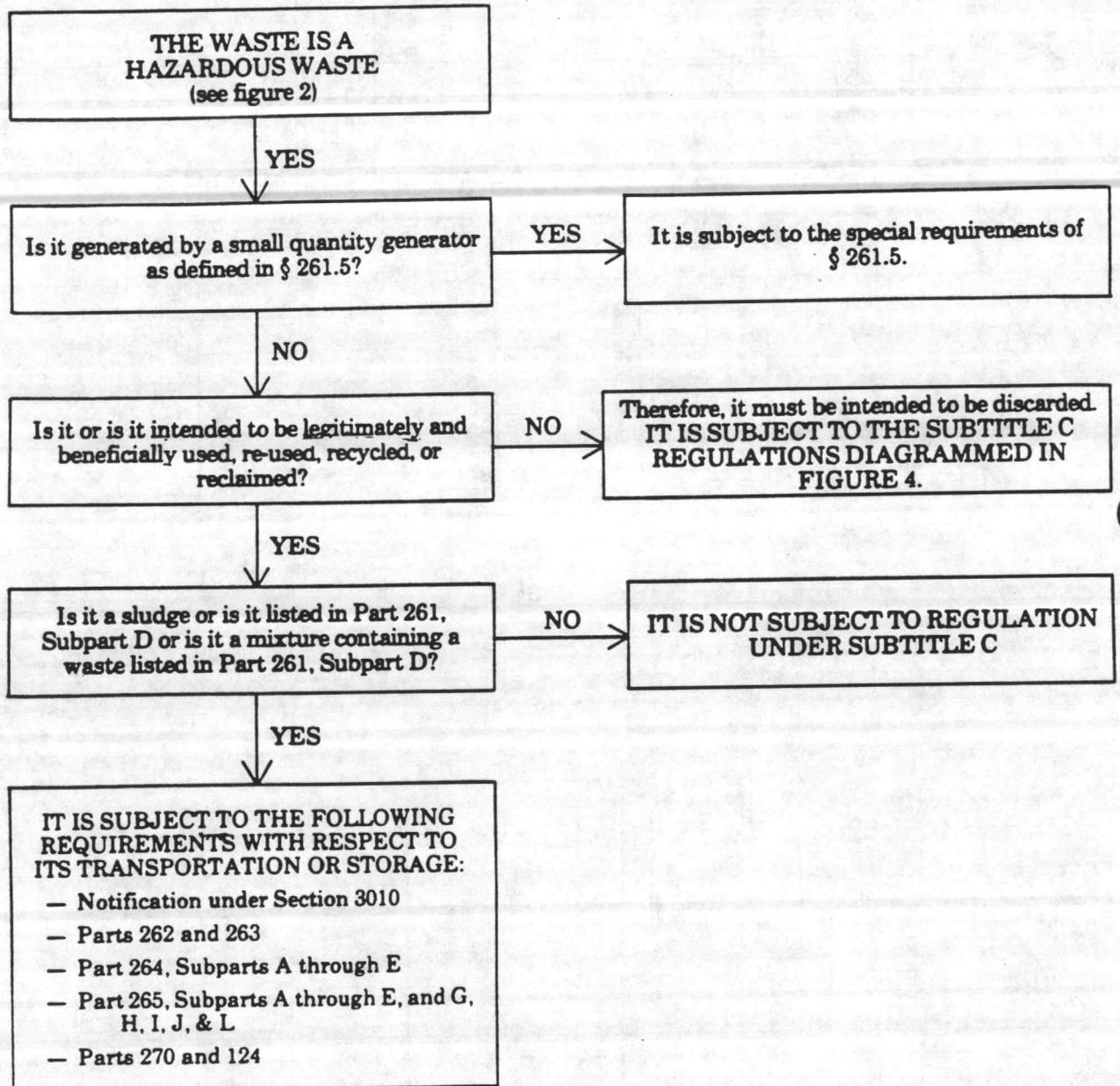
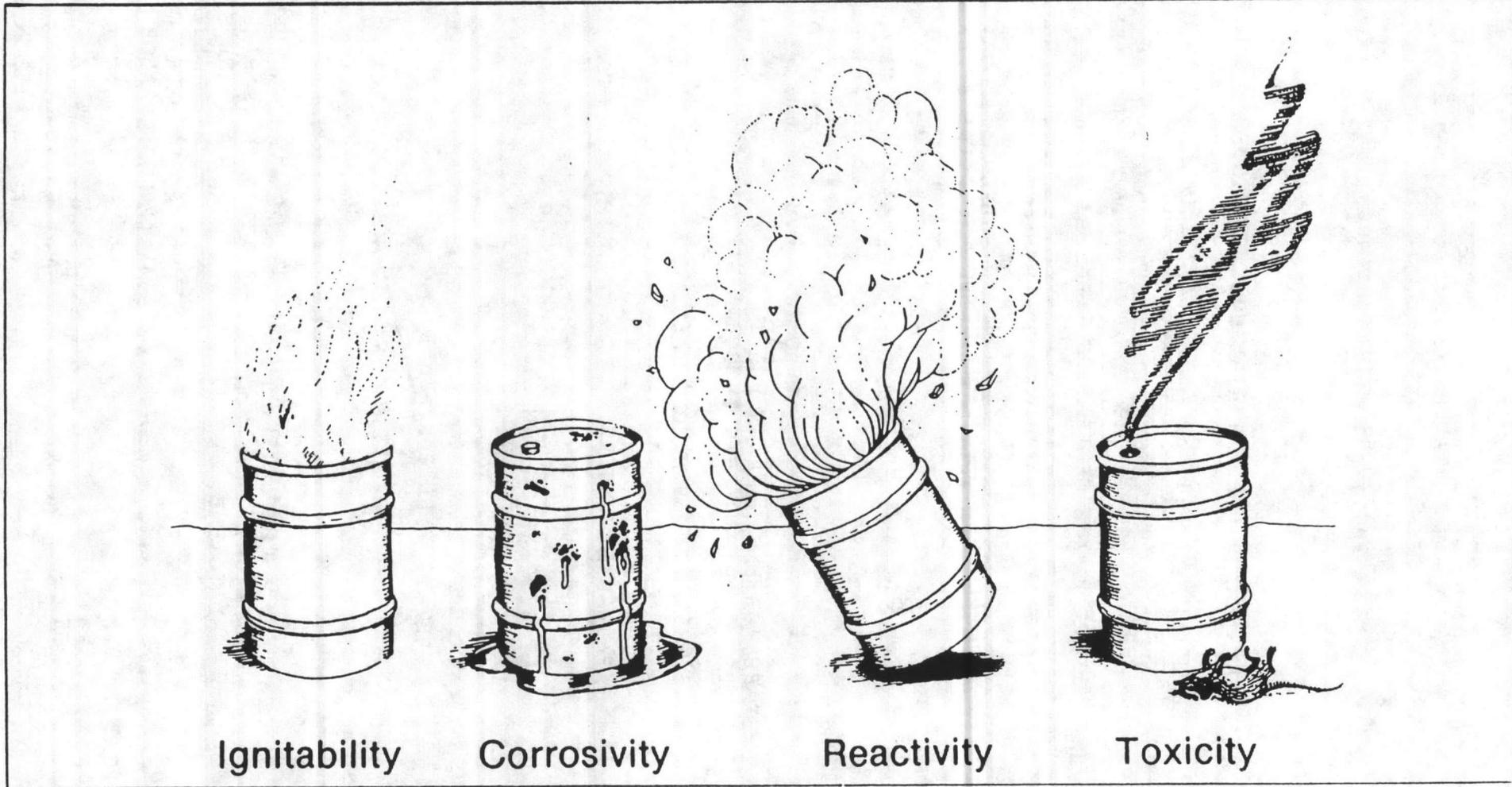


FIGURE 3
SPECIAL PROVISIONS FOR CERTAIN
HAZARDOUS WASTE



Characteristics That Identify a Waste as Hazardous

182b



Ignitability

Corrosivity

Reactivity

Toxicity

D001

D002

D003

D004 -
D043

WASTE LIST(S)

SUBPART D - 261.30

DEFINITIONS

- "D" WASTE - CHARACTERISTIC HAZARDOUS WASTE, PART 261.30
- "F" WASTE - HAZARDOUS WASTE FROM NON-SPECIFIC SOURCES, PART 261.31.
- "K" WASTE - HAZARDOUS WASTE FROM SPECIFIC SOURCES, PART 261.32.
- "P" WASTE - ACUTE HAZARDOUS WASTE, COMMERCIAL CHEMICAL PRODUCTS. PART 261.32.
- "U" WASTE - TOXIC HAZARDOUS WASTE, COMMERCIAL CHEMICAL PRODUCTS. PART 261.32.

HAZARD CODES USED:

IGNITABLE
CORROSIVE
REACTIVE
EP TOXIC WASTE
ACUTE HAZARDOUS WASTE
TOXIC WASTE

(I)
(C)
(R)
(E)
(H)
(T)

} ADDITIONAL
CODES

CHARACTERISTIC

HAZARDOUS WASTE

CHARACTERISTIC OF IGNITABILITY (D001)

(40 CFR PART 261.21)

- (1) IT IS A LIQUID, OTHER THAN AN AQUEOUS SOLUTION CONTAINING LESS THAN 24% ALCOHOL BY VOLUME AND HAS A FLASH POINT LESS THAN 60 DEGREES "C". (140 °F).
- (2) IT IS NOT A LIQUID AND IS CAPABLE, UNDER STANDARD TEMPERATURE AND PRESSURE, OF CAUSING FIRE THROUGH FRICTION, ABSORPTION OF MOISTURE OR SPONTANEOUS CHEMICAL CHANGES AND WHEN IGNITED, BURNS SO VIGOROUSLY AND PERSISTENTLY THAT IT CREATES A HAZARD.
- (3) IT IS IGNITABLE COMPRESSED GAS AS DEFINED IN 49CFR PART 173.300 OR DETERMINED TO BE SO BY SUITABLE TESTS.
- (4) IT IS AN OXIDIZER AS DEFINED IN 49CFR PART 173.151.

CHARACTERISTIC OF CORROSIVITY (D002)

(40CFR PART 261.22)

- (1) IT IS AQUEOUS AND HAS A pH LESS THAN OR = 2 OR GREATER THAN OR = 12.5.
- (2) IT IS A LIQUID AND CORRODES STEEL (SAE 1020) AT A RATE GREATER THAN 6.35mm (0.250 INCH) PER YEAR.

CHARACTERISTIC OF REACTIVITY (D003)

(40CFR PART 261.23)

- (1) IT IS NORMALLY UNSTABLE AND READILY UNDERGOES VIOLENT CHANGE W/O DETONATING.
- (2) IT REACTS VIOLENTLY WITH WATER.
- (3) IT FORMS POTENTIALLY EXPLOSIVES MIXTURES WITH WATER.
- (4) WHEN MIXED WITH WATER, IT GENERATES TOXIC GASES, VAPORS OR FUMES IN A QUANTITY SUFFICIENT TO PRESENT A DANGER TO HUMAN HEALTH OR THE ENVIRONMENT.

CHARACTERISTIC

HAZARDOUS WASTE

- (5) IT IS A CYANIDE OR SULFIDE BEARING WASTE WHICH, WHEN EXPOSED TO pH CONDITIONS BETWEEN 2.0 AND 12.5, CAN GENERATE TOXIC GASES, VAPORS OR FUMES IN A QUANTITY SUFFICIENT TO PRESENT A DANGER TO HUMAN HEALTH OR THE ENVIRONMENT.
- (6) IT IS CAPABLE OF DETONATION OR EXPLOSIVE REACTION IF IT IS SUBJECTED TO A STRONG INITIATING SOURCE OR IF HEATED UNDER CONFINEMENT.
- (7) IT IS READILY CAPABLE OF DETONATION OR EXPLOSIVE DECOMPOSITION OR REACTION AT STANDARD TEMPERATURE AND PRESSURE.
- (8) IT IS A FORBIDDEN EXPLOSIVE FOUND IN 49CFR PART 173.54 OR EXPLOSIVES IN CLASS 1.1, 1.2, 1.3, & 1.4 FOUND IN PART 173.50.

CHARACTERISTIC OF TOXICITY (D004 THRU 043) (40CFR PART 261.24)

- (1) A SOLID WASTE EXHIBITS THE CHARACTERISTICS OF TOXICITY IF, USING THE TOXICITY CHARACTERISTIC LEACHATE PROCEDURE (TCLP) THE PRODUCTS BEING TESTED LEACH OUT WITH CONTAMINANTS AT OR ABOVE THEIR REGULATORY LIMITS AS LISTED IN TABLE 1.

APPENDIX B

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

Examples of EPA Listed Wastes = F; K; P; U
TABLE 2

EPA
HAZARDOUS
WASTE
NUMBER

HAZARD
CODE

HAZARDOUS WASTE

EPA HAZARDOUS WASTE NUMBER	HAZARD CODE	HAZARDOUS WASTE
F001	T	The following spent halogenated solvents used in degreasing: tetrachloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004 and F005 and still bottoms from the recovery of these spent solvents.
F002	T	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trifluoromethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	I	The following spent non-halogenated solvents: xylene, acetone, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	T	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	I,T	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F006	T	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
F007	R,T	Spent cyanide plating bath solutions from electroplating.
F008	R,T	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009	R,T	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010	R,T	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process.
F011	R,T	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012	T	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.
F019	T	Wastewater treatment sludges from the chemical conversion coating of aluminum.
F020	H	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)
F021	H	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.
F022	H	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.

Examples of EPA Listed Wastes = F;K;P;U

EPA HAZARDOUS WASTE NUMBER	HAZARD CODE	HAZARDOUS WASTE
F023	H	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used on for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)
F024	T	Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes.
F025	T	Light ends, spent filters and filter aids, and spent Jessicant wastes from the production of chlorinated aliphatic hydrocarbons, having carbon content from one to five, utilizing free radical catalyzed processes.
F026	H	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.
F027	H	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulation containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.)
F028	T	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.
<u>Wood Preservation</u>		
K001	T	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.
<u>Inorganic Pigments</u>		
K002	T	Wastewater treatment sludge from the production of chrome yellow and orange pigments.
K003	T	Wastewater treatment sludge from the production of molybdate orange pigments.
K004	T	Wastewater treatment sludge from the production of zinc yellow pigments.
K005	T	Wastewater treatment sludge from the production of chrome green pigments.
K006	T	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K007	T	Wastewater treatment sludge from the production of iron blue pigments.
K007	T	Oven residue from the production of chrome oxide green pigments.
<u>Organic Chemicals</u>		
K009	T	Distillation bottoms from the production of acetaldehyde from ethylene.
K010	T	Distillation side cuts from the production of acetaldehyde from ethylene.
K011	R,T	Bottom stream from the wastewater stripper in the production of acrylonitrile.
K013	R,T	Bottom stream from acetonitrile column in the production of acrylonitrile
K014	T	Bottoms from the acetonitrile purification column in the production of acrylonitrile.
K015	T	Still bottoms from the distillation of benzyl chloride.
K016	T	Heavy ends or distillation residues from the production of carbon tetrachloride.
K017	T	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.
K018	T	Heavy ends from the fractionation column in ethyl chloride production.
K019	T	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.
K020	T	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.
K021	T	Aqueous spent antimony catalyst waste from fluoromethanes production.
K022	T	Distillation bottom tars from the production of phenol/acetone from cumene.
K023	T	Distillation light ends from the production of phthalic anhydride from naphthalene.
K024	T	Distillation bottoms from the production of phthalic anhydride from naphthalene.
K093	T	Distillation light ends from the production of phthalic anhydride from ortho-xylene
K094	T	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.
K025	T	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.
K026	T	Stripping still tails from the production of methyl ethyl pyridines.
K027	T	Centrifuge and distillation residues from toluene diisocyanate production.

REPORTABLE QUANTITY (RQ) REPORTING

CERCLA AND SARA TITLE III

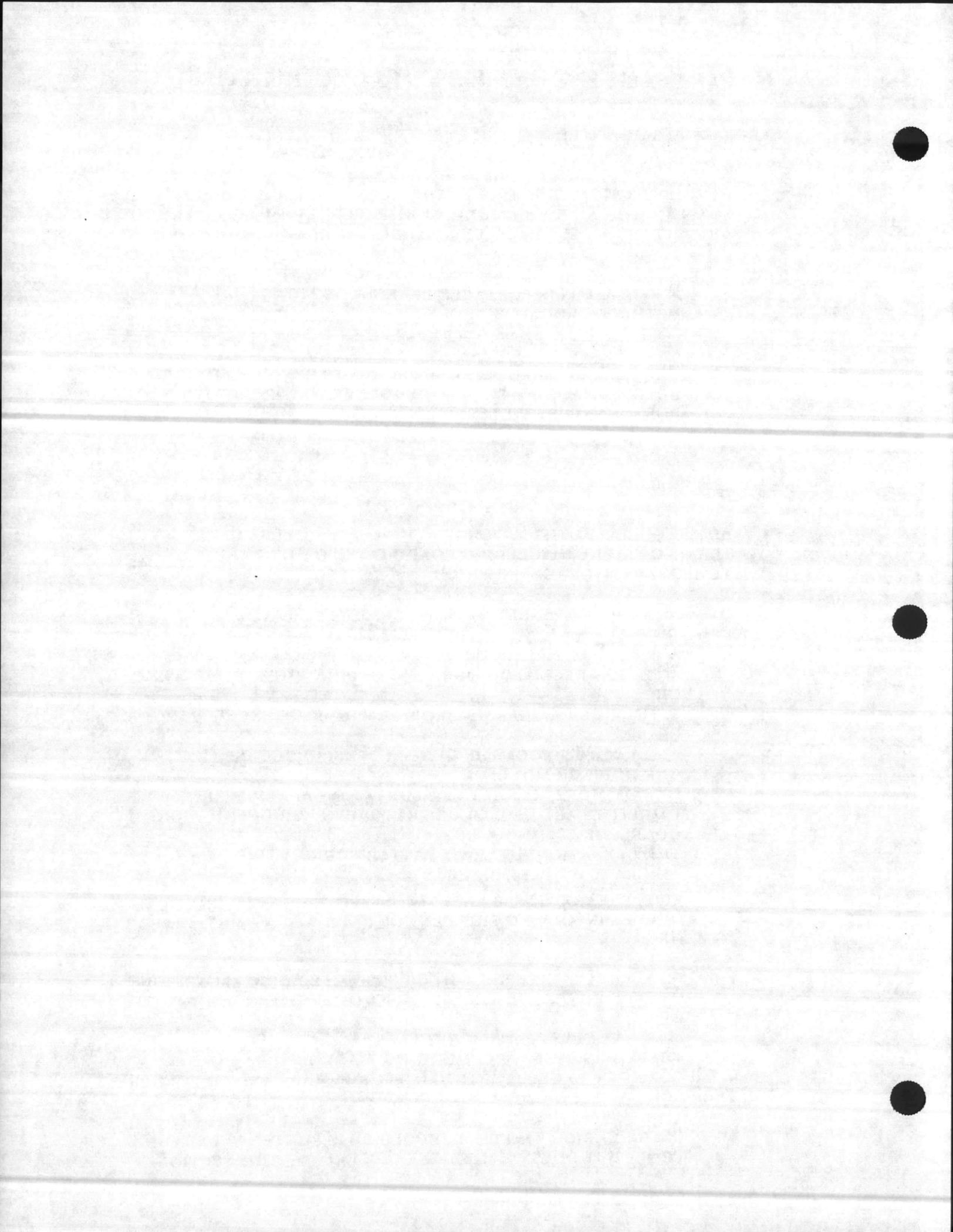
* CERCLA SECTION 103 REQUIRES THE RELEASE OF A HAZARDOUS SUBSTANCE IN AN RQ OR MORE TO BE REPORTED IMMEDIATELY TO THE NATIONAL RESPONSE CENTER (NRC)

- A RELEASE IS REPORTABLE IF AN RQ OR MORE IS RELEASED WITHIN A 24-HOUR PERIOD.
- THE RELEASE MUST ALSO BE "INTO THE ENVIRONMENT" TO BE REPORTED; THAT IS, NOT WHOLLY CONTAINED WITHIN A BUILDING OR STRUCTURE.

DOT

* DOT REQUIRES NOTIFICATION IF DURING THE COURSE OF TRANSPORTATION (INCLUDING LOADING, UNLOADING AND TEMPORARY STORAGE) IN WHICH -

- (1) AS A DIRECT RESULT OF HAZARDOUS MATERIALS;
 - A PERSON IS KILLED; OR
 - A PERSON RECEIVED INJURIES REQUIRING HOSPITALIZATION; OR
 - ESTIMATED CARRIER OR PROPERTY DAMAGE EXCEEDS \$50,000; OR
 - AN EVACUATION OF THE GENERAL PUBLIC OCCURS LASTING ONE HOUR OR MORE; OR
 - ONE OR MORE MAJOR TRANSPORTATION ARTERIES OR FACILITIES ARE CLOSED OR SHUT DOWN FOR ONE OR MORE HOURS; OR
 - THE OPERATIONAL FLIGHT PATTERN OR ROUTINE OF AN AIRCRAFT IS ALTERED; OR
- (2) FIRE, BREAKAGE, SPILLAGE OR SUSPECTED CONTAMINATION OCCURS INVOLVING SHIPMENT OF RADIOACTIVE MATERIALS; OR
- (3) FIRE, BREAKAGE, SPILLAGE, OR SUSPECTED CONTAMINATION OCCURS INVOLVING THE SHIPMENT OF ETIOLOGICAL AGENTS; OR
- (4) THERE HAS BEEN A RELEASE OF A MARINE POLLUTANT IN A QUANTITY EXCEEDING 110 GALS FOR LIQUIDS AND 882 POUNDS FOR SOLIDS; OR
- (5) IF THE CARRIER FEELS IT SHOULD BE REPORTED EVEN THOUGH IT DOESN'T MEET THE CRITERIA OF THIS SECTION.



ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

TABLE OF CONTENTS

PAGE

SECTION 6.	DOT REGULATIONS FOR HAZARDOUS WASTES AND HAZARDOUS MATERIALS (HM-126F AND HM-181) INCLUDING CONTAINERIZATION AND LABELING	191-220
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code of federal regulations

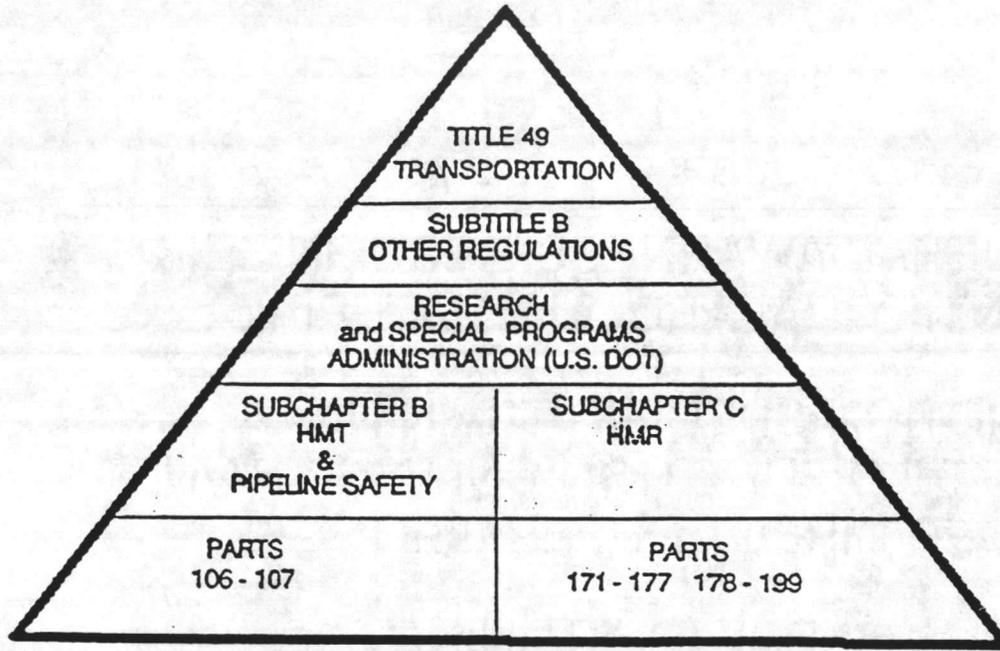
Transportation

49

PARTS 100 TO 177
Revised as of October 1, 1992



USING THE 49 CFR



SIX MAJOR AREAS OF THE 49 CFR

- A. PART 106, PART 107 & PART 171
- B. PART 172
- C. PART 173

- D. PARTS 174 - 177
- E. PART 178
- F. PART 383, 387, 390 - 399

Background/administration
 Table 101 and Haz Comm
 Shipping info; packaging
 authority
 Specific modal requirements
 Packaging specifications
 Drivers

HMTUSA IMPACTS

49 CFR

1. FINES	CIVIL: - \$250 - \$25,000 CRIMINAL: - 5 YEARS IN JAIL PLUS INDIVIDUAL - \$250,000 BUSINESS - \$500,000	HMTA	OF	1974
		HMTUSA	OF	1990
2. TRAINING		HM - 126		TRAINING
3. PREEMPTION		HM - 181		POP
4. INTRASTATE AUTHORITY		HM - 207		PRE EMPTION
5. CDL		HM - 208		REGISTRATION FEES
6. REGISTRATION FEES		HM - 211		MARINE POLLUTANTS
		HM - 214		OIL POLLUTION

H.M.126F

49 CFR SUBPART H(172.700-704)

- GENERAL AWARENESS-RECOGNIZE & IDENTIFY HAZARDOUS MATERIAL
- FUNCTION SPECIFIC TRAINING
CAN'T DO FUNCTION UNLESS TRAINED/
UNDER DIRECT SUPERVISION
- MODAL SPECIFIC TRAINING
- SAFETY TRAINING
EMERGENCY RESPONSE INFORMATION
METHODS TO PROTECT EMPLOYEES EXPOSURE
METHODS PROCEDURES AVOIDING ACCIDENTS
(OSHA,EPA CAN BE USED)
- TESTED ON SUBJECT COVERED
- RETRAIN EVERY 2 YRS.

HM 181

REQUIREMENTS

- **CLASSIFICATION**
- **PLACARDING & PACKAGEING**
- **HAZARD COMMUNICATION**
 - Shipping Papers
 - Emergency Response Information
 - Package Marking
 - Labeling

49 CFR
PART 172 SUBPART H

172.704

- * CURRENT EMPLOYEES TRAINED BY 1 OCT 93
- * ALL MUST BE TESTED
- * NEW HIRES AFTER 2 JULY 93 WITHIN 90 DAYS
- * MUST INCLUDE:
 - a. safety & emergency response
 - b. awareness
 - c. functional area training
- * RETRAINED EVERY TWO YEARS
- * RECORD KEEPING - 2 YEARS + 90 DAYS AFTER TERMINATION
 - * TESTING REQUIREMENTS
 - a. Name and address of trainer
 - b. Description, copy or location of test

EMERGENCY RESPONSE INFORMATION
(172 SUBPART G)

A. INFORMATION REQUIREMENT

1. Basic description and technical name (PSN, CLASS, ID, PG)
2. Immediate hazards to health
3. Risks of fire or explosion
4. Immediate precautions to be taken in case of an incident
5. Immediate methods for handling a fire
6. Initial methods for handling spills or leaks in absence of fire
7. Preliminary first aid measures

B. FORM OF INFORMATION

1. Printed in English

C. EMERGENCY RESPONSE
TELEPHONE NUMBER

1. Must be 24 hours day

PERFORMANCE ORIENTED PACKAGING (POP)

A. POP is based on performance testing such as:

- a. Drop testing
- b. Mass holding capacity
- c. Pressure testing
- d. Leak testing
- e. Stack testing

B. POP applies as follows:

- a. Non bulk packaging only
- b. Certain classes only - 3,4,5,6.1,8,9
- c. For class 1 packaging must be equal to PG II
- d. Does not apply to classes 1,2,6.2,7

C. POP is characterized by three packing groups (PG):

- a. Packing Group I - Great danger
- b. Packing Group II - Medium danger
- c. Packing Group III - Minor danger

D. POP container marking representing packing group compatibility:

- a. X - approved for PG I, II, III
- b. Y - approved for PG II, III
- c. Z - approved for PG III only

SHIPPERS RESPONSIBILITIES

FROM THE DEFENSE TRAFFIC MANAGEMENT REGULATION:

1. Be trained: for certifiers formal training
2. Inspect all vehicles prior to release
3. Provide emergency response brief to drivers
4. Maintain records

FROM 49 CFR:

1. Be properly trained.
2. Assure packaging is IAW with the regulation.
3. For US GOVT shipments must be IAW the 49.
4. Know previously authorized packaging.

FROM CDRMTMC MESSAGE 221300Z OCT 92:

1. Check drivers CDL for proper HAZMAT endorsements before releasing a shipment.

SHIPPING PAPERS (SUBPART C)

Minimum requirement

- a. haz & non-haz on same paper must be distinguished.
- b. shipping description - PSN, CLASS, ID, PG.
- c. total quantity of hazard.
- d. Emergency Response number
- e. Additional, conditional information:
 1. name of shipper for water shipments
 2. exemptions, when used
 3. LTD QTY as required
 4. RQ for hazardous substance
 5. radioactive material & label
 6. empty packaging = "RESIDUE"
 7. CARGO AIRCRAFT ONLY
 8. NOS = technical name
 9. DANGEROUS WHEN WET for 4.3
 10. Certification Statement (when not acting as private carrier)
 11. P.I.H.
 12. Marine Pollutant
 13. For waste w/ EPA characteristic, proper word
 14. "HOT" preceding PSN for elevated temperature materials

THE CERTIFICATION PROCESS

1. Determine the mode of transportation.
2. Locate/determine a good **Proper Shipping Name (PSN)**.
3. With the **PSN** locate your material in table 172.101.
The table gives you the following information:
 - a. The modes in which the item is regulated;
 - b. The shipping description information:
 - Proper Shipping name (col 2)
 - The hazard class or division (col 3)
 - The identification number (col 4)
 - Packing group information (col 5);
 - c. Subsidiary risk and labeling information (col 6);
 - d. Packaging authorization information (col 8A, 8B of 8C);
 - e. Special provisions (col 7).
4. Determine whether your shipment of material is also identified as either a Hazardous Substance (Appendix A) or a Marine Pollutant (Appendix B).
Make the appropriate entries and note the required labeling and placarding requirements.
5. Determine all marking requirements (part 172 subpart D).
6. Determine all placarding requirements (part 172 subpart F).
7. Prepare the shipping paper (part 172 subpart C).
8. Physically inspect/check the shipment, make sure placards are available for transporter (172.506a & 172.508a).

Hazcom Education For Transporters

Another final rule recently has amended the Hazardous Materials Transportation Act (HMTA). Section 106(b) finalized new training requirements to hazmat employers and employees. The new standard is designed to enhance employee safety and environmental protection through safe handling and movement of hazardous materials.

For clarification purposes, hazmat employers utilize people who package, store, transport or cause to transport hazardous materials. Employees are individuals who prepare, load, unload or handle hazardous materials, are responsible for safety of the transport of hazardous materials, or operate a vehicle carrying hazardous materials.

Take a deep breath and envision the spirit and intent of the law. A clearer picture should evolve. For years, OSHA has intended that the Hazard Communication Standard (1910.1200) guide employers in protecting employees from the hazards of substances they come into contact with.

HMTA Section 106(b) essentially follows suit and acknowledges that there are many employees who handle containers filled with said substances, and who — by one circumstance or another — *have the potential to come into contact with the material(s)*. Consider this rule as the Hazard Communication Standard for the transportation industry.

Make sense? Sure it does. Examine the following:

- Boxes of lab chemicals leak and/or break in warehouses during movement from Point A to Point B. What do your employees do now?
- Your forklift driver punctures or drops a drum. The splash soaks her pants. Can she interpret the label? What's an MSDS? What will she do?
- A solvent solution is leaking from a tanker valve. Do your drivers know about the hazards of the products? Do they know what to do? Do they know what you want them to do?

These simple illustrations should act as stimuli toward creating your own questions about who in your organization needs training, and about what.

Now, for some nuts and bolts: there are four categories of training in this rule. The first three apply to all personnel in the transport business; the last is focused on drivers.

General Awareness. Familiarize employees with the reason for training: they should be able to identify and recognize hazardous materials and interpret labels. Discuss the traits and safety issues of the products they work around each day.

Function-Specific. Does the employee have the knowledge and ability to execute shipping documents and paperwork? What, and where, are the written standard operating procedures for managing containers in storage or distribution areas?

Safety. Do employees understand emergency response procedures, personnel protective measures, first aid, remedial control measures and the physical and health hazards of products? This may be the most comprehensive aspect of training.

Drivers. Are drivers knowledgeable of the product, emergency response expectations, loading and unloading procedures and safe vehicle operation?

Other considerations of the new section:

- Broad subject training areas are addressed. With the exception of portable and cargo tanks, detailed training content is left to the employer. Note that all training must be relevant and meaningful, but no specific training time requirements are noted.

Training should be designed to cover the variety of circumstances surrounding the safe handling, storage and movement of the substances that your employees work with. Utilize the "what-if scenario" approach to determine your most pressing instructional needs. Create a matrix of employee classifications (warehouse, shippers, drivers) and topics (labels/MSDSs, paperwork, spill response). Use in-house specialists to assist in the needs assessment phase of the program. Consider outside resources to assist in developing effective approaches.

- Training for an affected worker who was employed before July 2, 1993, should be completed prior to October 1993. Training for employees hired after July 2 must be conducted within 90 days after employment. Those employees changing job functions must receive add-on relevant training within 90 days of the change. All employees should be carefully supervised by another knowledgeable individual during this period.

- An employee should receive refresher training

continued on page 67



Michael J. Cherniak is vice president of Environmental Training Consultants Inc. in Corvallis, Ore. He has been a hazardous materials consultant for the past 14 years and is past president of the National Environmental Training Association.

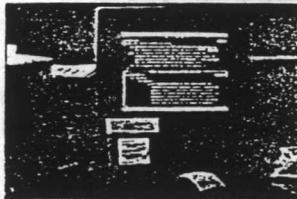
releases the hold-open linkage and allows the main poppet to close, stopping the flow of product due to pump pressure and limiting spillage from the dispenser.

**Dover Corp.,
OPW Division**

Circle 109 on card.

Regulatory Software

The new features of Version 2.0 of the FastRegs software include indexed searching of regulations; multiple windows for simultaneous viewing of different

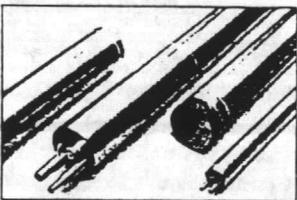


sections of a particular regulation or of numerous regulations; easier defining blocks; improved filing; operation completely from either the keyboard or a mouse. Version 2.0 supports regulation modules for RCRA and SARA. OSHA-Soft Inc.

Circle 110 on card.

Evacuator Pumps

Designed to provide a cost-effective method of pumping contaminated liq-



uids to the surface for treatment, the BRAINARD-KILMAN™ Evacuator total-fluid pumps are equipped with level logic control to provide on-demand pumping. Pumping capacities to 2.8 gpm with the 2-inch Evacuator and 9 gpm with the 4-inch size. Constructed of stainless steel and Teflon®, and available for 2-inch and larger wells, their totally pneumatic operation

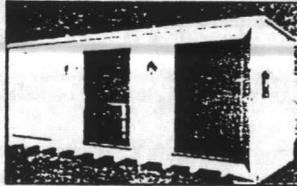
allows for use in explosive environments.

Longyear

Circle 111 on card.

Hazmat Storage

This heavy gauge FM-approved steel building is used to contain chemicals and other hazardous materials in accordance with federal, state and local regulations. Ten standard sizes and custom sizing are available. Featuring a heavy



gauge leak-tested spill containment reservoir, a heavy duty security lock and coating for chemical resistance, the unit accommodates up to 40 55-gallon drums. The building can be equipped with fire-rated construction, heating and cooling and interior shelving. JBI Inc.

Circle 112 on card.

Containment Piping

Users with severe chemical or temperature applications can order Halar-in-

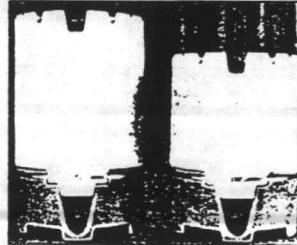


Halar, Halar-in-Polypropylene or Halar-in-PVDF for their containment piping systems. Halar can withstand strong acids, chlorine and aqueous caustics. It handles temperatures from -105 degrees F to 340 degrees F. The Duo-Pro line also can be engineered and assembled as a complete system. ASAHI/America

Circle 113 on card.

Mini-Bulk Tank

The Mini-Bulk D.O.T. tank for hazardous bulk liquids, available in 75- and 110-gallon sizes, is capable of handling corrosive and non-corrosive chemicals in an efficient manner. Its design provides full drain capability; it is forkliftable

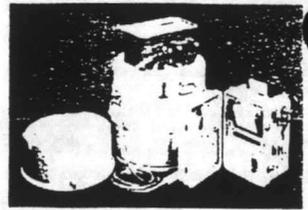


from two directions and is easy to clean. Safe stacking and color coding are possible. The Mini-Bulk's top design has a protected fill inlet for added protection. Poly Processing Co.

Circle 114 on card.

Stormwater Runoff

Isco offers an integrated monitoring system, including complete line of sam-



plers, flowmeters and accessories that allow customers to specify a system that meets their specific requirements and help them comply with EPA regulations. Dependable automatic samplers are offered with a choice of bottle configurations. Open channel flowmeters use ultrasonic, submerged probe and bubbler measurement technologies. A rain gauge provides accurate, on-site information while the company's Flowlink® software also allows remote reporting of rainfall, flow and sampling. A free "Guide to Storm Water Monitoring" is available.

**Isco Environmental
Division**

Circle 115 on card.

Environmental Training

continued from page 60

at least once every two years. Relevant training received by previous employers is acceptable if properly documented. However, if the job function has changed or the employee is exposed to new products, policies or procedures, then additional training participation should be mandatory. The simplest acid test is to require each new employee to pass your competency assessment.

- Training records should be created and retained as long as an employee is employed, and 90 days thereafter. Records should include name, date of training, an outline, a copy of instructional materials, a biography or basis of instructor competency, and a testing/evaluation/certification instrument. Maintain a separate training file for this program.

- For more information, contact the Department of Transportation's Jackie Smith at (202) 366-4488.

Remember, the ultimate spirit and intent of this statute is to provide employees with information to protect themselves and others from mishaps during the process of transport. However, employers must carefully note that this process also strengthens the link between all incidents involving hazardous materials and the employee. Past incidents excused to "human error" will in the future be linked to "the manager's responsibility to have provided training to..." Transportation managers should take this regulatory legal implication to heart.

EP

INTERNATIONAL CLASSIFICATION SYSTEM (UN)

CLASS 1 EXPLOSIVES

- DIVISION 1.1 EXPLOSIVES WITH A MASS EXPLOSIVE HAZARD
- DIVISION 1.2 EXPLOSIVES WITH A PROJECTION HAZARD
- DIVISION 1.3 EXPLOSIVES WITH PREDOMINATELY A FIRE HAZARD
- DIVISION 1.4 EXPLOSIVES WITH NO SIGNIFICATE BLAST HAZARD
- DIVISION 1.5 VERY INSENSITIVE EXPLOSIVES
- DIVISION 1.6 EXTREMELY INSENSITIVE EXPLOSIVE ARTICLES

CLASS 2 GASES

- DIVISION 2.1 FLAMMABLE GAS
- DIVISION 2.2 NONFLAMMABLE GAS
- DIVISION 2.3 POISON GASES
- DIVISION 2.4 CORROSIVE GASES (CANADIAN)

CLASS 3 FLAMMABLE LIQUIDS

- DIVISION 3.1 FLASHPOINT BELOW - 18°C
- DIVISION 3.2 FLASHPOINT - 18°C AND ABOVE, BUT LESS THAN 23°C
- DIVISION 3.3 FLASHPOINT OF 23°C AND UP TO 61°C

CLASS 4 FLAMMABLE SOLIDS; SPONTANEOUSLY COMBUSTIBLE MATERIALS; AND MATERIALS THAT ARE DANGEROUS WHEN WET

- DIVISION 4.1 FLAMMABLE SOLIDS
- DIVISION 4.2 SPONTANEOUSLY COMBUSTIBLE MATERIALS
- DIVISION 4.3 MATERIALS THAT ARE DANGEROUS WHEN WET

INTERNATIONAL CLASSIFICATION SYSTEM

CLASS 5 OXIDIZERS AND ORGANIC PEROXIDES

DIVISION 5.1 OXIDIZERS
DIVISION 5.2 ORGANIC PEROXIDES

CLASS 6 POISONOUS AND ETIOLOGICAL (INFECTIOUS) MATERIALS

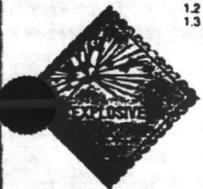
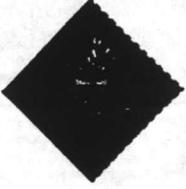
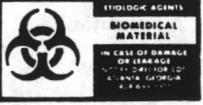
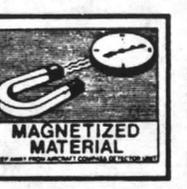
DIVISION 6.1 POISONOUS MATERIALS
DIVISION 6.2 ETIOLOGICAL (INFECTIONS) MATERIALS

CLASS 7 RADIOACTIVE MATERIALS

CLASS 8 CORROSIVES

CLASS 9 MISCELLANEOUS HAZARDOUS MATERIALS

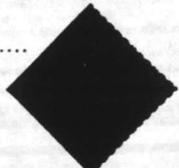
HM 181 HAZARDOUS MATERIALS LABELING CHART

<p>CLASS 1 Explosive 1.1 1.2 1.3</p>  <p>*Include appropriate division number and compatibility group</p>	<p>CLASS 1 Explosive 1.4</p>  <p>*Include appropriate compatibility group</p>	<p>CLASS 1 Explosive 1.5</p>  <p>*Include appropriate compatibility group</p>	<p>CLASS 1 Explosive 1.6</p>  <p>*Include appropriate compatibility group</p>	<p>CLASS 2 Division 2.1</p>  <p>Flammable gas</p>	<p>CLASS 2 Division 2.2</p>  <p>Non-flammable gas</p>	<p>CLASS 2 Division 2.2</p>  <p>Oxygen</p>
<p>CLASS 2 Division 2.3</p>  <p>Poison gas</p>	<p>CLASS 3</p>  <p>Flammable liquid</p>	<p>CLASS 4 Division 4.1</p>  <p>Flammable solid</p>	<p>CLASS 4 Division 4.2</p>  <p>Spontaneously combustible</p>	<p>CLASS 4 Division 4.3</p>  <p>Dangerous when wet</p>	<p>CLASS 5 Division 5.1</p>  <p>Oxidizer</p>	<p>CLASS 5 Division 5.2</p>  <p>Organic peroxide</p>
<p>CLASS 6 Division 6.1</p>  <p>Poison-Packing Groups I and II</p>	<p>CLASS 6 Division 6.1</p>  <p>Packing Group III</p>	<p>CLASS 6 Division 6.2</p>  <p>Infectious substance</p>  <p>42 CFR 72.3 Etiological agent label may apply</p>		<p>CLASS 7 I</p>  <p>Radioactive I</p>	<p>CLASS 7 II</p>  <p>Radioactive II</p>	<p>CLASS 7 III</p>  <p>Radioactive III</p>
<p>CLASS 8</p>  <p>Corrosive</p>	<p>CLASS 9</p>  <p>Miscellaneous</p>	<p style="text-align: center;">SUBSIDIARY RISK LABELS</p>  <p>Explosives Flammable Gas Flammable Liquid Flammable Solid Corrosive Oxidizer Poison Spontaneously Combustible Dangerous When Wet</p> <p>The class number is deleted for subsidiary risks labels. See Column 6 of the Sec. 172.101 Table</p>		 <p>Empty</p>	<p style="text-align: center;">FOR AIRCRAFT</p>  	

D.O.T. GENERAL GUIDELINES ON USE OF WARNING LABELS

1. Shipper must furnish and attach appropriate label(s) to each package of hazardous material offered for shipment unless exempted from labeling requirements.
2. If the material in a package has more than one hazard classification, the package must be labeled for each hazard. (Ref. Title 49, CFR, Sec. 172.402).
3. When two or more hazardous materials of different classes are packed within the same packaging or outer enclosure, the outside of the package must be labeled for each material involved. (Ref. Title 49, CFR, Sec. 172.404(a)).
4. Radioactive materials requiring labeling, must be labeled on two opposite sides of the package. (Ref. Title 49, CFR, Sec. 172.403(f)).
5. Labels must not be applied to a package containing only material which is not subject to Parts 170 - 189 of this subchapter or which is exempted therefrom. This does not prohibit the use of labels in conformance with U.N. recommendations ("Transport of Dangerous Goods"), or with the IMCO requirements ("International Maritime Dangerous Goods Code") ICAO Technical Instructions, TDG Regulations (Ref. Title 49, CFR, Sec. 172.401).

HAZARDOUS MATERIALS PACKAGE MARKINGS

<p>SAMPLE PACKAGING MARKING</p> <p>Proper Shipping Name ACETONE UN I.D. Number UN 1090</p> <p>HAZARDOUS WARNING LABEL</p> 	<p>CONSUMER COMMODITY</p> <p style="text-align: center;">ORM-D</p>			<p>CAUTION!</p> <p style="font-size: small;">This container contains a highly flammable liquid. It is extremely volatile and all electrical equipment has required through the licensed amount.</p> <p style="font-size: small;">DO NOT OPEN IN THE PRESENCE OF FLAMES OR OPEN FLAMES. Keep all open flames, lighters and bare wires, switches, fuses, etc. away.</p>	
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HM 181 HAZARDOUS MATERIALS LABELING CHART

§172.400 General labeling requirements.

(a) Except as specified in §172.400a, each person who offers for transportation or transports a hazardous material in any of the following packages or containment devices, shall label the package or containment device with labels specified for the material in the §172.101 Table and in this subpart:

- (1) A non-bulk package;
- (2) A bulk packaging, other than a cargo tank, portable tank, or tank car, with a volumetric capacity of less than 18 m³ (640 cubic feet), unless placarded in accordance with subpart F of this part;
- (3) A portable tank of less than 3785 L (1000 gallons) capacity, unless placarded in accordance with subpart F of this part;
- (4) A DOT Specification 106 or 110 multi-unit tank car tank, unless placarded in accordance with subpart F of this part; and
- (5) An overpack, freight container or unit load device, of less than 18 m³ (640 cubic feet), which contains a package for which labels are required, unless placarded or marked in accordance with §172.512 of this part.

(b) Labeling is required for a hazardous material which meets one or more hazard class definitions, in accordance with Column 6 of the §172.101 Table and the following table:

Hazard class or division	Label name	Label design or section reference (§)
1.1	EXPLOSIVE 1.1	172.411
1.2	EXPLOSIVE 1.2	172.411
1.3	EXPLOSIVE 1.3	172.411
1.4	EXPLOSIVE 1.4	172.411
1.5	EXPLOSIVE 1.5	172.411
1.6	EXPLOSIVE 1.6	172.411
2.1	FLAMMABLE GAS	172.417
2.2	NON-FLAMMABLE GAS	172.415
2.3	POISON GAS	172.416
3 (flammable liquid)	FLAMMABLE LIQUID	172.419
3 (combustible liquid)	(none)	
4.1	FLAMMABLE SOLID	172.420
4.2	SPONTANEOUSLY COMBUSTIBLE	172.422
4.3	DANGEROUS WHEN WET	172.423
5.1	OXIDIZER	172.426
5.2	ORGANIC PEROXIDE	172.427
6.1 (Packing Groups I and II)	POISON	172.430
6.1 (Packing Group III)	KEEP AWAY FROM FOOD	172.431
6.2	INFECTIOUS SUBSTANCE ¹	172.432
7 (see §172.403)	RADIOACTIVE WHITE-I	172.436
7	RADIOACTIVE YELLOW-II	172.438
7	RADIOACTIVE YELLOW-III	172.440
7 (empty packages, see §173.427)	EMPTY	172.450
8	CORROSIVE	172.442
9	CLASS 9	172.446

¹The ETIOLOGIC AGENT label specified in regulations of the Department of Health and Human Services at 42 CFR 72.3 may apply to packages of infectious substances.

§172.400a Exceptions from labeling.

(a) Notwithstanding the provisions of §172.400, a label is not required on—

- (1) A cylinder containing a Division 2.1 or Division 2.2 gas that is
 - (i) Not poisonous;
 - (ii) Carried by a private or contract motor carrier;
 - (iii) Not overpacked; and

(iv) Durably and legibly marked in accordance with CGA Pamphlet C-7, appendix A.

(2) A package or unit of military explosives (including ammunition) shipped by or on behalf of the DOD when in—

(i) Freight containerload, carload or truckload shipments, if loaded and unloaded by the shipper or DOD; or

(ii) Unitized or palletized break-bulk shipments by cargo vessel under charter to DOD if at least one required label is displayed on each unitized or palletized load.

(3) A package containing a hazardous material other than ammunition that is—

(i) Loaded and unloaded under the supervision of DOD personnel, and

(ii) Escorted by DOD personnel in a separate vehicle.

(4) A compressed gas cylinder permanently mounted in or on a transport vehicle.

(5) A freight container, aircraft unit load device or portable tank, which—

(i) Is placarded in accordance with Subpart F of this part, or

(ii) Conforms to paragraph (a)(3) or (b)(3) of §172.512.

(6) An overpack or unit load device in or on which labels representative of each hazardous material in the overpack or unit load device is visible.

(7) A package of low specific activity radioactive material, when transported under §173.425(b) of this subchapter.

(b) Certain exceptions to labeling requirements are provided for small quantities and limited quantities in applicable sections in part 173 of this subchapter.

§172.401 Prohibited labeling.

(a) Except as provided in paragraph (c) of this section, no person may offer for transportation or no carrier may transport any package bearing a label specified in this subpart unless—

- (1) The package contains a material that is a hazardous material, and
- (2) The label represents a hazard of the hazardous material in the package.

(b) No person may offer for transportation and no carrier may transport a package bearing any marking or label which by its color, design, or shape could be confused with or conflict with a label prescribed by this part.

(c) The restrictions in paragraphs (a) and (b) of this section, do not apply to packages labeled in conformance with—

(1) Any United Nations recommendation, including the class number (see §172.407), in the document entitled "Transport of Dangerous Goods";

(2) The International Maritime Organization (IMO) requirements, including the class number (see §172.407), in the document entitled "International Maritime Dangerous Goods Code";

(3) The ICAO Technical Instructions, or

(4) The TDG Regulations.

§172.402 Additional Labeling requirements.

(a) Subsidiary hazard labels. Each package containing a hazardous material—

- (1) Shall be labeled with primary and subsidiary hazard labels as specified in Column 6 of the §172.101 Table; and

(2) For other than Class 2 or Class 1 materials (for subsidiary labeling requirements for Class 1 materials see paragraph (e) of this section), if not already labeled under paragraph (a)(1) of this section, shall be labeled with subsidiary hazard labels in accordance with the following table:

Subsidiary hazard level (packing group)	Subsidiary Hazard (Class or Division)						
	3	4.1	4.2	4.3	5.1	6.1	8
I.....	X	X	X	X	X
II.....	X	X	X	X	X	X	X
III.....	.	N	X	X	N	N	..

- X—Required for all modes.
- Required for transport by vessel only.
- ..—Required for transport by aircraft and vessel only.
- ...—Impossible as subsidiary hazard.
- N—None required.

(b) Display of hazard class on labels. The appropriate hazard class or, for Division 5.1 or 5.2 the division number, shall be displayed in the lower corner of a primary hazard label and may not be displayed on a subsidiary label.

(c) Cargo Aircraft Only label. Each person who offers for transportation or transports by aircraft a package containing a hazardous material which is authorized on cargo aircraft only shall label the package with a CARGO AIRCRAFT ONLY label specified in §172.448 of this subpart.

(d) Radioactive Materials. Each package containing a radioactive material that also meets the definition of one or more additional hazards, except Class 9, shall be labeled with a radioactive material as required by §172.403 of this subpart and for each additional hazard.

(e) Class 1 (explosive) Materials. In addition to the label specified in Column 6 of the §172.101 Table, each package of Class 1 material that also meets the definition for:

- (1) Division 6.1, Packing Groups I or II, shall be labeled POISON; or
- (2) Class 7, shall be labeled in accordance with §172.403 of this subpart.

§172.403 Contains special requirements for RADIOACTIVE materials. See regulations.

§172.405 Authorized label modifications.

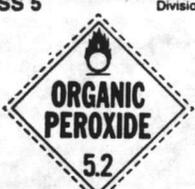
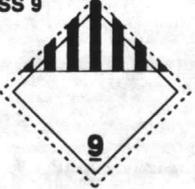
(a) For Classes 1, 2, 3, 4, 5, 6, and 8, text indicating a hazard (for example FLAMMABLE LIQUID) is not required on a label when—

(1) The label otherwise conforms to the provisions of this subpart, and

(2) The hazard class or, for Division 5.1 or 5.2 the division number, is displayed in the lower corner of the label, if the label corresponds to the primary hazard class of the hazardous material.

(b) For a package containing Oxygen, compressed, or Oxygen, refrigerated liquid, the OXIDIZER label specified in §172.426 of this subpart, modified to display the word "OXYGEN" instead of "OXIDIZER", and the class number "2" instead of "5.1", may be used in place of the NON-FLAMMABLE GAS and OXIDIZER labels. Notwithstanding the provisions of paragraph (a) of this section, the word "OXYGEN" must appear on the label.

HM 181 HAZARDOUS MATERIALS PLACARDING CHART

<p>CLASS 1</p>  <p>EXPLOSIVES 1.1, 1.2, & 1.3 *The Division number 1.1, 1.2 or 1.3 and compatibility group are in black ink. Placard any quantity of Division number 1.1, 1.2 or 1.3 material.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.4 *The compatibility group is in black ink. Placard 454 kg (1001 lbs.) or more of 1.4 Explosives.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.5 *The compatibility group is in black ink. Placard 454 kg (1001 lbs.) or more of 1.5 Blasting Agents.</p>	<p>CLASS 1</p>  <p>EXPLOSIVES 1.6 *The compatibility group is in black ink. Placard 454 kg (1001 lbs.) or more of 1.6 Explosives.</p>	<p>CLASS 2</p>  <p>OXYGEN Placard 454 kg (1001 lbs.) or more aggregate gross weight of either oxygen compressed and oxygen, refrigerated liquid. See 172.504(f)(7).</p>
<p>CLASS 2 Division 2.1</p>  <p>FLAMMABLE GAS Placard 454 kg (1001 lbs.) or more of flammable gas. See DANGEROUS.</p>	<p>CLASS 2 Division 2.2</p>  <p>NON-FLAMMABLE GAS Placard 454 kg (1001 lbs.) or more aggregate gross weight of non-flammable gas. See DANGEROUS.</p>	<p>CLASS 2 Division 2.3</p>  <p>POISON GAS Placard any quantity of Division 2.3 material.</p>	<p>CLASS 3</p>  <p>FLAMMABLE Placard 454 kg (1001 lbs.) or more gross weight of flammable liquid. See DANGEROUS.</p>	<p>CLASS 3</p>  <p>GASOLINE May be used in the place of FLAMMABLE on a placard displayed on a cargo tank or a portable tank being used to transport gasoline by highway. See 172.542(c).</p>
<p>CLASS 3</p>  <p>COMBUSTIBLE Placard a combustible liquid when transported in bulk. A FLAMMABLE placard may be used in place of a Combustible placard on cargo tank or portable tank or a compartmented tank car which contains both flammable and combustible liquids. See 172.504(f)(2).</p>	<p>CLASS 3</p>  <p>FUEL OIL May be used in place of COMBUSTIBLE on a placard displayed on a cargo tank or portable tank being used to transport by highway fuel oil not classed as a flammable liquid. See 172.544(c).</p>	<p>CLASS 4 Division 4.1</p>  <p>FLAMMABLE SOLID Placard 454 kg (1001 lbs.) or more gross weight of flammable solid. See DANGEROUS.</p>	<p>CLASS 4 Division 4.2</p>  <p>SPONTANEOUSLY COMBUSTIBLE Placard 454 kg (1001 lbs.) or more gross weight of spontaneously combustible material. See DANGEROUS.</p>	<p>CLASS 4 Division 4.3</p>  <p>DANGEROUS WHEN WET MATERIAL Placard any quantity of Division 4.3 material.</p>
<p>CLASS 5 Division 5.1</p>  <p>OXIDIZER Placard 454 kg (1001 lbs.) or more gross weight of oxidizing material. See DANGEROUS.</p>	<p>CLASS 5 Division 5.2</p>  <p>ORGANIC PEROXIDE Placard 454 kg (1001 lbs.) or more gross weight of organic peroxide. See DANGEROUS.</p>	<p>CLASS 6 Division 6.1 Packing Group I & II</p>  <p>POISON Placard 454 kg (1001 lbs.) or more gross weight of Packing Groups I & II. See DANGEROUS. Placard any quantity of Inhalation Hazard 6.1, PGI.</p>	<p>CLASS 6 Division 6.1 Packing Group III</p>  <p>HARMFUL KEEP AWAY FROM FOOD Placard 454 kg (1001 lbs.) or more gross weight of Packing Group III. See DANGEROUS.</p>	<p>CLASS 7</p>  <p>RADIOACTIVE Placard any quantity of packages bearing the RADIOACTIVE YELLOW III label. Certain low specific activity radioactive materials in "exclusive use" will not bear the label, but the RADIOACTIVE placard is required.</p>
<p>CLASS 8</p>  <p>CORROSIVE Placard 454 kg (1001 lbs.) or more gross weight of corrosive material. See DANGEROUS.</p>	<p>CLASS 9</p>  <p>MISCELLANEOUS Placard 454 kg (1001 lbs.) or more gross weight of a material which presents a hazard during transport, but which is not included in any other hazard class. See DANGEROUS.</p>	<p>DANGEROUS Placard 454 kg (1001 lbs.) gross weight of two or more categories of hazardous materials listed in Table 2. A freight container, unit load device, transport vehicle or rail car which contains non-bulk packagings with two or more categories of hazardous materials that require different placards specified in Table 2 may be</p>	<p>placarded with DANGEROUS placards instead of the separate placarding specified for each of the materials in Table 2. However, when 2,268 kg (5000 lbs.) or more of one category of material is loaded therein at one loading facility, the placard specified in Table 2 for that category must be applied.</p> <p>Division 1.4 (explosives) Division 1.5 (blasting agents) Division 1.6 (explosives) Division 2.1 (flammable gas) Division 2.2 (non-flammable gas) Class 3 (flammable liquid) Combustible liquid Division 4.1 (flammable solid) Division 4.2 (spontaneously combustible) Division 5.1 (oxidizer) Division 5.2 (organic peroxide) Class 6 (poison) Class 8 (corrosive) Class 9 (miscellaneous)</p>	
<p>DANGER The loading of this car has been FUMIGATED or TREATED</p> <p>REPORT ALL INHALENGE, OPEN, BURN, STING AND SEE THIS PLACARD TO THE CONDUCTOR OF THE TRAIN. REPORT ALL INHALENGE, OPEN, BURN, STING AND SEE THIS PLACARD TO THE CONDUCTOR OF THE TRAIN.</p>	<p>RAIL Placard empty tank cars for residue of material last contained.</p> 	<p>The square background is required for the following placards when on rail cars: EXPLOSIVES 1.1 or 1.2; POISON GAS or POISON GAS-RESIDUE (Division 2.3, Hazard Zone A); POISON or POISON-RESIDUE (Division 6.1, PG I, Hazard Zone A). The square background is required for placards on motor vehicles transporting highway route controlled quantities of radioactive materials (Class 7).</p>	<p>DISPLAY OF IDENTIFICATION NUMBER WHEN TRANSPORTING HAZARDOUS MATERIALS IN PORTABLE TANKS, CARGO TANKS AND TANK CARS.</p>  <p style="text-align: center;">ORANGE PANEL</p>  <p style="text-align: center;">PLACARD</p>	

HM 181 HAZARDOUS MATERIALS PLACARDING CHART

172.502 Prohibited placarding.

- (a) Prohibited placarding. Except as provided in paragraph (b) of this section, no person may affix or display on a packaging, freight container, unit load device, motor vehicle or rail car—
- (1) Any placard described in this subpart unless—
 - (i) The material being offered or transported is a hazardous material;
 - (ii) The placard represents a hazard of the hazardous material being offered or transported; and
 - (iii) Any placarding conforms to the requirements of this subpart.
 - (2) Any sign or other device that, by its color, design, shape or content, could be confused with any placard prescribed in this subpart.
- (b) Exceptions. (1) The restrictions in paragraph (a) of this section do not apply to a bulk packaging, freight container, unit load device, transport vehicle or rail car which is placarded in conformance with the TDG Regulations, the IMDG Code or the UN Recommendations.
- (2) The restrictions of paragraph (a) of this section do not apply to the display of an identification number on a white square-on-point configuration in accordance with §172.336(b) of this part.
- (c) Permissive placarding. Placards may be displayed for a hazardous material, even when not required, if the placarding otherwise conforms to the requirements of this subpart.

172.504 General placarding requirements.

- (a) General. Except as otherwise provided in this subchapter, each bulk packaging, freight container, unit load device, transport vehicle or rail car containing any quantity of a hazardous material must be placarded on each side and each end with the type of placards specified in Tables 1 and 2 of this section and in accordance with other placarding requirements of this subpart, including the specifications for the placards named in the tables and described in detail in §§172.519 through 172.558.
- (b) DANGEROUS placard. A freight container, unit load device, transport vehicle or rail car which contains non-bulk packagings with two or more categories of hazardous materials that require different placards specified in Table 2 may be placarded with DANGEROUS placards instead of the separate placarding specified for each of the materials in Table 2. However, when 2,268 kg (5,000 pounds) or more of one category of material is loaded therein at one loading facility, the placard specified in Table 2 of paragraph (e) of this section for that category must be applied.
- (c) Exception for less than 454 kg (1,001 pounds). Except for transport vehicles and freight containers subject to §172.505, bulk packagings, or transportation by aircraft or vessel, placards for hazardous materials covered by Table 2 are not required on—
- (1) A transport vehicle or freight container which contains less than 454 kg (1,001 pounds) aggregate gross weight of hazardous materials covered by Table 2 of paragraph (e) of this section; or
 - (2) A rail car loaded with transport vehicles or freight containers, none of which is required to be placarded. The exceptions provided in paragraph (c) of this section do not prohibit the display of placards in the manner prescribed in this subpart, if not otherwise prohibited (see §172.502), on transport vehicles or freight containers which are not required to be placarded.
- (d) Exception for empty non-bulk packages. A non-bulk packaging that contains only the residue of a hazardous material covered by Table 2 of paragraph (e) of this section need not be included in determining placarding requirements.
- (e) Placarding tables. Placards are specified for hazardous materials in accordance with the following tables:

Table 1

Category of material (Hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference (§)
1.1	EXPLOSIVES 1.1	172.522
1.2	EXPLOSIVES 1.2	172.522
1.3	EXPLOSIVES 1.3	172.522
2.3	POISON GAS	172.540
4.3	DANGEROUS WHEN WET	172.548
6.1 (PG I, inhalation hazard only)	POISON	172.554
7 (Radioactive Yellow III label only)	RADIOACTIVE ¹	172.556

¹ RADIOACTIVE placard also required for exclusive use shipments of low specific activity material in accordance with §173.425(b) or (c) of this subchapter.

Table 2

Category of material (Hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference (§)
1.4	EXPLOSIVES 1.4	172.523
1.5	EXPLOSIVES 1.5	172.524
1.6	EXPLOSIVES 1.6	172.525
2.1	FLAMMABLE GAS	172.532
2.2	NON-FLAMMABLE GAS	172.528
3	FLAMMABLE	172.542
Combustible liquid	COMBUSTIBLE	172.544
4.1	FLAMMABLE SOLID	172.546
4.2	SPONTANEOUSLY COMBUSTIBLE	172.547
5.1	OXIDIZER	172.550
5.2	ORGANIC PEROXIDE	172.552
6.1 (PG I or II, other than PG I inhalation hazard)	POISON	172.554
6.1 (PG III)	KEEP AWAY FROM FOOD	172.553
6.2	(None)	
8	CORROSIVE	172.558
9	CLASS 9	172.560
ORM-D	(None)	

- (f) Additional placarding exceptions. (1) An EXPLOSIVES 1.2 placard is not required for Division 1.2 explosives on a transport vehicle, rail car, freight container or unit load device which contains Division 1.1 explosives, and is placarded with EXPLOSIVES 1.1 placards, as required.
- (2) A FLAMMABLE placard may be used in place of a COMBUSTIBLE placard on—
- (i) A cargo tank or portable tank.
 - (ii) A compartmented tank car which contains both flammable and combustible liquids.
- (3) A NON-FLAMMABLE GAS placard is not required on a transport vehicle which contains non-flammable gas if the transport vehicle also contains flammable gas or oxygen and it is placarded with FLAMMABLE GAS or OXYGEN placards, as required.
- (4) An EXPLOSIVES 1.3, 1.4, 1.5, 1.6 or OXIDIZER placard is not required for Division 1.3, 1.4, 1.5, 1.6 or 5.1 materials on a freight container, unit load device, transport vehicle or rail car which also contains Division 1.1 or 1.2 explosives and is placarded with EXPLOSIVES 1.1 or 1.2 placards, as required.
- (5) For transportation by transport vehicle or rail car only, an OXIDIZER placard is not required for Division 5.1 materials on a transport vehicle, rail car or freight container which also contains Division 1.5 explosives and is placarded with EXPLOSIVES 1.5 placards, as required.
- (6) The EXPLOSIVE 1.4 placard is not required for those Division 1.4 Compatibility Group S (1.4S) materials that are not required to be labeled 1.4S.
- (7) For domestic transportation of oxygen, compressed or oxygen, refrigerated liquid, the OXYGEN placard in §172.530 of this subpart may be used in place of a NON-FLAMMABLE GAS placard.
- (8) Except for a material classed as a combustible liquid that also meets the definition of a Class 9 material, a COMBUSTIBLE placard is not required for a material classed as a combustible liquid when transported in a non-bulk packaging. For a material in a non-bulk packaging classed as a combustible liquid that also meets the definition of a Class 9 material, the CLASS 9 placard may be substituted for the COMBUSTIBLE placard.
- (g) For shipments of Class 1 (explosive) materials by aircraft or vessel, the applicable compatibility group letter must be displayed on the placards required by this section.

§172.505 Placarding for subsidiary hazards.

- (a) Each transport vehicle, portable tank, freight container or unit load device that contains a poisonous material subject to the "Poison-Inhalation Hazard" shipping description of §172.203(m)(3) shall be placarded with POISON or POISON GAS placards, as appropriate, on each side and each end, if not so placarded under §172.504.
- (b) In addition to the RADIOACTIVE placard which may be required by §172.504(e) of this subpart, each transport vehicle, portable tank or freight container that contains 454 kg (1,001 pounds) or more gross weight of fissile or low specific activity uranium hexafluoride shall be placarded with a CORROSIVE placard on each side and each end.
- (c) Each transport vehicle, portable tank, freight container or unit load device that contains a material which has a subsidiary hazard of being dangerous when wet, as defined in §173.124 of this subchapter, shall be placarded with DANGEROUS WHEN WET placards, on each side and each end, in addition to the placards required by §172.504.
- (d) Hazardous materials that possess secondary hazards may exhibit subsidiary placards that correspond to the placards described in this part, even when not required by this part (see also §172.519(b)(4) of this subpart).

UNITED NATIONS (UN) MARKING - CODES

UN MARKING

- UN Symbol (u/n)
- Packaging Type Code
- Packing Group Code (I=X, II=Y, III=Z)
- Gross Mass in Kilograms/S (For Solids)
- Relative Density (For Liquids)
- Hydraulic Test Pressure in Kilopascals (For Liquids)
- Year of Manufacture
- State Where Test Was Done
- Name of Manufacturer

EXAMPLES

<u>49CFR SPECIFICATION</u>		<u>EQUIVALENT UN PERFORMANCE MARKING</u>
DOT 12B65 Fibreboard box	(u/n)	4G/Y30/S/88 USA/ABC
DOT 17F Tighthead drum	(u/n)	1A1/X/540/88 USA/ABC
DOT 17E Tighthead drum	(u/n)	1A1/Y/100/88 USA/ABC
DOT 17C Tighthead drum	(u/n)	1A1/Y1.3/270/88 USA/ABC
DOT 17C Removable head drum	(u/n)	1A2/Y/270/88 or (u/n) 1A2/Y270/S/88 USA/ABC USA/ABC

DOT/UN PACKAGING - CODES

<u>TYPE</u>	<u>MATERIAL</u>	<u>DESIGN</u>	<u>UN CODE</u>	<u>DOT CODE</u>	
Drum	Steel	Non-removable head	1A1	17E, 17C 17F, 5C	
		Removable head	1A2	37A, 17C 17H	
	Aluminum	Non-removable head	1B1	42B, 42D	
		Removable head	1B2		
	Plywood		1D	22A, 22B	
	Fibre		1G	21C	
	Plastic	Non-removable head	1H1	34	
		Removable head	1H2	35	
	Barrels	Wooden	Bung type	2C1	10A, 10B
			Slack type	2C2	11A, 11B
Jerricans	Steel	Non-removable head	3A1		
		Removable head	3A2		
	Plastic	Non-removable	3H1	34	
		Removable	3H2		
Boxes	Steel	Without liner	4A1	32D	
		With liner	4A2		
	Aluminum	Without liner	4B1		
		With liner	4B2		
	Natural wood	Ordinary	4C1	15A, 15C 15D, 15E	
		With siftproof walls	4C2		

TYPE	MATERIAL	DESIGN	UN CODE	DOT CODE
Boxes cont.	Plywood		4D	19A, 19B
	Reconstituted wood		4F	
	Fibreboard		4G	12A, 12B
	Plastic	Expanded		4H1
Solid			4H2	
Bags	Woven plastic	Without inner lining or coating	5H1	
		Sift-proof	5H2	
		Water resistant	5H3	
	Plastic film		5H4	44P
	Textile	Without inner lining or coating	5L1	
		Sift-proof	5L2	
		Water resistant	5L3	
	Paper	Multiwall	5M1	44C
Multiwall, water resistant		5M2	44C	
Composite packagings receptacle	Plastic	In steel drum	6HA1	37M/2SL
		In steel crate or box	6HA2	
		In aluminum drum	6HB1	
		In aluminum crate or box	6HB2	

TYPE	MATERIAL	DESIGN	UN CODE	DOT CODE	
Boxes cont.	Plywood		4D	19A, 19B	
	Reconstituted wood		4F		
	Fibreboard		4G	12A, 12B	
	Plastic	Expanded		4H1	33A
		Solid		4H2	
Bags	Woven plastic	Without inner lining or coating	5H1		
		Sift-proof	5H2		
		Water resistant	5H3		
	Plastic film		5H4	44P	
	Textile	Without inner lining or coating		5L1	
		Sift-proof		5L2	
		Water resistant		5L3	
	Paper	Multiwall		5M1	44C
		Multiwall, water resistant		5M2	44C
	Composite Plastic packagings receptacle		In steel drum	6HA1	37M/2SL
In steel crate or box			6HA2		
In aluminum drum			6HB1		
In aluminum crate or box			6HB2		

The Uniform Hazardous Waste Manifest Summary

The hazardous waste management process is surrounded by a complex "paper trail" that follows a waste shipment from cradle to grave.

The key document in this process is the Uniform Hazardous Waste Manifest.

The generator of hazardous waste material is responsible for supplying most of the information contained on the manifest. This block of information characterizes the waste itself. It also identifies all parties involved in the generation, transportation, treatment or disposal of the waste.

When a transporter takes possession of the waste material, he or she is required to sign and date the manifest. Though the manifest serves as a system of checks and balances to all parties in the hazardous waste service industry, it is especially important to the transporter. The transporter's job depends on an accurate manifest.

When the waste material is eventually received at a treatment or disposal facility, a facility representative is required to sign and date the manifest.

Thus, the manifest is a concise record of who will be handling the waste, a description of the waste itself, and proof of acceptance by the treatment or disposal facility.

Guidelines

General

- No person may offer, transport, transfer or deliver a hazardous waste without a properly completed hazardous waste manifest.
- All information placed on a manifest must be legibly printed or typed. Hand-written manifests are unacceptable.
- All required information sections must be complete and correct.
- When corrections are made on a manifest, the person making the correction must initial and

date the space corrected. Manifests which have numerous corrections should be redone in total.

- When five or more waste streams are being combined into one shipment, a Uniform Hazardous Waste Manifest Continuation Sheet should be used.
- The Uniform Hazardous Waste Manifest is a legally binding document which characterizes and identifies the waste material. It is the key element in the long "paper trail" which tracks hazardous waste from point of generation through eventual disposal. It must be complete and accurate. And it is the law.

Manifest Entries

- All address entries must be complete with zip codes. All phone numbers must be complete with area codes.
- The U.S. DOT description (section 11) cannot contain any codes or abbreviations unless specifically authorized or required in the Hazardous Materials Table.
- The proper DOT description must be printed or typed in its correct sequential form (e.g., Waste Arsenic Solid, Poison B, UN 1558).
- The letters "RQ" stand for Reportable Quantity. When a Reportable Quantity designation is required, the letters "RQ" must appear on the EPA Hazardous Waste label and on the manifest. Placement of the "RQ" letters must be either before or after the proper DOT description.

The "RQ" is based on the amount of a reportable quantity material present in an individual container (i.e., drummed loads) or the amount on each individual vehicle if the waste is not containerized (i.e., bulk shipments such as roll-offs or dumps).

Using the waste arsenic trioxide example, this material has an "RQ" value of 5000 pounds. This value is listed in the DOT Hazardous Materials table. If the waste is packaged in a standard 55 gallon container, the 5000 pound "RQ" value will not be exceeded. Since a drum is a relatively small container, it is impossible that the 5000 pound limit could be reached. Even if 60 drums are on the shipment, the "RQ" value only applies to a single container. Therefore, in this example, the letters "RQ" should not appear on the EPA Hazardous Waste label or on the Uniform Hazardous Waste Manifest, as part of the DOT description.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
NC 6170022580

Manifest Document No.
000001

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

4. Generator's Phone (919) 451-8579

5. Transporter 1 Company Name

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

10. US EPA ID Number

A. State Manifest Document Number

B. State Generator's ID
NC6170022580

C. State Transporter's ID

(D) Transporter's Phone

E. State Transporter's ID

(F) Transporter's Phone

G. State Facility's ID

(H) Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

13. Total Quantity

14. Unit Wt/Vol

15. Waste No.

HM	No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
a.					
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Waste Listed Above

15. Special Handling Instructions and Additional Information

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 governmental 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

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

19. Discrepancy Indication Space

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

ORIGINAL — RETURN TO GENERATOR

U.S. EPA Form 8700-22

Read all instructions before completing this form.

This form has been designed for use on a 12-pitch (elite) typewriter, a firm point pen may also be used — press down hard.

Federal regulations require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage, and disposal facilities to use this form (8700-22) and, if necessary, the continuation sheet (Form 8700-22A) for both inter- and intrastate transportation.

Federal regulations also require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage and disposal facilities to complete the following information:

GENERATORS

Item 1. Generator's U.S. EPA ID Number — Manifest Document Number

Enter the generator's U.S. EPA twelve digit identification number and the unique five digit number assigned to this Manifest (e.g., 00001) by the generator.

Item 2. Page 1 of —

Enter the total number of pages used to complete this Manifest, i.e., the first page (EPA Form 8700-22) plus the number of Continuation Sheets (EPA Form 8700-22A), if any.

Item 3. Generator's Name and Mailing Address

Enter the name and mailing address of the generator. The address should be the location that will manage the returned Manifest forms.

Item 4. Generator's Phone Number

Enter a telephone number where an authorized agent of the generator may be reached in the event of an emergency.

Item 5. Transporter 1 Company Name

Enter the company name of the first transporter who will transport the waste.

Item 6. U.S. EPA ID Number

Enter the U.S. EPA twelve digit identification number of the first transporter identified in item 5.

Item 7. Transporter 2 Company Name

If applicable, enter the company name of the second transporter who will transport the waste. If more than two transporters are used to transport the waste, use a Continuation Sheet(s) (EPA Form 8700-22A) and list the transporters in the order they will be transporting the waste.

Item 8. U.S. EPA ID Number

If applicable, enter the U.S. EPA twelve digit identification number of the second transporter identified in item 7.

Note.—If more than two transporters are used, enter each additional transporter's company name and U.S. EPA twelve digit identification number in items 24-27 on the Continuation Sheet (EPA Form 8700-22A). Each Continuation Sheet has space to record two additional transporters. Every transporter used between the generator and the designated facility must be listed.

Item 9. Designated Facility Name and Site Address

Enter the company name and site address of the facility designated to receive the waste listed on this Manifest. The address must be the site address, which may differ from the company mailing address.

Item 10. U.S. EPA ID Number

Enter the U.S. EPA twelve digit identification number of the designated facility identified in item 9.

Item 11. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number (UN/NA))

Enter the U.S. DOT Proper Shipping Name, Hazard Class, and ID Number (UN/NA) for each waste as identified in 49 CFR 171 through 177.

Note.—If additional space is needed for waste descriptions, enter these additional descriptions in item 28 on the Continuation Sheet (EPA Form 8700-22A).

Item 12. Containers (No. and Type)

Enter the number of containers for each waste and the appropriate abbreviation from Table I (below) for the type of container.

Table I — Types of Containers

DM = Metal drums, barrels, kegs	CY = Cylinders
DW = Wooden drums, barrels, kegs	CM = Metal boxes, cartons, cases (including roll-offs)
DF = Fiberboard or plastic drums, barrels, kegs	CW = Wooden boxes, cartons, cases
TP = Tanks portable	CF = Fiber or plastic boxes, cartons, cases
TT = Cargo tanks (tank trucks)	BA = Burlap, cloth, paper or plastic bags
TC = Tank cars	
DT = Dump truck	

Item 13. Total Quantity

Enter the total quantity of waste described on each line.

Item 14. Unit (Wt./Vol.)

Enter the appropriate abbreviation from Table II (below) for the unit of measure.

Table II — Units of Measure

G = Gallons (liquids only)	L = Liters (liquids only)
P = Pounds	K = Kilograms
T = Tons (2000 lbs)	M = Metric tons (1000 kg)
Y = Cubic yards	N = Cubic meters

Item 15. Special Handling Instructions and Additional Information

Generators may use this space to indicate special transportation, treatment, storage, or disposal information or Bill of Lading information. States may not require addi-

tional, new, or different information in this space. For international shipments, generators must enter in this space the point of departure (City and State) for those shipments destined for treatment, storage, or disposal outside the jurisdiction of the United States.

Item 16. Generator's Certification

The generator must read, sign (by hand), and date the certification statement. If a mode other than highway is used, the word "highway" should be lined out and the appropriate mode (rail, water, or air) inserted in the space below. If another mode in addition to the highway mode is used, enter the appropriate additional mode (e.g., and rail) in the space below.

Primary exporters shipping hazardous wastes to a facility located outside of the United States must add to the end of the first sentence of the certification the following words "and conforms to the terms of the EPA Acknowledgment of Consent to the shipment."

In signing the waste minimization certification statement, those generators who have not been exempted by statute or regulation from the duty to make a waste minimization certification under section 3002(b) of RCRA are also certifying that they have complied with the waste minimization requirements.

Generators may preprint the words "On behalf of" in the signature block or may hand write this statement on the signature block prior to signing the generator certifications.

Note.—All of the above information except the handwritten signature required in item 16 may be preprinted.

TRANSPORTERS

Item 17. Transporter 1 Acknowledgement of Receipt of Materials

Enter the name of the person accepting the waste on behalf of the first transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Item 18. Transporter 2 Acknowledgement of Receipt of Materials

Enter, if applicable, the name of the person accepting the waste on behalf of the second transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Note.—International Shipments — Transporter Responsibilities.

Exports.—Transporters must sign and enter the date the waste left the United States in item 15 of Form 8700-22.

Imports.—Shipments of hazardous waste regulated by RCRA and transported into the United States from another country must upon entry be accompanied by the U.S. EPA Uniform Hazardous Waste Manifest. Transporters who transport hazardous waste into the United States from another country are responsible for completing the Manifest (40 CFR 263.10(c)(1)).

OWNERS AND OPERATORS OF TREATMENT, STORAGE, OR DISPOSAL FACILITIES

Item 19. Discrepancy Indication Space

The authorized representative of the designated (or alternate) facility's owner or operator must note in this space any significant discrepancy between the waste described on the Manifest and the waste actually received at the facility.

Owners and operators of facilities located in unauthorized States (i.e., the U.S. EPA administers the hazardous waste management program) who cannot resolve significant discrepancies within 15 days of receiving the waste must submit to their Regional Administrator (see list below) a letter with a copy of the Manifest at issue describing the discrepancy and attempts to reconcile it (40 CFR 264.72 and 265.72).

Owners and operators of facilities located in authorized States (i.e., those States that have received authorization from the U.S. EPA to administer the hazardous waste program) should contact their State agency for information on State Discrepancy Report requirements.

EPA Regional Administrators

Regional Administrator, U.S. EPA Region I, J.F. Kennedy Fed. Bldg., Boston, MA 02203

Regional Administrator, U.S. EPA Region II, 26 Federal Plaza, New York, NY 10278

Regional Administrator, U.S. EPA Region III, 6th and Walnut Sts., Philadelphia, PA 19106

Regional Administrator, U.S. EPA Region IV, 345 Courtland St., NE., Atlanta, GA 30365

Regional Administrator, U.S. EPA Region V, 230 S. Dearborn St., Chicago, IL 60604

Regional Administrator, U.S. EPA Region VI, 1201 Elm Street, Dallas, TX 75270

Regional Administrator, U.S. EPA Region VII, 324 East 11th Street, Kansas City, MO 64106

Regional Administrator, U.S. EPA Region VIII, 1860 Lincoln Street, Denver, CO 80295

Regional Administrator, U.S. EPA Region IX, 215 Fremont Street, San Francisco, CA 94105

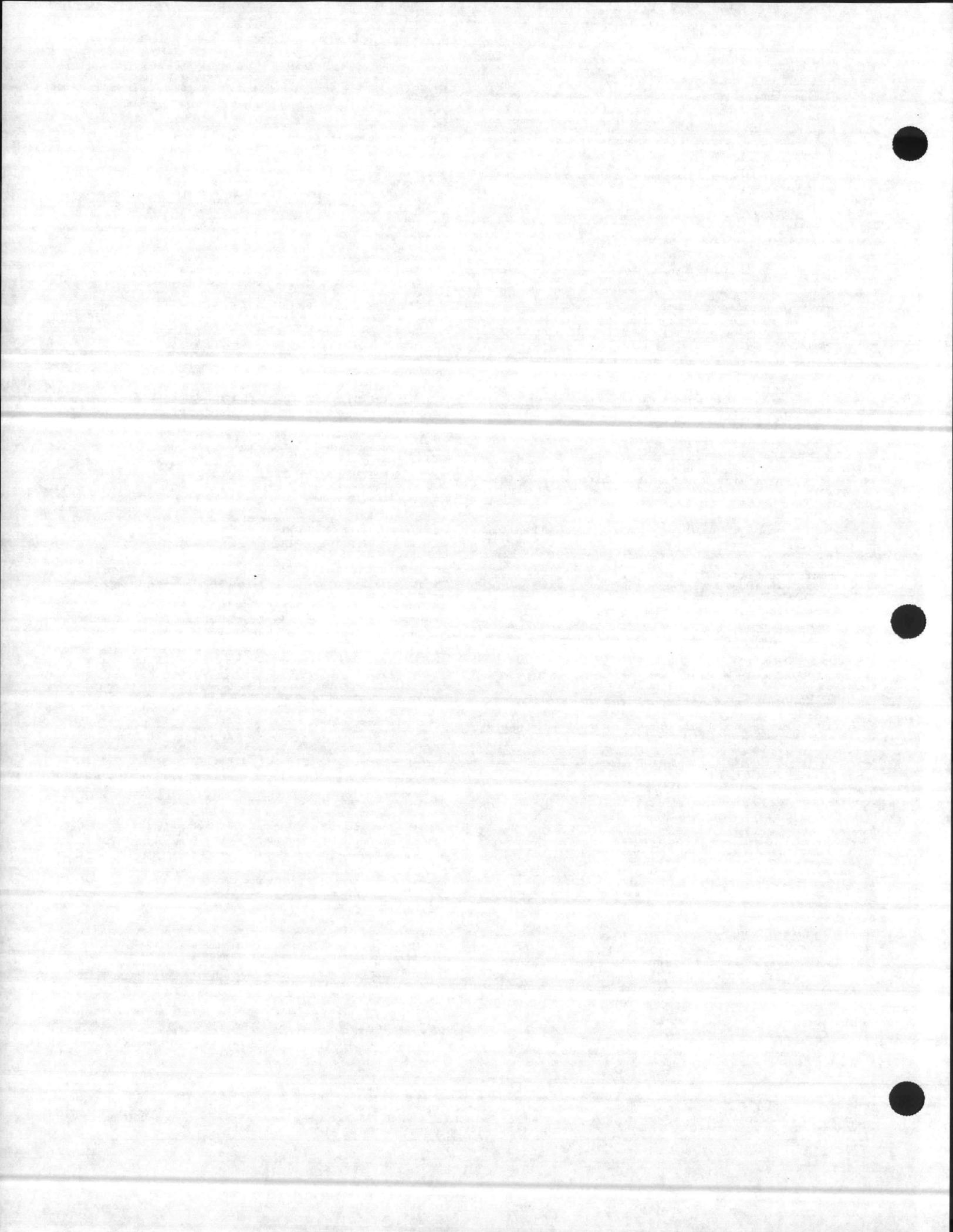
Regional Administrator, U.S. EPA Region X, 1200 Sixth Avenue, Seattle, WA 98101

Item 20. Facility Owner or Operator. Certification of Receipt of Hazardous Materials Covered by This Manifest Except as Noted in Item 19

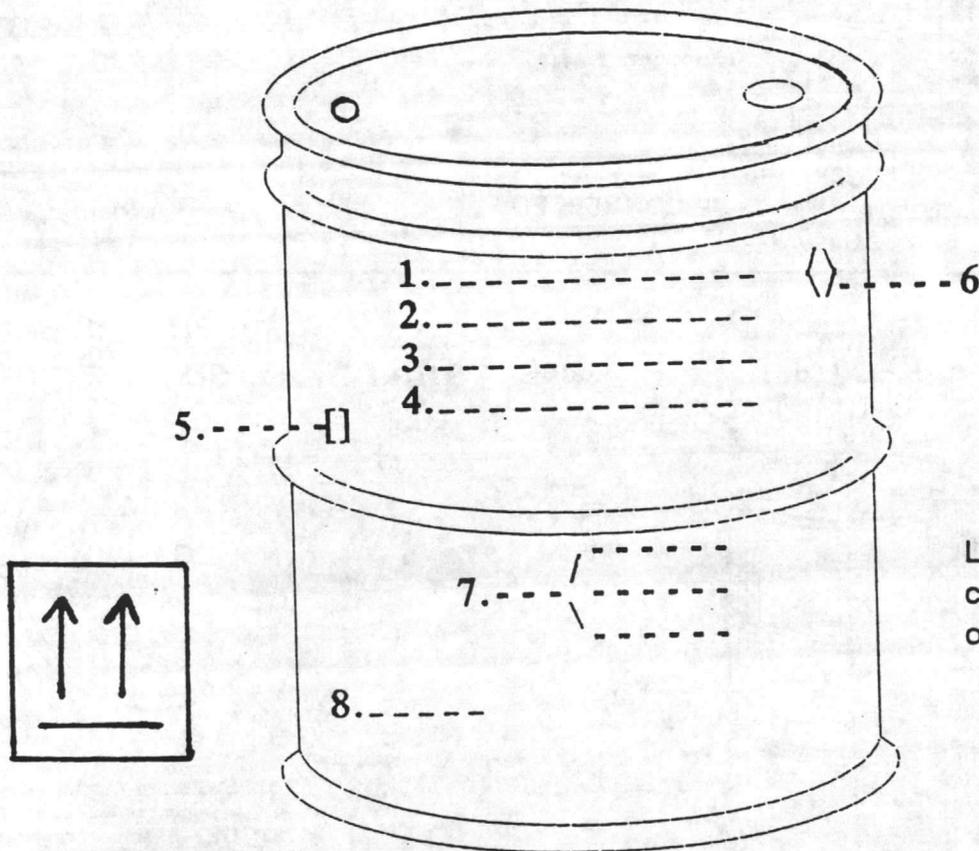
Print or type the name of the person accepting the waste on behalf of the owner or operator of the facility. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Items A-K are not required by Federal regulations for intra- or interstate transportation. However, States may require generators and owners or operators of treatment, storage, or disposal facilities to complete some or all of items A-K as part of State manifest reporting requirements. Generators and owners and operators of treatment, storage, or disposal facilities are advised to contact State officials for guidance on completing the shaded areas of the Manifest.

Public reporting burden for this collection of information is estimated to average 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office Management and Budget, Washington, DC 20503.



PROCEDURES FOR MARKING DRUMS OF
HAZARDOUS WASTE AND HAZARDOUS
MATERIALS FOR DISPOSAL



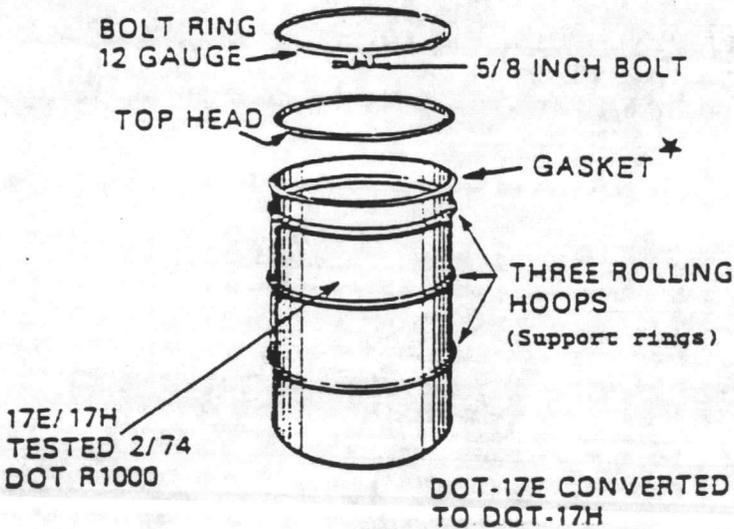
Labeling must be in contrast to the color of the container.

(This symbol is used in only specific cases to indicate container orientation.)

1. DTID = EMD
2. WORDS "HAZARDOUS WASTE" = UNIT
3. CONTENTS (NOUN NAME, MIXTURE) = UNIT
4. ACCUMULATION START DATE = UNIT
5. PACKING ENVELOPE W/#4 COPY 1348 = EMD
6. HAZARD CLASS = EMD
7. EPA WASTE NUMBER = EMD
8. NUMBER OF CONTAINERS = UNIT

EXAMPLE

M67001 3333 011
HAZARDOUS WASTE
ENAMEL PAINT WITH 5%
DRY CLEANING SOLVENT
4 OCT 1993
FLAMMABLE
D001, D002
1-3 OR 1 OF 3



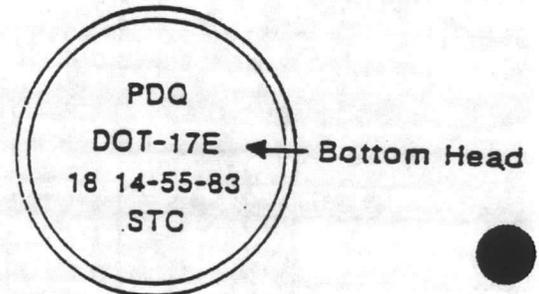
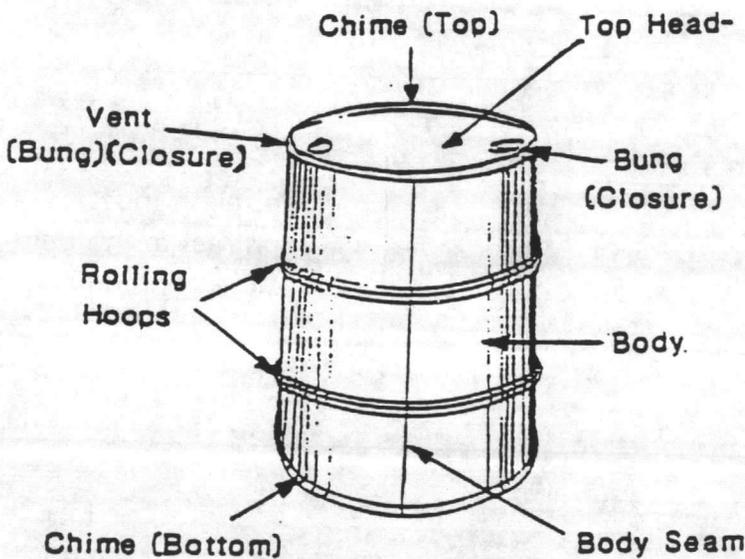
NOTE: OTHER TERMINOLOGY MAY APPLY FOR DRUM TYPES

DOT 17H:

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

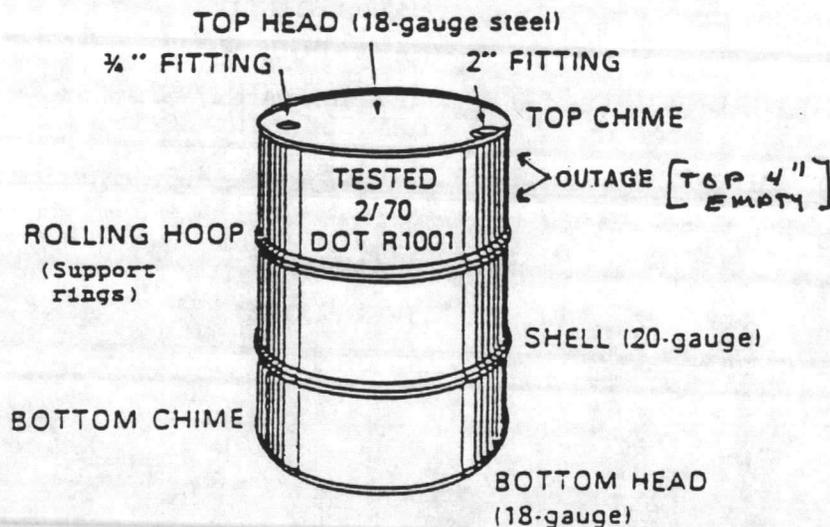
* Not required by DOT

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

Safe Container Management, continued

Table 3-2

CONTAINER MANAGEMENT	
<u>DO</u>	DON'T
Ensure containers meet turn-in requirements (especially non-leaking and having no visible residue) before you accept them.	Open containers without specific authorization to do so.
	Store drums on bare ground or allow water to collect on their lids.
Make sure containers are marked/labeled correctly.	Expose drums to sunlight/heat sufficient to cause extreme pressure build-up (bulging).
Keep adequate aisle space.	Drop, bash, or rupture containers through careless handling.
Inspect containers regularly.	Stack containers in such a way they are likely to fall or damage the bottom container.
When you find signs of damage or corrosion, request repackaging <u>before</u> container leaks.	
Report all spills/leaks immediately.	
Use drum handling equipment whenever moving drums.	
If you must move drums by hand, use techniques described in your safety manual.	
Inspect and use only pallets in good condition.	

**UPDATE ON HAZARDOUS
MATERIAL LABELS**

In 1991, OASD issued a policy statement that hazardous material turned in to DRMOs for reissue, sale, or donation would be marked with the Hazard Communication Standard compliance label required by the Occupational Safety and Health Administration (OSHA). The Defense Reutilization & Marketing Service (DRMS) directed the implementation of this policy by DRMS Letter 91-6 of 24 June 1991. Some DRMOs have not enforced this requirement until now. DRMO Norfolk will be enforcing the requirement immediately. If your DRMO is not enforcing the requirement, expect it to do so in the near future.

The labels may be printed using the Hazardous Material Information System (HMIS). Other options include ordering the forms through the supply system or painting the required information on the container. Without the label, DRMOs will not accept the material to be redistributed.

If you do not have HMIS, or if the product is not in HMIS, the Manufacturer's Material Safety Data Sheet should be used to obtain the information required. Do not attempt to fill in the section marked "Specific Hazards and Precautions (including Target Organ Effects)". The only information required in these cases is (a) chemical names (b) hazards (such as for PD-680 health - severe hazard, contact - moderate hazard, fire - moderate hazard, and reactivity - no hazard), and (c) manufacturer's name and address. Blank labels may be ordered through supply. For size 8 1/2" x 11" labels use NSN 0102-LF-012-0800 and for 1/4 size label use NSN 0102-LF-1100.1.

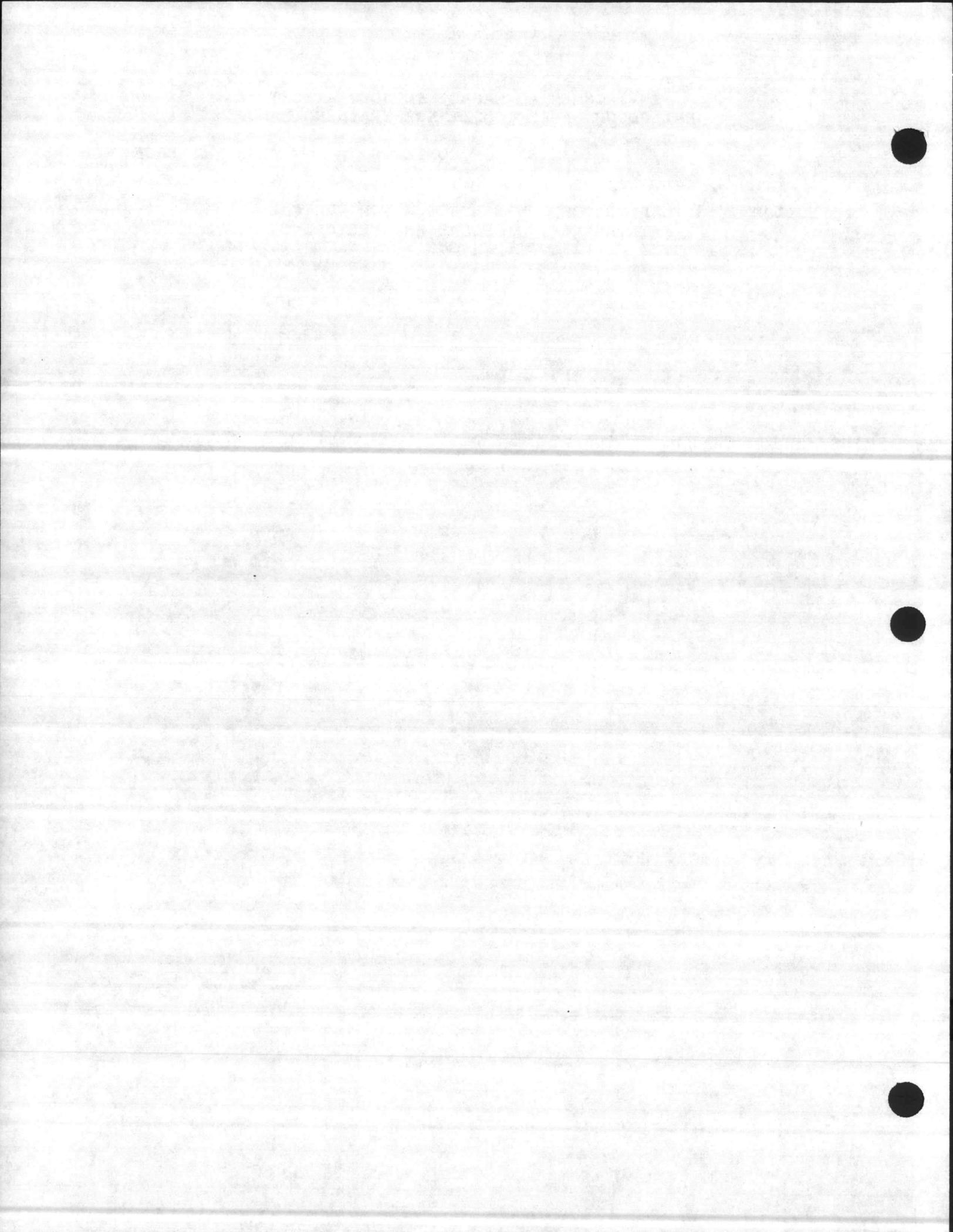
These requirements do not apply to hazardous waste. Hazardous material turned in without the label will be treated as hazardous waste, and you will be required to pay for its disposal. While DRMO also charges for turning in hazardous material, the liability and the cost will not be as great if they are able to sell, donate, or reuse the material rather than dispose of it as waste.

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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ENVIRONMENTAL MANAGEMENT DEPARTMENT (EMD)
FLOW CHART FOR PROPER DISPOSAL PROCEDURES

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

- Ref: (a) CG MCB Message 300203Z JUN 93: Disposal of Used
Wet Cell Batteries
(b) CG MCB Message 021621Z DEC 87: Mandatory Time
Limitations for Hazardous Waste Storage
(c) EMD Flow Chart for Use/Disposal of Hazardous
Material/Hazardous Waste (HM/HW)
(d) Hazardous Waste Profile Sheet (HWPS) for Used
Electrolyte
(e) Video: EMD #1, ACID BATTERY 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,
"NON-LEAKING"

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 RE-
MOVING BATTERY FROM THE VEHICLE

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

7. OTHER 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 A SATELLITE ACCUMULATION
AREA IS REQUIRED TO HANDLE LOW LEVEL RATE OF GENERATION

EMD FLOW CHART FOR PROPER DISPOSAL PROCEDURES

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

STEP

PROCEDURES

- 10a. IF REGULAR ACCUMULATION: DISPOSE IN ACCORDANCE WITH 90 DAY STORAGE LIMITATIONS, REF A AND B
- 10b. IF LOW LEVEL ACCUMULATION: LOOK TO CONSOLIDATION OF SITES OR APPLY TO EMD FOR A SATELLITE ACCUMULATION AREA

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. CONTAINER LABELING: HAZARDOUS WASTE (ON TOP LINE)
CONTENTS:
ACCUMULATION START DATE:
DOT SHIPPING NAME: WASTE BATTERY FLUID ACID

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

13. DISPOSAL OF BATTERY CASINGS:

13a. "LEAKERS"

FROM 5d.
13b. "NON-LEAKERS"

- A. BATTERIES SHALL BE STORED UPRIGHT AT ALL TIMES.
- B. BATTERIES OF THE SAME HEIGHT WILL BE STORED ON PALLET
- C. BATTERIES WILL BE STACKED ONE LAYER HIGH AND COVERED WITH 1/2 INCH THICK (7/16 FINISHED) PLYWOOD, SAME DIMENSIONS AS PALLET (40 X 48, 4-WAY 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.

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF AUGUST 1992

For U.S. Government Use Only

FSC: 6810

NIIN: 007534785

Manufacturer's CAGE: 62910

Part No. Indicator: A

Part Number/Trade Name: SULFURIC ACID 96%

=====
General Information
=====

Item Name: SULFURIC ACID, ACS

Manufacturer's Name: MALLINCKRODT INC

Manufacturer's Street: PARIS BYPASS

Manufacturer's P. O. Box: M

Manufacturer's City: PARIS

Manufacturer's State: KY

Manufacturer's Country: US

Manufacturer's Zip Code: 40361

Manufacturer's Emerg Ph #: 314-982-5000

Manufacturer's Info Ph #: 606-987-7000

Distributor/Vendor # 1:

Distributor/Vendor # 1 Cage:

Distributor/Vendor # 2:

Distributor/Vendor # 2 Cage:

Distributor/Vendor # 3:

Distributor/Vendor # 3 Cage:

Distributor/Vendor # 4:

Distributor/Vendor # 4 Cage:

Safety Data Action Code:

Safety Focal Point: N

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 002

Status: SMJ

Date MSDS Prepared: 21OCT86

Safety Data Review Date: 17JAN91

Supply Item Manager: S9M

MSDS Preparer's Name:

Preparer's Company:

Preparer's St Or P. O. Box:

Preparer's City:

Preparer's State:

Preparer's Zip Code:

Other MSDS Number:

MSDS Serial Number: BJSGR

Specification Number:

Spec Type, Grade, Class:

Hazard Characteristic Code:

Unit Of Issue:

Unit Of Issue Container Qty:

Type Of Container:

Net Unit Weight:

NRC/State License Number:

Net Explosive Weight:

Net Propellant Weight-Ammo:

Coast Guard Ammunition Code:

=====

Ingredients/Identity Information

=====

Proprietary: NO
Ingredient: SULFURIC ACID (SARA III)
Ingredient Sequence Number: 01
Percent: 96
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: WS5600000
CAS Number: 7664-93-9
OSHA PEL: 1 MG/M3
ACGIH TLV: 1 MG/M3; 9192
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: VENT:PREFERRED BECAUSE IT CAN CONTROL EMISSIONS OF CONTAMINANT
AT ITS SOURCE, PREVENT DISPERSION OF IT INTO GEN (ING 3)
Ingredient Sequence Number: 02
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: 9999999ZZ
CAS Number: N/K
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: WORK AREA.REFER TO ACGIH DOCUMENT,"INDUSTRIAL VENT, A MANUAL
OF RECOMMENDED PRACTICES", MOST RECENT EDITION, (ING 4)
Ingredient Sequence Number: 03
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: 9999999ZZ
CAS Number: N/K
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: FOR DETAILS.RESP PROT:W/HOOD MAY BE WORN.OTHER PROT EQUIP:
MAINTAIN EYE WASH FOUNTAIN & QUICK-DRENCH FACIL IN WORK(ING 5)
Ingredient Sequence Number: 04
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: 9999999ZZ
CAS Number: N/K
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: AREA.EMER EYE WASH & DELUGE SHOWER IN IMME AREA OF USE.SUP
DAT:FORM POISON HYDROGEN CYANIDE & HYDROGEN SULFIDE RESPECT.

Ingredient Sequence Number: 05
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: 9999999ZZ
CAS Number: N/K
OSHA PEL: N/K
ACGIH TLV: N/K
Other Recommended Limit: N/K

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: COLORLESS, OILY LIQUID; ODORLESS.
Boiling Point: 590F, 310C
Melting Point: 7F, -14C
Vapor Pressure (MM Hg/70 F): 1 @ 146C
Vapor Density (Air=1): <0.3 @ 25C
Specific Gravity: 1.84
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: INFINITE @ 20C
Percent Volatiles By Volume: N/K
Viscosity:
pH: N/K
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:

=====

Fire and Explosion Hazard Data

=====

Flash Point: N/K
Flash Point Method: N/K
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: DRY CHEMICAL, FOAM OR CARBON DIOXIDE. WATER SPRAY MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL.
Special Fire Fighting Proc: USE NIOSH/MSHA APPRVD SCBA W/FULL FACEPIECE OPERATED IN PRESS DEMAND/OTHER POS PRESS MODE & FULL PROT CLTHG. NOT COMBUST BUT SUBSTANCE IS STRONG (SEE SUPP DATA)
Unusual Fire And Expl Hazrds: NOT COMBUSTIBLE, BUT SUBSTANCE IS A STRONG OXIDIZER AND ITS HEAT OF REACTION WITH REDUCING AGENTS OR COMBUSTIBLES MAY CAUSE IGNITION.

=====

Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): HEAT
Materials To Avoid: WATER, BASES, ORG MATL, HALOGENS, METAL ACETYLIDES, OXIDES & HYDRIDES, STRONG OXIDIZING/REDUCING AGENTS (SEE SUPP DATA)
Hazardous Decomp Products: TOXIC FUMES OF OXIDES OF SULFUR. WILL REACT W/WATER OR STEAM TO PRODUCE TOXIC & CORROSIVE FUMES. REACTS (SEE SUPP DATA)
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NOT RELEVANT

Health Hazard Data

LD50-LC50 Mixture: LD50:(ORAL) 2140 MG/KG (RAT)

Route Of Entry - Inhalation: YES

Route Of Entry - Skin: NO

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: INHAL:PRODUCES DAMAGING EFFECTS ON MUC MEMB & UPPER RESP TRACT. MAY CAUSE LUNG EDEMA. SYMPS MAY INCLUDE IRRIT OF NOSE & THROAT & LABORED BRTHG. INGEST:CORR. CAN CAUSE SEVERE BURNS OF MOUTH, THROAT & STOMACH, LEADING TO DEATH. CAN CAUSE SORE THROAT, VOMITING, DIARRHEA. SKIN:CORR. SYMPS OF REDNESS, (SEE EFTS OF OVEREXP)

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

Explanation Carcinogenicity: NOT RELEVANT

Signs/Symptoms Of Overexp: HLTH HAZ:PAIN & SEVERE BURN CAN OCCUR. EYE: IRR. SPLASHES CAN CAUSE BLURRED VISION, REDNESS, PAIN & SEVERE TISSUE BURNS. CHRONIC:LONG-TERM EXPOS TO MIST OR VAPORS MAY CAUSE DAMAGE TO TEETH. Med Cond Aggravated By Exp: PRE-EXISTING SKIN DISORDERS OR EYE PROBLEMS OR IMPAIRED RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE.

Emergency/First Aid Proc: INHAL:REMOVE TO FRESH AIR. IF NOT BRTHG, GIVE RTF RESP. IF BRTHG DFCLT, GIVE O*2. CALL MD. INGEST:DO NOT INDUCE VOMITING. GIVE LG QTYS OF WATER/MILK IF AVAILABLE. CALL MD IMMED. NEVER GIVE ANYTHING BY MOUTH TO UNCON PERSON. SKIN:IMMED FLUSH W/PLENTY OF WATER OR AT LEAST 15 MIN WHILE REMOVING CONTAM CLTHG/SHOES. CALL MD. EYE:WASH W/PLENTY OF WATER FOR AT LEAST 15 MIN, LIFTING LIDS. GET MD IMMED.

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: DIKE & COVER LEAKING OR SPILLED LIQ W/DIRT, VERMICULITE, KITTY-LITTER OR OTHER INERT ABSORBENT. COVER SPILL W/SODIUM BICARBONATE OR SODA ASH & MIX. CLEAN-UP PERSONNEL REQUIRE PROT CLTHG & NIOSH/MSHA APPRVD RESP PROT FROM VAPS & MISTS.

Neutralizing Agent: SODIUM BICARBONATE, SODA ASH.

Waste Disposal Method: NEUTRALIZED WASTE MAY BE CONTAINERIZED & DISPOSED IN RCRA APPROVED WASTE DISPOSAL FACILITY I/A/W FEDERAL, STATE AND LOCAL REGULATIONS. FLUSH AREA OF SPILL W/DILUTE SODA ASH & DISCARD TO SEWER. REPORTABLE QTY:1000 LBS.

Precautions-Handling/Storing: STORE IN COOL, DRY, VENT STORAGE AREA W/ACID RESISTANT FLOORS & GOOD DRAINAGE. PROT FROM PHYSICAL DMG. KEEP OUT OF DIRECT SUNLIGHT (SEE OTHER PREC)

Other Precautions: HNDLG/STOR PREC:AND AWAY FROM HEAT, WATER AND INCOMPATIBLE MATERIALS. DO NOT WASH OUT CONTAINER AND USE IT FOR OTHER PURPOSES. WHEN DILUTING, ALWAYS ADD ACID TO WATER, NEVER ADD WATER TO ACID.

Control Measures

Respiratory Protection: IF TLV IS EXCEEDED, NIOSH/MSHA APPRVD FULL FACEPIECE CHEM CARTRIDGE RESP MAY BE WORN, IN GEN, UP TO 100 TIMES TLV OR MAXIMUM USE CONC SPECIFIED BY RESP SUPPLIER, WHICHEVER IS LESS. AIRLINE RESP W/FULL FACEPIECE/AIRLINE RESP (SEE INGRED 4)

Ventilation: LOCAL &/OR GEN EXHST IS RECOMM TO KEEP EXPOS BELOW AIRBORNE EXPOS LIMITS. LOCAL EXHST VENT IS GENERALLY (SEE INGRED 2)

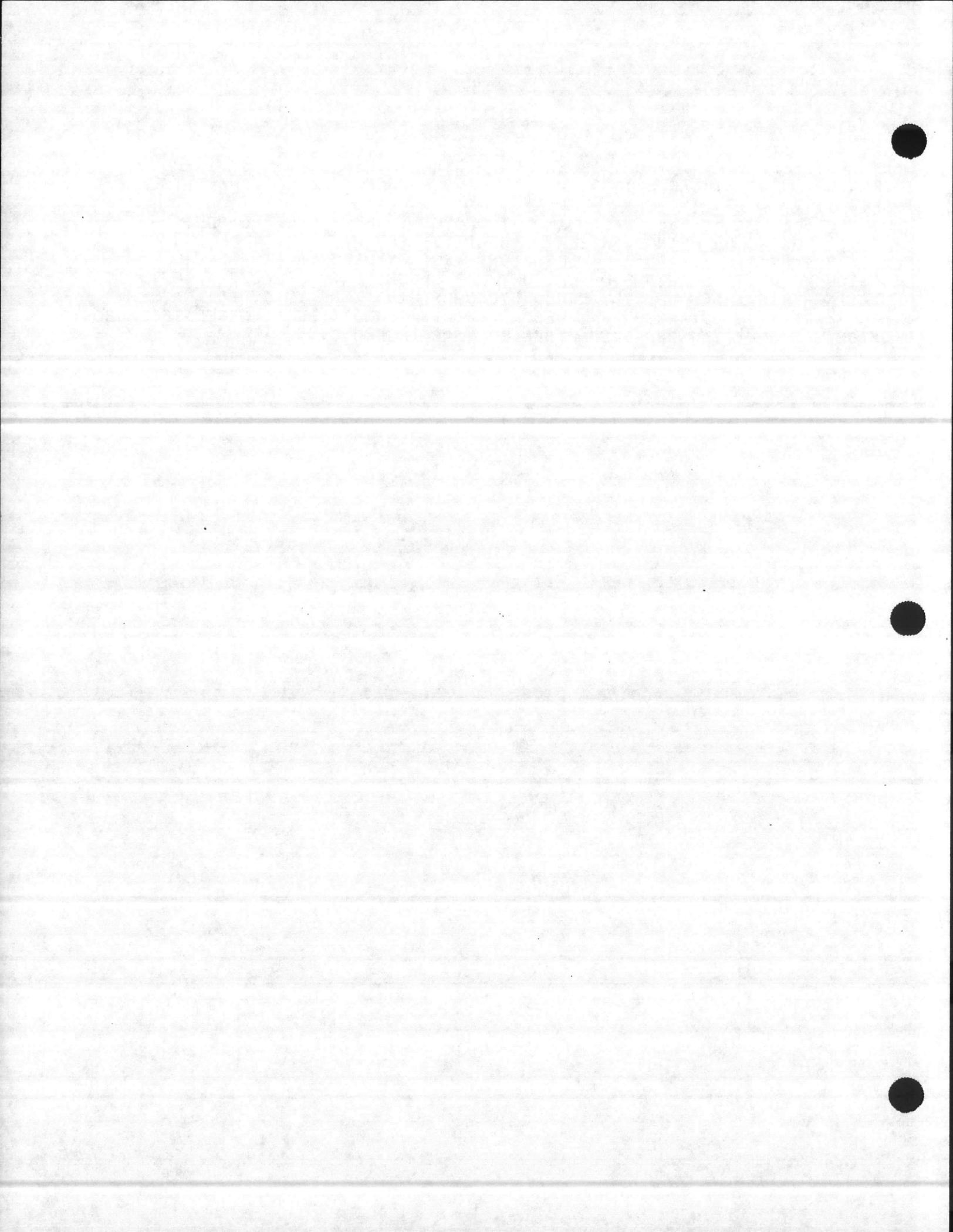
Protective Gloves: IMPERVIOUS GLOVES.

Eye Protection: CHEM WORKERS GOGGLES/FACESHLD OPT (FP N)

Other Protective Equipment: IMPERVIOUS CLTHG, BOOTS, LAB COAT, APRON/
COVERALLS. CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING W/MATL.(SEE
INGRED 4)

Work Hygienic Practices: WASH HANDS THOROUGHLY AFTER USE AND BEFORE
EATING, SMOKING OR USING SANITARY FACILITIES (FP N).

Suppl. Safety & Health Data: FIRE FIGHT PROC:OXIDIZER & ITS HEAT OF
REACTION W/REDUCING AGENTS OR COMBUST MAY CAUSE IGNIT. REACTS W/MOST METALS
RELEASING FLAMMABLE, POTNTLY EXPLO HYDROGEN GAS. MTLs TO AVOID:AND MANY
OTHER REACTIVE SUBSTANCES. HAZ DECOMP PROD:W/CARBONATES TO GENERATE CARBON
DIOXIDE GAS & W/CYANIDES & SULFIDES TO (SEE INGRED 5)



HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 001 (580AL078)
Marine Corps Base, Camp Lejeune
1. GENERATOR NAME
2. FACILITY ADDRESS
North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID
NC 6170022580
4. GENERATOR STATE ID
same
6. TECHNICAL CONTACT
Mr. John Riggs
7. TITLE
Env. Control Spec.
PHONE
919, 451-1482

- B. 1. NAME OF WASTE** Spent Sulfuric Acid
2. USEPA/or/STATE WASTE CODE(S) D002, D004-D011 (only waste codes that apply will be manifested)
3. PROCESS GENERATING WASTE Electrolyte drained from wet cell batteries
4. PROJECTED ANNUAL VOLUME/UNITS unknown / lbs **5. MODE OF COLLECTION** poly containers
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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)

COLOR Clear to Dirty
DENSITY _____ **BTU/LB** <1000
TOTAL SOLIDS <1% **ASH CONTENT** <1%
PACKAGING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER
TREATMENT GROUP: WASTEWATER NON-WASTEWATER
 IGNITABLE (D001) > 200° REACTIVE (D003)
 FLASH POINT (F) > 200° WATER REACTIVE
 HIGH TOC (> 10%) CYANIDE REACTIVE
 LOW TOC (< 10%) SULFIDE REACTIVE
 CORROSIVE (D002) pH < 2 TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)
 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)

COPPER < 1 **PHENOLICS** N/A
NICKEL < 1 **TOTAL HALOGENS** N/A
ZINC < 1 **VOLATILE ORGANICS** N/A
CHROMIUM-HEX N/A **PCBs** N/A
(OTHER) N/A

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Sulfuric Acid		5-40%
Water		60-95%
TOTAL	100	100%

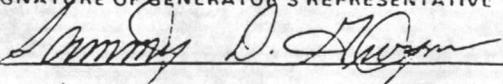
5. SHIPPING INFORMATION

DOT HAZARDOUS MATERIAL? YES NO
PROPER SHIPPING NAME Waste Sulfuric Acid, Spent
Label: Corrosive
HAZARD CLASS 8 **U.N. or N.A. NO.** UN 1832
ADDITIONAL DESCRIPTION PGII
METHOD OF SHIPMENT BULK DRUM OTHER: _____
CERCLA REPORTABLE QUANTITY (RQ) 1 lb
EMERGENCY RESPONSE GUIDE PAGE _____
DOT PUBLICATION 5800.4 **PAGE NO.** 39 **EDITION (YR)** 1990
SPECIAL HANDLING INFORMATION Causes Severe Skin Burns

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION

CHEMICAL ANALYSIS (ATTACH TEST RESULTS)
 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) MSDS, 49CFR, Chemical Dictionary
Sammy D. Gwynn HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE



233

DATE

6 DEC 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input checked="" type="checkbox"/> ARSENIC	D004	< 10	<input type="checkbox"/> HEXACHLORO-1,3.-BUTADIENE	D033	
<input checked="" type="checkbox"/> BARIUM	D005	< 200	<input type="checkbox"/> HEXACHLOROETHANE	D034	
<input type="checkbox"/> BENZENE	D018		<input checked="" type="checkbox"/> LEAD	D008	< 5000
<input checked="" type="checkbox"/> CADMIUM	D006	< 15	<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input checked="" type="checkbox"/> MERCURY	D009	< 3
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input checked="" type="checkbox"/> CHROMIUM	D007	< 250	<input type="checkbox"/> PENTACHLOROPHENOL	D037	
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024		<input checked="" type="checkbox"/> SELENIUM	D010	< 10
<input type="checkbox"/> P-CRESOL	D025		<input checked="" type="checkbox"/> SILVER	D011	< 25
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

PART III



UNITED STATES MARINE CORPS

MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

IN REPLY REFER TO:

6240/1

BEMD

15 APR 1994

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: PROCEDURES FOR DISPOSAL OF USED OIL FILTERS

Ref: (a) Federal Register, Volume 57, No 98, 20 May 92
(b) CG MCB Camp Lejeune msg R 011516Z Jul 92
(c) PHONCON MCB Camp Lejeune (EMD) Mr. Riggs/DGSC,
Richmond, Ms. Howell of 15 Mar 94
(d) PHONCON MCB Camp Lejeune (EMD) Mr. Riggs/DGSC-HTIS,
Richmond, Mr. Hanif of 15 Mar 94
(e) PHONCON MCB Camp Lejeune (EMD) Mr. Riggs/NCDEHNR Mr.
Holyfield of 22 Mar 94

Encl: (1) Manufacturers of Non-Terne Plated Oil Filters

1. This correspondence provides updated management requirements for used oil filters. Reference (a) identified Environmental Protection Agency requirements to drain all used oil filters and manage terne-plated items as a hazardous waste. Reference (b) provided interim guidance on disposal of used oil filters required for compliance with reference (a). References (c) and (d) confirmed that the Defense General Supply Center, the Defense Construction Supply Center, and the Hazardous Materials Minimization Program personnel have surveyed the suppliers and contractors for identification of existing terne-plated filter stocks and have removed them from their inventories. Further discussion indicates that member companies of the Filter Manufacturers Council (FMC) provided as the enclosure, have eliminated terne-plating from their manufacturing processes effective 1 January 1993. It is important to note that foreign filter manufacturers are not represented in the FMC. Reference (e) reinforced the requirement to pursue hazardous waste minimization and affirmed State support for this hazardous waste minimization effort.

2. Effective 1 May 1994, the following procedures will be implemented:

a. Each used oil filter will have the dome or anti-drain back valve punctured and will be drained for a minimum of 12 hours. Residual oil will be placed into shop used oil collection tanks/drums. Filters which readily leak residual oil when picked up by hand or equipment are not considered properly drained and must be drained for an additional period.

b. Filters manufactured by companies noted on the enclosure will be disposed of into the unit/organizational solid waste dumpster immediately upon completion of the draining process and no longer processed as a hazardous waste.

Subj: PROCEDURES FOR DISPOSAL OF USED OIL FILTERS

c. Filters manufactured by foreign companies or manufacturers not identified on the enclosure will be properly drained and will be placed into a Type 17H open-head 55-gallon drum or other appropriate Department of Transportation container. The container will be marked as "Used Oil Filters, Waste Determination Pending". Organizations will request waste determination assistance utilizing the existing request procedures through the Environmental Management Department.

3. Environmental Management Department personnel will assist Base Hazardous Material Disposal Officers and tenant command Hazardous Material Disposal Coordinators with appropriate disposal guidelines in the event terne-plated filters are identified. Reference (b) is superseded by this correspondence. Implementation of the aforementioned procedures will reduce hazardous waste generation by approximately 29,000 pounds annually and will eliminate burdensome hazardous waste storage, management, and disposal requirements for the subject waste stream.

4. Point of contact is Mr. John Riggs, Environmental Compliance Division, Environmental Management Department, at extension 1482.



ROBERT L. WARREN
By direction

Distribution:

CG, II MEF (G-4)
CG, 2d MarDiv (G-4 HMDC)
CG, 2d FSSG (G-4 HMDC)
CO, 2d SRIG (G-4 HMDC)
AC/S EMD (HMDC)
AC/S Log
Chief, DRMO

Copy to:
CO, MCAS NR
COMCABEAST

HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 280 (580DS054)

Marine Corps Base, Camp Lejeune

1. GENERATOR NAME
2. FACILITY ADDRESS

North Carolina

 5. ZIP CODE
28542

3. GENERATOR USEPA ID

NC 6170022580

4. GENERATOR STATE ID

same

6. TECHNICAL CONTACT

Mr. John Riggs

7. TITLE

Env. Control Spec.

PHONE

(919) 451-1482

B. 1. NAME OF WASTE Drained Filter
2. USEPA/or/STATE WASTE CODE(S) D018, D004-D011 (only codes that apply will manifested)
3. PROCESS GENERATING WASTE Filter from vehicles and other equipment
4. PROJECTED ANNUAL VOLUME/UNITS unknown / 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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)

 COLOR _____
 DENSITY _____ BTU/LB _____
 TOTAL SOLIDS _____ ASH CONTENT _____
 LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

 PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER

 TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001) REACTIVE (D003)
 FLASH POINT (F) _____
 HIGH TOC (> 10%) WATER REACTIVE
 LOW TOC (< 10%) CYANIDE REACTIVE
 SULFIDE REACTIVE

 CORROSIVE (D002) TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)
 pH _____
 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)

 COPPER N/A PHENOLICS N/A
 NICKEL N/A TOTAL HALOGENS N/A
 ZINC N/A VOLATILE ORGANICS N/A
 CHROMIUM-HEX N/A PCBs N/A
 (OTHER) _____

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Residuel oil, gas		1-2%
Filter: Cardboard, Paper, Plastic, Metal Screens		60-70%
Casing: Metal		30-40%
TOTAL	100	100%

5. SHIPPING INFORMATION

 DOT HAZARDOUS MATERIAL? YES NO

 PROPER SHIPPING NAME Hazardous Waste Solid N.O.S.

Label: Class 9

 HAZARD CLASS 9 U.N. or N.A. NO. NA 3077

 ADDITIONAL DESCRIPTION PGIII

 METHOD OF SHIPMENT BULK DRUM OTHER: _____

 CERCLA REPORTABLE QUANTITY (RQ) 1 lb

EMERGENCY RESPONSE GUIDE PAGE _____

 DOT PUBLICATION 5800.4 PAGE NO. 31 EDITION (YR) 90

SPECIAL HANDLING INFORMATION _____

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)

 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) MSDS, Chemical Dictionary, 49 CFR

 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL
 (Print or Type Name)

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE

DATE

25 Oct 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input checked="" type="checkbox"/> ARSENIC	D004	< 10	<input type="checkbox"/> HEXACHLORO-1,3-BUTADIENE	D033	
<input checked="" type="checkbox"/> BARIUM	D005	< 150	<input type="checkbox"/> HEXACHLOROETHANE	D034	
<input checked="" type="checkbox"/> BENZENE	D018	< 1000	<input checked="" type="checkbox"/> LEAD	D008	< 200
<input checked="" type="checkbox"/> CADMIUM	D006	< 20	<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input type="checkbox"/> MERCURY	D009	< 1
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input checked="" type="checkbox"/> CHROMIUM	D007	< 50	<input type="checkbox"/> PENTACHLOROPHENOL	D037	
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024		<input checked="" type="checkbox"/> SELENIUM	D010	< 10
<input type="checkbox"/> P-CRESOL	D025		<input checked="" type="checkbox"/> SILVER	D011	< 10
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

PART III

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF AUGUST 1992
For U.S. Government Use Only

FSC: 9150
NIIN: 00D001448
Manufacturer's CAGE: 75273
Part No. Indicator: A
Part Number/Trade Name: L-421 GREASE

=====

General Information

=====

Item Name: GREASE, LUBRICATING
Manufacturer's Name: WITCO CHEMICAL CORP, KENDALL REFINING CO DIV
Manufacturer's Street: 77 N. KENDALL AVE
Manufacturer's P. O. Box: 2000
Manufacturer's City: BRADFORD
Manufacturer's State: PA
Manufacturer's Country: US
Manufacturer's Zip Code: 16701-1726
Manufacturer's Emerg Ph #: 814-368-6111
Manufacturer's Info Ph #: 814-368-6111
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: D
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status:
Date MSDS Prepared: 14NOV85
Safety Data Review Date: 10MAY88
Supply Item Manager: UNK
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BBFFZ
Specification Number: N/K
Spec Type, Grade, Class:
Hazard Characteristic Code: N1
Unit Of Issue: NK
Unit Of Issue Container Qty: N/K
Type Of Container: N/K
Net Unit Weight: N/K
/State License Number:
Explosive Weight:
Net Propellant Weight-Ammo:
Coast Guard Ammunition Code:

=====

Ingredients/Identity Information

=====

Proprietary: NO
Ingredient: PETROLEUM HYDROCARBON
Ingredient Sequence Number: 01
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: D
IOSH (RTECS) Number: 1000099PH
CAS Number:
SHA PEL:
CGIH TLV:
Other Recommended Limit:

Proprietary: NO
Ingredient: LITHIUM STEARATE
Ingredient Sequence Number: 02
Percent: N/K
Ingredient Action Code:
Ingredient Focal Point: D
IOSH (RTECS) Number: WI4370000
CAS Number:
SHA PEL:
CGIH TLV:
Other Recommended Limit:

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: DARK AMBER, SEMI-SOLID GREASE, MINERAL OIL ODOR
Boiling Point: >500F/260C
Melting Point: N/R
Vapor Pressure (MM Hg/70 F): NEG
Vapor Density (Air=1): N/A
Specific Gravity: 0.9-0.95
Decomposition Temperature: N/K
Evaporation Rate And Ref: NEG
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: NEG
Viscosity:
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY):
Autoignition Temperature:

=====

Fire and Explosion Hazard Data

=====

Flash Point: >410F/210C
Flash Point Method: COC
Lower Explosive Limit: N/K
Upper Explosive Limit: N/K
Extinguishing Media: DRY CHEMICAL, WATERFOG, CARBON DIOXIDE, FOAM, SAND/EARTH.
DO NOT USE WATER EXCEPT AS FOG.
Special Fire Fighting Proc: WATER MAY CAUSE FROTHING; EXPOSED MATL COULD BE
DANGERED W/WATER.

Unusual Fire And Expl Hazrds: N/K

=====
Reactivity Data
=====

Stability: YES

Cond To Avoid (Stability): N/K

Materials To Avoid: STRONG OXIDIZERS LIKE HYDROGEN PEROXIDE, BROMINE & CHROMIC ACID.

Hazardous Decomp Products: FROM BURNING-CARBON MONOXIDE, CARBON DIOXIDE.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly):
=====

=====
Health Hazard Data
=====

LD50-LC50 Mixture: N/K

Route Of Entry - Inhalation: N/K

Route Of Entry - Skin: N/K

Route Of Entry - Ingestion: N/K

Health Haz Acute And Chronic: EXTENDED SKIN CONTACT MAY CAUSE DERMATITIS TO SOME INDIVIDUALS.

Carcinogenicity - NTP: N/K

Carcinogenicity - IARC: N/K

Carcinogenicity - OSHA: N/K

Explanation Carcinogenicity:

Signs/Symptoms Of Overexp: EXTENDED SKIN CONTACT MAY CAUSE DERMATITIS TO SOME INDIVIDUALS.

Med Cond Aggravated By Exp: N/K

Emergency/First Aid Proc: EYES-FLUSH W/WATER 15 MIN; CALL PHYSICIAN.

SKIN-REMOVE EXCESS W/CLOTH OR PAPER. WASH THOROUGHLY W/SOAP & WATER. INHAL-REMOVE TO FRESH AIR & CALL DOC. INGEST-GET IMMED MED ATTN.
=====

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: TRANSFER BULK OF MIXTURE INTO ANOTHER CONTAINER. ABSORB RESIDUE W/INERT MATL LIKE EARTH OR SAND. SWEEP UP & DISPOSE OF.

Neutralizing Agent: N/K

Waste Disposal Method: IAW ALL APPLICABLE FED, STATE & LOCAL REGS.

Precautions-Handling/Storing: DO NOT HANDLE OR STORE AT TEMPS OVER 100F/38C.

Other Precautions: N/K
=====

=====
Control Measures
=====

Respiratory Protection: NONE REQD.

Ventilation: NONE REQD.

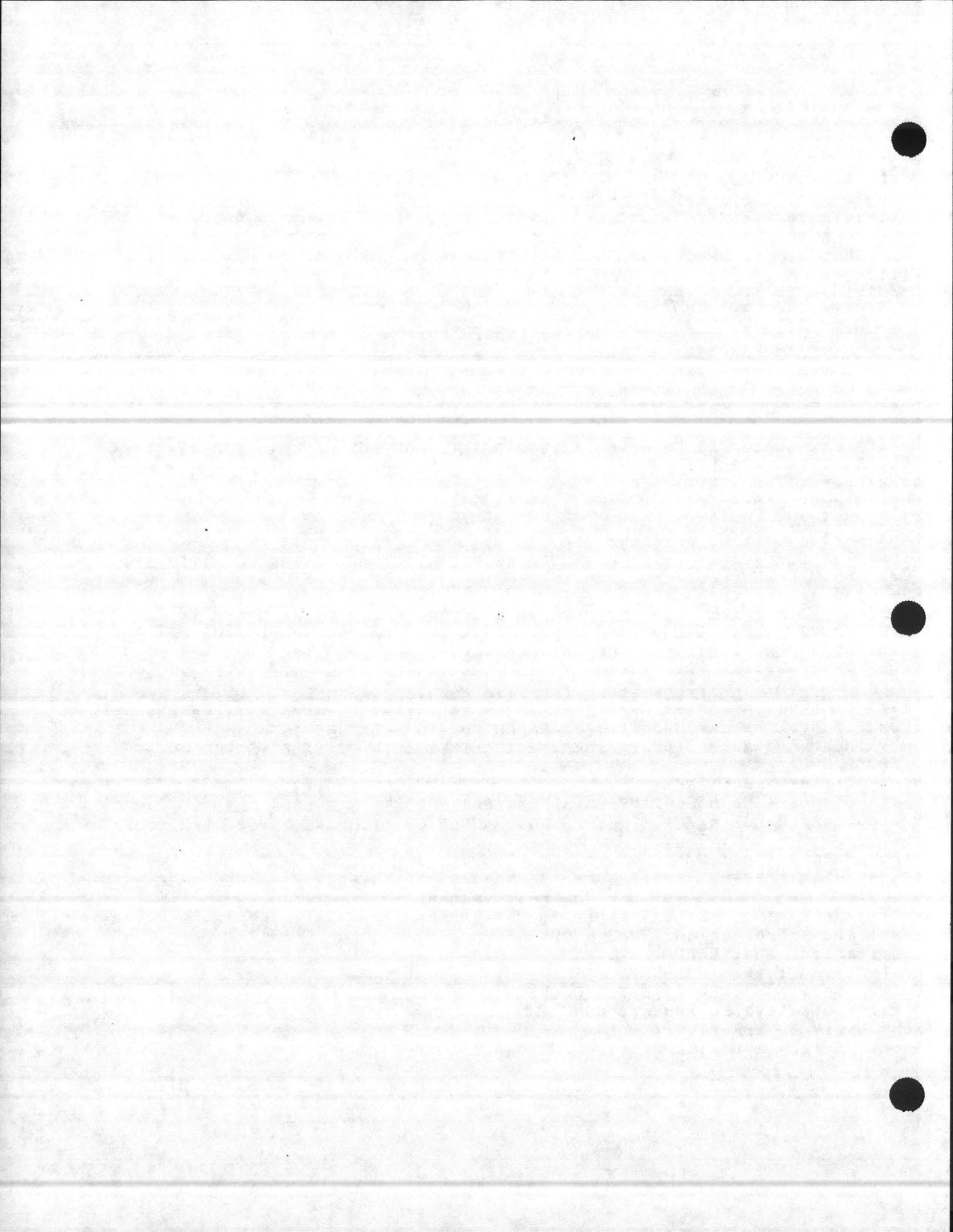
Protective Gloves: RUBBER.

Eye Protection: CHEM SAFETY GOGGLES.

Other Protective Equipment: NONE

Work Hygienic Practices:

Suppl. Safety & Health Data:
=====



TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004		<input type="checkbox"/> HEXACHLORO-1,3-BUTADIENE	D033	
<input type="checkbox"/> BARIUM	D005		<input type="checkbox"/> HEXACHLOROETHANE	D034	
<input type="checkbox"/> BENZENE	D018		<input type="checkbox"/> LEAD	D008	
<input type="checkbox"/> CADMIUM	D006		<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input type="checkbox"/> MERCURY	D009	
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input type="checkbox"/> CHROMIUM	D007		<input type="checkbox"/> PENTACHLOROPHENOL	D037	
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024	N/A	<input type="checkbox"/> SELENIUM	D010	N/A
<input type="checkbox"/> P-CRESOL	D025		<input type="checkbox"/> SILVER	D011	
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

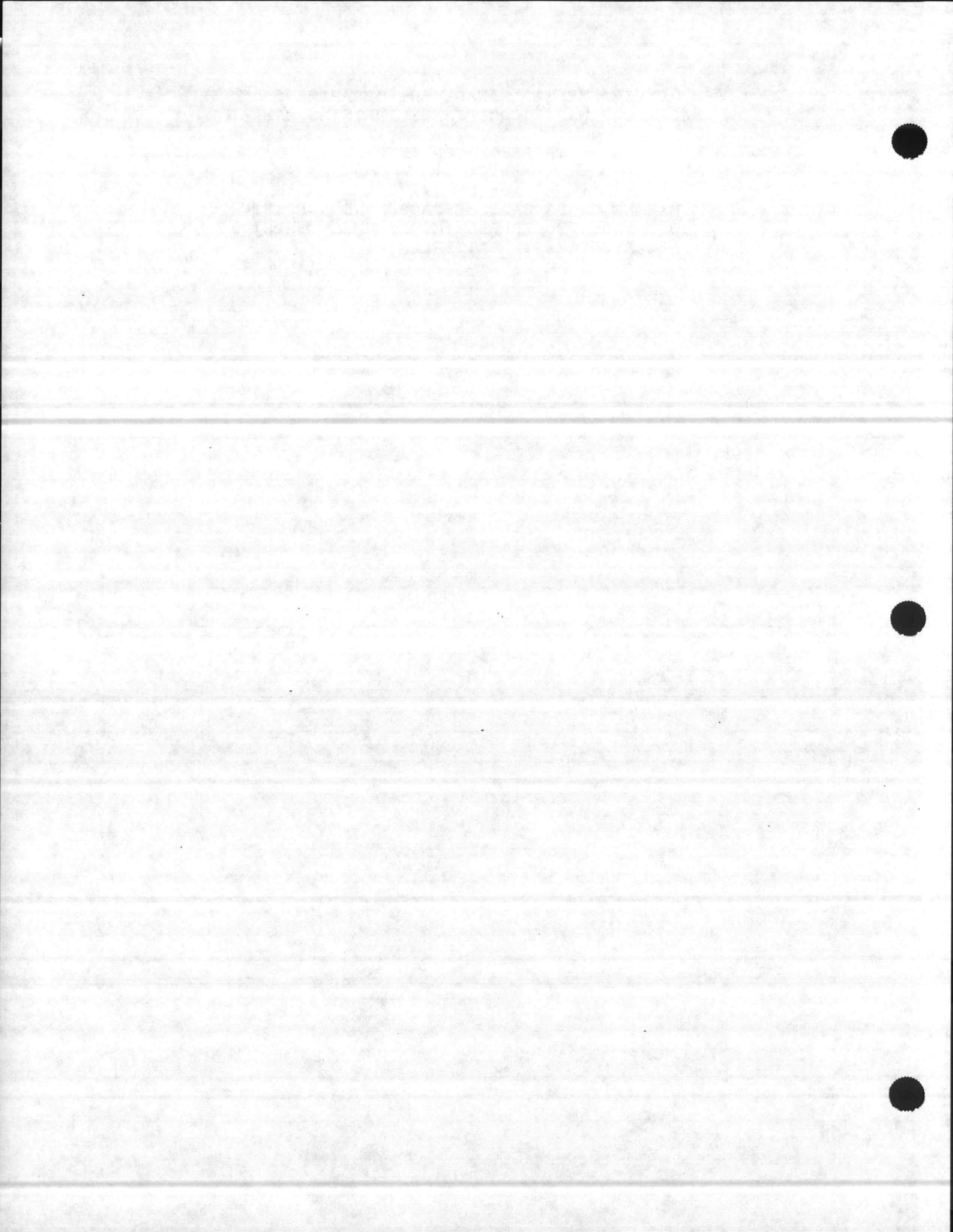
PART III

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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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 Division, 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.	

*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.

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,	

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.

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	

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.

MATERIAL SAFETY DATA SHEETS

NICKEL CADMIUM POCKET PLATE STORAGE BATTERY

SAB NIFE INC.
Battery Manufacturing Operation
251 Industrial Blvd.
Greenville, NC 27835-5026
Information Phone # 919-752-8126

For Chemical Emergency
Spill, Leak, Fire, Exposure or Accident
CALL CHEMTREC - Day or Night
800-424-9300



EDISON™ AND AMERICAD™ BRAND NICKEL CADMIUM POCKET PLATE STORAGE BATTERIES

HMIS Ratings: 3 Health 1 Flammability 2 Reactivity

1. HEALTH HAZARD INFORMATION

Effects of Overexposure

- Eye Effects:** Contact with electrolyte solution inside battery causes very rapid, severe damage. Extremely corrosive to eye tissues. May result in permanent blindness. Contact with nickel oxide and graphite may cause minor irritation.
- Skin Effects:** Contact with electrolyte solution inside battery may cause serious burns to skin tissues. Contact with graphite dust may cause minor irritation. Contact with nickel oxide may cause skin sensitization, resulting in chronic eczema or nickel itch.
- Ingestion:** Ingestion of electrolyte solution causes tissue damage to throat area and gastro/respiratory tract. Ingestion of nickel oxide causes nausea and dizziness.
- Inhalation:** During activation procedures mist generated may cause varying degrees of irritation of the nasal mucous membranes and respiratory tract tissues. May vary from mild irritation of nasal mucous membranes to damage of lung tissues proper. Inhalation of cadmium oxide may cause dry throat, cough, headache, vomiting, chest pain, chills, excessive overexposure may result in pulmonary emphysema, cor pulmonale.

Carcinogenicity: NIOSA recommends that nickel and cadmium be treated as occupational carcinogen.

2. EMERGENCY FIRST AID

Battery Electrolyte:

- Eye Contact:** Flush with plenty of water for at least 15 minutes. Get immediate medical attention.
- Skin Contact:** Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes.
- Ingestion:** Do not induce vomiting. Dilute by giving water. If available give several glasses of milk. Get immediate medical attention. Do not give anything by mouth to an unconscious person.
- Inhalation:** Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.

Graphite and Nickel Oxide:

- Skin Contact:** Wash with cold water and soap.

3. SPECIAL PROTECTION INFORMATION

Perform activation procedures in a well ventilated area. Battery operating areas must be well ventilated to remove normal gases generated.

Respiration Protection: Use NIOSH approved mist respirator if necessary during activation and actual usage.

Eye Protection: Use splash goggles or face shield whenever handling a battery.

Hand Protection: If exposed to electrolyte solution, or dried salts, use any water-insoluble non-permeable glove, i.e., synthetic rubber. DO NOT use leather or wool.

Other Protective Equipment: Rubber Boots, rubber apron or rainwear or equivalent if exposed to electrolyte solution.

4. REACTIVITY DATA

Stable under normal conditions.

CAUTION: NEVER ACTIVATE OR TOP OFF WITH ACID.

Incompatibilities: Aluminum, zinc, tin and other active metals, acid, chlorinated and aromatic hydrocarbons, nitrocarbons, halocarbons. Trichloroethylene will react with electrolyte solution to form dichloroethylene which is spontaneously combustible.

Hazardous Decomposition Products: Nickel oxide, cadmium, cadmium oxide, and potassium hydroxide. Note that normal reactions inside battery liberate flammable hydrogen gas. Do not seal battery from atmosphere.

Hazardous Polymerization will not occur.

Flash Point

Case Material	Acrylic	Polysulfone
Melting Point	210°F	374°F
Decomposition (non-violent)	550°F	
Auto Ignition	570°-580°F	1022°F (550°C)

Extinguishing Media

CO₂, Dry Chemical, Foam Water Spray

	Melting Point	Boiling Point
Cadmium	321°C	767°C
Cadmium Oxide	1400°C	900-1000°C decomp
Nickel	1455°C	2900°C

Special Fire Fighting Procedures

Use self-contained breathing apparatus, protective clothing and equipment to prevent potential body contact with electrolyte solution or mixture of water and solution.

Fire and Explosion Hazards

Electrolyte solution is corrosive to all human tissues. It will react violently with many organic chemicals, especially nitrocarbons and chlorocarbons. Electrolyte solution reacts with zinc, aluminum, tin and other active materials releasing flammable hydrogen gas.

Cadmium fumes may be released when batteries are subjected to high temperatures.

6. HAZARDOUS INGREDIENTS**EXPOSURE LIMITS**

Acrylic Polymer Container	None Established — OSHA
Polysulfone Container	None Established — OSHA
Nickel Oxide, Solid	1 mg/m ³ — OSHA
Lithium Hydroxide	None Established — OSHA
Graphite	15 mppcf use respirator
Electrolyte Solution	2 mg/m ³ ACGIH CEILING-Air
Steel	None Established — OSHA
Cadmium Oxide, Solid	0.1 mg/m ³ fume — OSHA 0.2 mg/m ³ dust — OSHA 0.05 mg/m ³ ACGIH Ceiling

7. PHYSICAL PROPERTIES

Boiling Point —	Not Applicable	Melting Point —	Not Applicable
Vapor Pressure —	2 mm Hg at 68°F	Vapor Density —	Not Applicable
Specific Gravity —	1.185 — 1.225	Evaporation Rate —	Not Determined
Solubility in Water —	Electrolyte solution is completely soluble. REMAINDER — is insoluble		

8. SPILL MANAGEMENT PROCEDURES**Electrolyte Solution Spills**

Small (up to 5 gallons): Flush with water and neutralize with dilute acid.

Large: Contain material in suitable containers or holding area. Do NOT allow material to enter sewers, streams or storm conduits. Recover material with vacuum truck and dispose of properly. Reportable Quantity: 1000 pounds. 40 CFR 117.13.

9. DISPOSAL INFORMATION

The storage battery is a hazardous waste under RCRA.

Battery is EP Toxic. Battery and electrolyte solution are corrosive. Dispose of in accordance with all federal, state and local regulations.

10. PRECAUTIONS AND COMMENTS

These cells and the batteries constructed from them may be highly active and capable of rapid generation of electrical energy. Care should be taken to handle cells properly to avoid shorting or misuse that will result in rapid uncontrolled generation of electrical, chemical, or heat energy.

Do not transport activated batteries without vent cap in place.

When removing battery from service visually inspect for leakage prior to handling. If leakage has occurred follow Spill Management Procedures.

Do not allow an exposed flame or spark to come near the cells.

Disclaimer: This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either express or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his own particular use. We do not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information nor do we offer warranty against patent infringement. Additional information is available by calling the telephone number above designated for this purpose.

Date Issued: 11-1-87

Last Date Revised 11-1-87

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF AUGUST 1992

For U.S. Government Use Only

FSC: 6140

NIIN: 010252620

Manufacturer's CAGE: 55150

Part No. Indicator: A

Part Number/Trade Name: NICKEL CADMIUM BATTERY

=====
General Information
=====

Item Name: BATTERY, STORAGE(NICKEL-CADMIUM)

Manufacturer's Name: TELECOMMUNICATION DEVICES, INC.

Manufacturer's Street: 2320 WISCONSIN AVE

Manufacturer's P. O. Box:

Manufacturer's City: DOWNERS GROVE

Manufacturer's State: IL

Manufacturer's Country: US

Manufacturer's Zip Code: 60515-4091

Manufacturer's Emerg Ph #:

Manufacturer's Info Ph #:

Distributor/Vendor # 1:

Distributor/Vendor # 1 Cage:

Distributor/Vendor # 2:

Distributor/Vendor # 2 Cage:

Distributor/Vendor # 3:

Distributor/Vendor # 3 Cage:

Distributor/Vendor # 4:

Distributor/Vendor # 4 Cage:

Safety Data Action Code:

Safety Focal Point: D

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status:

Date MSDS Prepared: PRE-HCS

Safety Data Review Date: 06JUL83

Supply Item Manager: CX

MSDS Preparer's Name:

Preparer's Company:

Preparer's St Or P. O. Box:

Preparer's City:

Preparer's State:

Preparer's Zip Code:

Other MSDS Number:

MSDS Serial Number: BGFNP

Specification Number:

Spec Type, Grade, Class:

Hazard Characteristic Code: C2

Unit Of Issue: EA

Unit Of Issue Container Qty: 1

Type Of Container:

Net Unit Weight:

NRC/State License Number:

Net Explosive Weight:

Net Propellant Weight-Ammo:

Coast Guard Ammunition Code:

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: POTASSIUM HYDROXIDE (SARA III)
Ingredient Sequence Number: 01
Percent: >20
Ingredient Action Code:
Ingredient Focal Point: D
NIOSH (RTECS) Number: TT2100000
CAS Number: 1310-58-3
OSHA PEL: C, 2 MG/M3
ACGIH TLV: C 2 MG/M3; 9192
Other Recommended Limit:

=====
Physical/Chemical Characteristics
=====

Appearance And Odor: COLORLESS LIQUID, ODORLESS.
Boiling Point: VERY HIGH
Melting Point:
Vapor Pressure (MM Hg/70 F): UNK
Vapor Density (Air=1): N/A
Specific Gravity: 2.04
Decomposition Temperature:
Evaporation Rate And Ref: N/A
Solubility In Water: APPRECIABLE
Percent Volatiles By Volume:
Viscosity:
pH:
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY):
Autoignition Temperature:

=====
Fire and Explosion Hazard Data
=====

Flash Point: N/A
Flash Point Method:
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A
Extinguishing Media: LARGE VOL.OF H*2O, DO NOT SPLASH SOLUTION (IN CASE OF FIRE).
Special Fire Fighting Proc: COOL EXPOSED CONTAINERS W/H*2O
Unusual Fire And Expl Hazrds: FLAMM.GAS MAY BE PRODUCED ON CONTACT W/ METALS.MAY CAUSE FIRE ON CONTACT W/MOISTURE & COMBUSTIBLES.

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability):
Materials To Avoid: AL, SN, PB, ZN, ACIDS, HALOGENATED HYDROCARBONS, GLASS
Hazardous Decomp Products: PRODUCES FLAMMABLE HYDROGEN GAS CONTACT W/ AL, ZN, SN, PB.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly):

=====
Health Hazard Data
=====

LD50-LC50 Mixture:

Route Of Entry - Inhalation:

Route Of Entry - Skin:

Route Of Entry - Ingestion:

Health Haz Acute And Chronic:

Carcinogenicity - NTP:

Carcinogenicity - IARC:

Carcinogenicity - OSHA:

Explanation Carcinogenicity:

Signs/Symptoms Of Overexp: SORE THROAT, COUGHING, SHORTNESS OF BREATH, LABORED BREATHING, CORROSIVE TO SKIN, SKIN BURNS, DIARRHEA.

Med Cond Aggravated By Exp:

Emergency/First Aid Proc: INHALATION:FRESH AIR, REST & CARRY TO HOSPITAL. SKIN:REMOVE CONTAMINATED CLOTHES, RINSE SKIN W/PLENTY OF WATER.

EYES:FIRST RINSE W/PLENTY OF WATER, THEN CARRY TO DOCTOR, IF NECESSARY.

INGEST:RINSE MOUTH, GIVE PLENTY OF WATER TO DRINK & CARRY TO HOSPITAL.

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: DO NOT TOUCH SPILLED MATERIAL. EVACUATE UNPROTECTED PERSONS. WEAR PROTECTIVE EQUIP. STOP LEAK. SM SPL:ABS W/ABSORBENT & PUT IN APPD CONTRS. LG SPL:CONTAIN W/DIKE & TRANSFER TO APPD CONTRS.

PROVIDE VENTILATION.

Neutralizing Agent:

Waste Disposal Method: KEEP IN COVERED DRUMS, PENDING DISPOSAL. HANDLE & DISPOSE IN FULL COMPLIANCE W/ALL APPLICABLE INTERNATIONAL, FEDERAL, STATE & LOCAL REGULATIONS.

Precautions-Handling/Storing: KEEP CONTAINERS TIGHTLY CLOSED. STORE IN COOL, DRY, WELL VENTILATED AREA; PROTECT CONTAINERS FROM PHYSICAL DAMAGE & AVOID CONTACT W/SKIN. AVOID CONT W/ACID

Other Precautions: AVOID CONTACT W/CHLORINE DIOXIDE, NITROBENZENE, NITROGEN TRICHLORIDE, 2, 4, 6-TRINITROTOLUENE. REMOVE & WASH CONTAMINATED CLOTHING. MAINTAIN STRICT HYGIENE.

=====
Control Measures
=====

Respiratory Protection: USE SELF-CONTAINED BREATHING APPARATUS.

Ventilation: LOCAL EXHAUST IS PREFERRED.

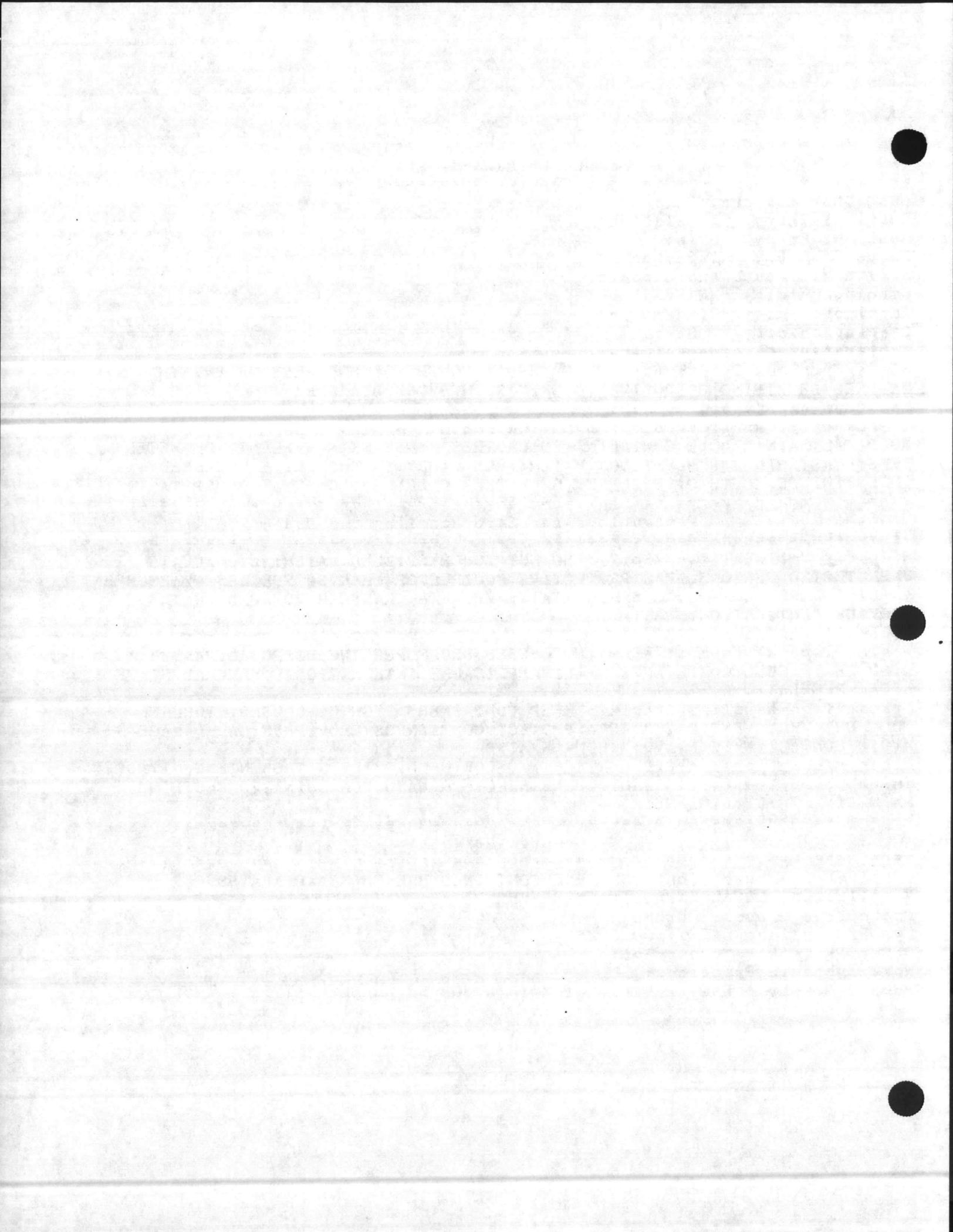
Protective Gloves: RUBBER

Eye Protection: SAFETY GOGGLES

Other Protective Equipment:

Work Hygienic Practices:

Suppl. Safety & Health Data: ITEM IS A NON-SPILLABLE BATTERY.



HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 006 (580BL009)

Marine Corps Base, Camp Lejeune

1. GENERATOR NAME
2. FACILITY ADDRESS

North Carolina

 5. ZIP CODE
28542

3. GENERATOR USEPA ID

NC 6170022580

4. GENERATOR STATE ID

same

6. TECHNICAL CONTACT

Mr. John Riggs

7. TITLE

Env. Control Spec.

PHONE

(919) 451-1482

B. 1. NAME OF WASTE Nickel Cadmium Batteries (wet)
2. USEPA/or/STATE WASTE CODE(S) D002, D006
3. PROCESS GENERATING WASTE Spent Batteries from Military Communications Equipment
4. PROJECTED ANNUAL VOLUME/UNITS unknown / lbs **5. MODE OF COLLECTION** Drums
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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)

 COLOR Green

 DENSITY > 2 BTU/LB < 1000

 TOTAL SOLIDS 60-70% ASH CONTENT 70-80%

 LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

 PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER

 TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001) > 200 REACTIVE (D003)

 FLASH POINT (F) > 200
 HIGH TOC (> 10%) WATER REACTIVE
 LOW TOC (< 10%) CYANIDE REACTIVE
 SULFIDE REACTIVE

 CORROSIVE (D002) pH > 12.5 TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)

 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)

 COPPER < 100 PHENOLICS N/A

 NICKEL 100-100,000 TOTAL HALOGENS N/A

 ZINC < 100 VOLATILE ORGANICS N/A

 CHROMIUM-HEX N/A PCBs N/A

(OTHER) _____

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Plastic casing		60-80%
Potassium hydroxide		10-15%
Water		10-15%
Nickel Hydroxide		1-5%
Cadmium Hydroxide		1-5%
Other Hydroxides		2%
TOTAL	100	100%

5. SHIPPING INFORMATION

 DOT HAZARDOUS MATERIAL? YES NO

 PROPER SHIPPING NAME Waste, Batteries, Wet, Filled with Alkali, Electric Storage

 Label: Corrosive

 HAZARD CLASS 8 U.N. or N.A. NO. UN 2795

 ADDITIONAL DESCRIPTION PGIII

 METHOD OF SHIPMENT BULK DRUM OTHER: _____

 CERCLA REPORTABLE QUANTITY (RQ) 10 lbs

EMERGENCY RESPONSE GUIDE PAGE _____

 DOT PUBLICATION 5800.4 PAGE NO. 60 EDITION (YR) 1990

SPECIAL HANDLING INFORMATION _____

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)

 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) MSDS, Chemical Dictionary

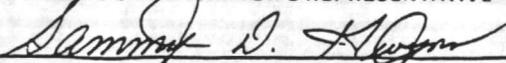
 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL

(Print or Type Name)

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE

DATE


26 Oct 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3-BUTADIENE	D033	_____
BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
BENZENE	D018	_____	<input type="checkbox"/> LEAD	D008	_____
CADMIUM	D006	1-200,000	<input type="checkbox"/> LINDANE	D013	_____
CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	N/A
CHLOROFORM	D022	_____	<input type="checkbox"/> NITROBENZENE	D036	_____
CHROMIUM	D007	_____	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
O-CRESOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
M-CRESOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
P-CRESOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
1,4-DICHLOROENZENE	D027	_____	<input type="checkbox"/> TRICHLOROETHYLENE	D040	_____
1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,45-TP (SILVEX)	D017	_____
ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
HEXACHLOROENZENE	D032	_____			

PART III

HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 007(580BS011)
Marine Corps Base, Camp Lejeune
1. GENERATOR NAME
2. FACILITY ADDRESS
North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID
NC 6170022580
4. GENERATOR STATE ID
same
6. TECHNICAL CONTACT
Mr. John Riggs
7. TITLE
Env. Control Spec.
PHONE
919 451-1482
B. 1. NAME OF WASTE Nickel Cadmium Batteries (dry)
2. USEPA/or/STATE WASTE CODE(S) D006
3. PROCESS GENERATING WASTE Spent Batteries from Military Communications Equipment
4. PROJECTED ANNUAL VOLUME/UNITS unknown / 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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)
COLOR Green
DENSITY > 2 **BTU/LB** < 1000
TOTAL SOLIDS > 100% **ASH CONTENT** 70-80%
LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS
PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER

TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001)

FLASH POINT (F) _____

 HIGH TOC (> 10%)

 LOW TOC (< 10%)

 REACTIVE (D003)

 WATER REACTIVE

 CYANIDE REACTIVE

 SULFIDE REACTIVE

 CORROSIVE (D002)

pH _____

 CORRODES STEEL

 TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)

3. CHEMICAL COMPOSITION (ppm or mg/L)
COPPER < 100 **PHENOLICS** N/A
NICKEL < 200,000 **TOTAL HALOGENS** N/A
ZINC < 100 **VOLATILE ORGANICS** N/A
CHROMIUM-HEX N/A **PCBs** N/A
(OTHER) _____

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

COMPONENT	CONCENTRATION	RANGE
Plastic and metal casing		50-70%
Cadmium salts		5-15%
Nickel salts		5-15%
Potassium hydroxide (solid)		10-20%
Inert		0-10%
TOTAL	<u>100</u>	<u>100%</u>

5. SHIPPING INFORMATION
DOT HAZARDOUS MATERIAL? YES NO

PROPER SHIPPING NAME Waste, Batteries, Dry, Containing Potassium Hydroxide Solid
Label: Corrosive
HAZARD CLASS 8 **U.N. or N.A. NO.** UN 3028
ADDITIONAL DESCRIPTION PGIII
METHOD OF SHIPMENT BULK DRUM OTHER: _____

CERCLA REPORTABLE QUANTITY (RQ) 10 lbs
EMERGENCY RESPONSE GUIDE PAGE _____

DOT PUBLICATION 5800.4 **PAGE NO.** 60 **EDITION (YR)** 1990
SPECIAL HANDLING INFORMATION _____

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)

 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with

RCRA requirements) Chemical Dictionary, MSDS

 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL

(Print or Type Name)

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE



DATE

250293

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3-BUTADIENE	D033	_____
<input type="checkbox"/> BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
<input type="checkbox"/> BENZENE	D018	_____	<input type="checkbox"/> LEAD	D008	_____
<input checked="" type="checkbox"/> CADMIUM	D006	< 200,000	<input type="checkbox"/> LINDANE	D013	_____
<input type="checkbox"/> CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
<input type="checkbox"/> CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
<input type="checkbox"/> CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	_____
<input type="checkbox"/> CHLOROFORM	D022	_____	<input type="checkbox"/> NITROBENZENE	D036	N/A
<input type="checkbox"/> CHROMIUM	D007	_____	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
<input type="checkbox"/> O-CRESOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
<input type="checkbox"/> M-CRESOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
<input type="checkbox"/> P-CRESOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
<input type="checkbox"/> CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
<input type="checkbox"/> 2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027	_____	<input type="checkbox"/> TRICHLOROETHYLENE	D040	_____
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,45-TP (SILVEX)	D017	_____
<input type="checkbox"/> ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
<input type="checkbox"/> HEXACHLOROBENZENE	D032	_____			

PART III



UNITED STATES MARINE CORPS

MARINE CORPS BASE
PSC BOX 20004
CAMP LEJEUNE, NORTH CAROLINA 28542-0004

IN REPLY REFER TO:

6240/1
BEMD

29 APR 1994

From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: DISPOSAL OF LITHIUM BATTERIES

Ref: (a) USMC TI-6135-15/3 of 28 Jul 89
(b) CG MCB ltr 4400 MMBP-394 of 4 Oct 93
(c) DRMS Hazardous Waste Disposal Contract, solicitation number SP4400-94-R-0052

1. Reference (a) provides general and technical instructions concerning the use, handling, storage, transportation, and disposal of lithium batteries and is applicable to all Marine Corps personnel. Reference (b) provides additional information on procurement, management and disposal of various communication and lead acid batteries. Effective 1 May 1994, disposal information contained in references (a), (b), and Marine Corps Base guidance relative to the management and disposal of lithium batteries is superseded as follows:

a. Lithium-sulfur dioxide (BA-5000 series, except as noted in paragraphs b. and c. of this correspondence), lithium-sulfur manganese (BA-5372/U)(BA-5516) and lithium-thionyl chloride (BA-6000) series batteries equipped with and completely discharged utilizing the Complete Discharge Device (CDD) as required within references (a) and (b) will be disposed as a non-Resource Conservation and Recovery Act (RCRA) solid waste. Batteries completely discharged by use of the CDD, marked and managed as noted in the references will be placed into a proper container and inspected by the organizational Hazardous Material Disposal Officer to ensure all requirements have been met. Certification of this inspection will be documented utilizing the existing hazardous material/waste disposal worksheet and turn-in procedures. Upon receipt, Environmental Management Department personnel will coordinate placement of these batteries into bulk management containers provided under reference (c).

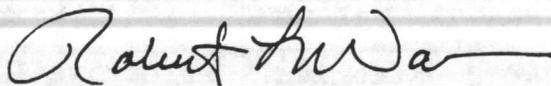
b. Lithium-sulfur dioxide batteries (BA-5567/U) are not equipped with a CDD. Once the battery is completely discharged through normal equipment use, the battery may be turned in as non-RCRA waste. Certification/turn-in procedures will follow those presented in paragraph 1.a. of this correspondence. Extreme caution must be exercised to ensure the BA-5567/U lithium battery is not confused with the BA-1567/U mercury battery which is of similar size and appearance.

Subj: DISPOSAL OF LITHIUM BATTERIES

c. Lithium-sulfur dioxide batteries without a CDD (except the BA-5567) are classified as a reactive hazardous waste by the Environmental Protection Agency. The storage, handling, and disposal of these batteries will conform to the requirements contained within reference (a) and supplemental guidelines provided by Marine Corps Base.

2. Adherence to the noted requirements presents significant opportunity for commands to minimize the number of hours involved in management of lithium batteries; to cut container acquisition cost; to reduce disposal cost; and to significantly decrease the potential for hazardous waste violations.

3. Point of contact is Mr. John Riggs, Environmental Compliance Division, Environmental Management Department, extension 1482.



ROBERT L. WARREN
By direction

Distribution:

CG, II MEF (G-4)
CG, 2d MarDiv (G-4 HMDC)
CG, 2d FSSG (G-4 HMDC)
CO, 2d SRIG (G-4 HMDC)
CO, MCAS NR
Chief, DRMO

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF AUGUST 1992

For U.S. Government Use Only

FSC: 6135

NIIN: 010342239

Manufacturer's CAGE: 90303

Part No. Indicator: A

Part Number/Trade Name: LITHIUM/SULFUR DIOXIDE BATTERY BA-559810

=====
General Information
=====

Item Name:

Manufacturer's Name: DURACELL USA

Manufacturer's Street:

Manufacturer's P. O. Box:

Manufacturer's City:

Manufacturer's State:

Manufacturer's Country:

Manufacturer's Zip Code:

Manufacturer's Emerg Ph #: (704) 874-4111

Manufacturer's Info Ph #:

Distributor/Vendor # 1:

Distributor/Vendor # 1 Cage:

Distributor/Vendor # 2:

Distributor/Vendor # 2 Cage:

Distributor/Vendor # 3:

Distributor/Vendor # 3 Cage:

Distributor/Vendor # 4:

Distributor/Vendor # 4 Cage:

Safety Data Action Code:

Safety Focal Point: A

Record No. For Safety Entry: 002

Tot Safety Entries This Stk#: 002

Status:

Date MSDS Prepared: PRE-HCS

Safety Data Review Date: 01NOV85

Supply Item Manager:

MSDS Preparer's Name:

Preparer's Company:

Preparer's St Or P. O. Box:

Preparer's City:

Preparer's State:

Preparer's Zip Code:

Other MSDS Number:

MSDS Serial Number: BGGHD

Specification Number:

Spec Type, Grade, Class:

Hazard Characteristic Code: F7

Unit Of Issue: EA

Unit Of Issue Container Qty:

Type Of Container:

Net Unit Weight:

NRC/State License Number:

Net Explosive Weight:

Net Propellant Weight-Ammo:

Coast Guard Ammunition Code:

=====

Ingredients/Identity Information

=====

Proprietary: NO
Ingredient: SULFUR DIOXIDE (SARA III)
Ingredient Sequence Number: 01
Percent: 30
Ingredient Action Code:
Ingredient Focal Point: A
NIOSH (RTECS) Number: WS4550000
CAS Number: 7446-09-5
OSHA PEL: 2 PPM/5 STEL
ACGIH TLV: 2 PPM/5 STEL; 9192
Other Recommended Limit:

Proprietary: NO
Ingredient: ACETONITRILE (SARA III)
Ingredient Sequence Number: 02
Percent: 10
Ingredient Action Code:
Ingredient Focal Point: A
NIOSH (RTECS) Number: AL7700000
CAS Number: 75-05-8
OSHA PEL: 40PPM/60 STEL
ACGIH TLV: 40PPM/60STEL; 9192
Other Recommended Limit:

=====

Physical/Chemical Characteristics

=====

Appearance And Odor:
Boiling Point:
Melting Point:
Vapor Pressure (MM Hg/70 F):
Vapor Density (Air=1):
Specific Gravity:
Decomposition Temperature:
Evaporation Rate And Ref:
Solubility In Water:
Percent Volatiles By Volume:
Viscosity:
pH:
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY):
Autoignition Temperature:

=====

Fire and Explosion Hazard Data

=====

Flash Point:
Flash Point Method:
Lower Explosive Limit:
Upper Explosive Limit:
Extinguishing Media: WATER, DO NOT USE CARBON DIOXIDE
Special Fire Fighting Proc: USE CLASS D EXTINGUISHER OR DRY GRAPHITE
COMPOUND ON LI FIRE
Unusual Fire And Expl Hazrds: BATTERY CELLS VENT SULFUR DIOXIDE, AND

HYDROGEN CYANIDE, LITHIUM HYDRIDE MAY ALSO BE FORMED

=====
Reactivity Data
=====

Stability: YES

Conditions To Avoid (Stability): FIRE, HIGH STORAGE TEMPERATURES, SHORT CIRCUITING

Materials To Avoid: ATMOSPHERIC GASES, HALOCARBONS, HALOGENS, METAL OXIDES

Hazardous Decomp Products: SO₂, HYDROGEN CYANIDE, LITHIUM OXIDE, & HYDRIDE

Hazardous Poly Occur:

Conditions To Avoid (Poly):
=====

=====
Health Hazard Data
=====

LD50-LC50 Mixture:

Route Of Entry - Inhalation:

Route Of Entry - Skin:

Route Of Entry - Ingestion:

Health Haz Acute And Chronic:

Carcinogenicity - NTP:

Carcinogenicity - IARC:

Carcinogenicity - OSHA:

Explanation Carcinogenicity:

Signs/Symptoms Of Overexp: SULFUR DIOXIDE PRODUCES RESPIRATORY TRACT IRRITATION, CHRONIC EFFECTS INCLUDE RHINITIS, (SEE SUPP DATA

Med Cond Aggravated By Exp:

Emergency/First Aid Proc: EYE CONTACT: FLUSH WITH COPIOUS AMOUNTS OF WATER; SEEK MEDICAL ATTENTION, SKIN CONTACT: FLUSH W/WATER, REMOVE CONTAMINATED CLOTHING, INHALATION: MOVE TO FRESH AIR IF BREATHING HAS STOPPED BEGIN CPR. SEEK MEDICAL ATTENTION.
=====

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: CLEAR PERSONNEL FROM IMMEDIATE AREA & ALLOW BATTERY TO VENT. LET STAND 30-60 MINUTES, TEST BATTERY COMPARTMENT BY TOUCHING WITH HAND, IF HOT, LET STAND 30 MINUTES, IF COOL, REMOVE BATTERY & PACK. AVOID CONTACT WITH CELL COMPONENTS.

Neutralizing Agent:

Waste Disposal Method: CONTACT THE LOCAL DEFENSE PROPERTY DISPOSAL OFFICE FOR TURN IN PROCEDURES

Precautions-Handling/Storing: STORE IN COOL, DRY AREA. PROVIDE VENTILATION ADEQUATE TO MAINTAIN SO₂ LEVELS BELOW 2PPM. SEGREGATE FROM FLAMMABLE & COMBUSTIBLE LIQ'S. PROVIDE SPRINKLERS.

Other Precautions: DO NOT HEAT, CRUSH, OR DISASSEMBLE THESE BATTERIES. DO NOT SHORT CIRCUIT, RECHARGE, OR BYPASS THE INTERNAL FUSE.
=====

=====
Control Measures
=====

Respiratory Protection: FIRES: FULL-FACE PRESSURE-DEMAND SCBA, USE FULL-FACE ACID (SEE SUPP)

Ventilation: ADEQUATE TO MAINTAIN SO₂ LEVELS <2PPM IN STORAGE AREAS

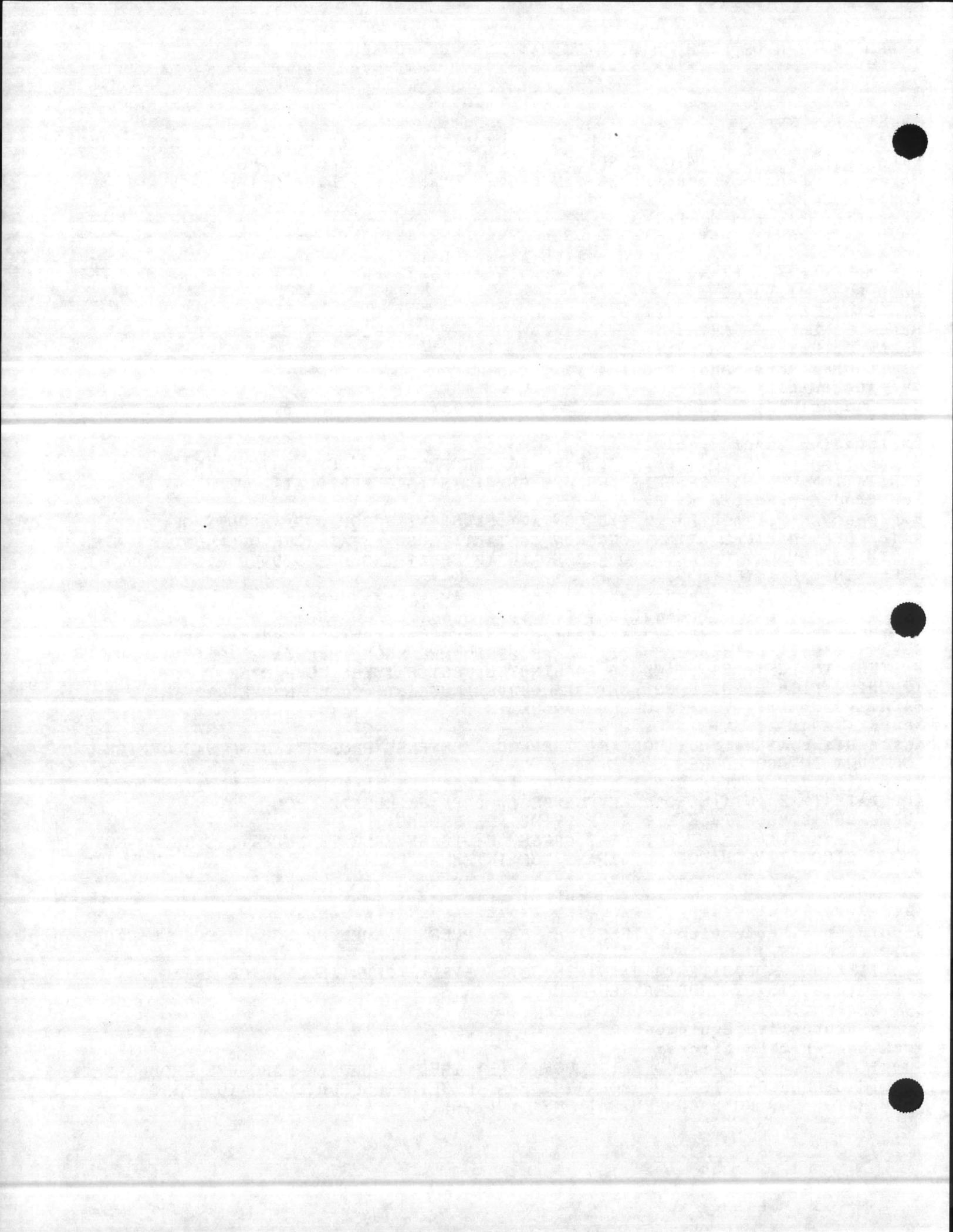
Protective Gloves: RUBBER/NEOPRENE

Eye Protection: CHEMICAL GOGGLES

Other Protective Equipment:

Work Hygienic Practices:

Suppl. Safety & Health Data: COUGH & DRY THROAT. CHRONIC EXPOSURE PRODUCES CHEMICAL PNEUMONITIS & PULMONARY EDEMA. RESPIRATOR PROTECTION (CONT) GAS RESPIRATOR FOR SO₂ CONCENTRATIONS <100 PPM.



HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 005 (580MS010)
Marine Corps Base, Camp Lejeune
1. GENERATOR NAME
2. FACILITY ADDRESS
North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID
NC 6170022580
4. GENERATOR STATE ID
same
6. TECHNICAL CONTACT
Mr. John Riggs
7. TITLE
Env. Control Spec.
PHONE
(919)451-1482
B. 1. NAME OF WASTE Lithium Batteries
2. USEPA/STATE WASTE CODE(S) D003
3. PROCESS GENERATING WASTE Spent Batteries from Military Communications Equipment
4. PROJECTED ANNUAL VOLUME/UNITS unknown / 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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)
COLOR Green
DENSITY > 2 BTU/LB < 5000
TOTAL SOLIDS 60-70% **ASH CONTENT** 70-80%
LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS
PHYSICAL STATE: SOLID LIQUID SEMI-SOLID

 GAS OTHER

TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001)

FLASH POINT (F) > 200
 REACTIVE (D003)

 HIGH TOC (> 10%)

 WATER REACTIVE

 LOW TOC (< 10%)

 CYANIDE REACTIVE

 SULFIDE REACTIVE

 CORROSIVE (D002)

pH 4.1-10
 TOXICITY CHARACTERISTIC

(SEE REVERSE FOR LISTING)

 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)
COPPER < 100 **PHENOLICS** N/A
NICKEL < 1000 **TOTAL HALOGENS** N/A
ZINC < 100 **VOLATILE ORGANICS** N/A
CHROMIUM-HEX N/A **PCBs** N/A

(OTHER) _____

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Electrolyte: Acetonitrile (solvent)		
Lithium Bromide (solute)		0-15%
Anode: Lithium Metal Foil		5-8%
Cathode: Sulfur Dioxide		
Separators: Polypropylene (non-woven)		25-30%
Cell Container: Nickel-Plated or		
Stainless Steel		32-48%
TOTAL	100	100%

5. SHIPPING INFORMATION
DOT HAZARDOUS MATERIAL? YES NO

PROPER SHIPPING NAME Waste Lithium Battery, Solid Cathode
Label: Class 9

HAZARD CLASS 9 **U.N. or N.A. NO.** UN 3090
ADDITIONAL DESCRIPTION packaging group II
METHOD OF SHIPMENT BULK DRUM OTHER: _____

CERCLA REPORTABLE QUANTITY (RQ) 100 lbs
EMERGENCY RESPONSE GUIDE PAGE _____

DOT PUBLICATION 5800.4 **PAGE NO.** 40 **EDITION (YR)** 1990
SPECIAL HANDLING INFORMATION Dangerous when wet
6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)

 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) MSDS, Chemical Dictionary

 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL

(Print or Type Name)

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE



DATE

27 Oct 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004		<input type="checkbox"/> HEXACHLORO-1,3.-BUTADIENE	D033	
<input type="checkbox"/> BARIUM	D005		<input type="checkbox"/> HEXACHLOROETHANE	D034	
<input type="checkbox"/> BENZENE	D018		<input type="checkbox"/> LEAD	D008	
<input type="checkbox"/> CADMIUM	D006		<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input type="checkbox"/> MERCURY	D009	
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input type="checkbox"/> CHROMIUM	D007	N/A	<input type="checkbox"/> PENTACHLOROPHENOL	D037	N/A
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024		<input type="checkbox"/> SELENIUM	D010	
<input type="checkbox"/> P-CRESOL	D025		<input type="checkbox"/> SILVER	D011	
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

PART III

DOD Hazardous Materials Information System
DoD 6050.5-LR
AS OF AUGUST 1992
For U.S. Government Use Only

NC: 6135
NIIN: 009268322
Manufacturer's CAGE: 77542
Part No. Indicator: A
Part Number/Trade Name: MAGNESIUM-CARBON BATTERY, BA4386/PRC25

=====
General Information
=====

Item Name:
Manufacturer's Name: RAY-O-VAC DIVISION, ESB INCORPORATED
Manufacturer's Street:
Manufacturer's P. O. Box:
Manufacturer's City:
Manufacturer's State:
Manufacturer's Country:
Manufacturer's Zip Code:
Manufacturer's Emerg Ph #: (608)252-7400EXT230
Manufacturer's Info Ph #:
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: N
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status:
Date MSDS Prepared: INTERIM
Safety Data Review Date: 20AUG86
Supply Item Manager:
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: BFWWX
Specification Number:
Spec Type, Grade, Class:
Hazard Characteristic Code: N1
Unit Of Issue:
Unit Of Issue Container Qty:
Type Of Container:
Net Unit Weight:
NRC/State License Number: N/A
Net Explosive Weight:
Net Propellant Weight-Ammo: N/A
Coast Guard Ammunition Code:

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: BARIUM CHROMATE, ACGIH TLV FOR INSOLUBLE CHROMIUM VI CMPDS IS
0.05MG/CUM
Ingredient Sequence Number: 01
Percent:
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: CQ8760000
CAS Number:
OSHA PEL:
ACGIH TLV:
Other Recommended Limit:

Proprietary: NO
Ingredient: MAGNESIUM PERCHLORATE
Ingredient Sequence Number: 02
Percent: 6.80
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: SC8925000
CAS Number:
OSHA PEL:
ACGIH TLV:
Other Recommended Limit:

Proprietary: NO
Ingredient: MANGANESE DIOXIDE (AS MANGANESE)
Ingredient Sequence Number: 03
Percent: 28.0
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: OP0350000
CAS Number: 1313-13-9
OSHA PEL: C, 5 MG/M3/1 FUME TWA
ACGIH TLV: 5 MG/M3 DUST/1 FUME
Other Recommended Limit:

Proprietary: NO
Ingredient: CARBON BLACK
Ingredient Sequence Number: 04
Percent: 3.80
Ingredient Action Code:
Ingredient Focal Point: N
NIOSH (RTECS) Number: FF5800000
CAS Number: 1333-86-4
OSHA PEL: 3.5 MG/M3
ACGIH TLV: 3.5 MG/M3; 9192
Other Recommended Limit:

Proprietary: NO
Ingredient: LITHIUM CHROMATE, SOLUBLE CHROMIUM
Ingredient Sequence Number: 05
Percent: .004
Ingredient Action Code:

Ingredient Focal Point: N
IOSH (RTECS) Number: OG7570000
CAS Number:
OSHA PEL:
ACGIH TLV: 0.5MG/CUM
Other Recommended Limit:

=====

Physical/Chemical Characteristics

=====

Appearance And Odor:
Boiling Point: N/A
Melting Point:
Vapor Pressure (MM Hg/70 F):
Vapor Density (Air=1):
Specific Gravity:
Decomposition Temperature:
Evaporation Rate And Ref: N/A
Solubility In Water: N/A
Percent Volatiles By Volume:
Viscosity:
pH:
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY):
Autoignition Temperature:

=====

Fire and Explosion Hazard Data

=====

Flash Point:
Flash Point Method:
Lower Explosive Limit:
Upper Explosive Limit:
Extinguishing Media: USE ONLY CO*2, FOAM OR DRY POWDER.
Special Fire Fighting Proc: WEAR SELF-CONTAINED BREATHING APPARATUS.
Unusual Fire And Expl Hazrds: BATTERIES MAY RUPTURE & SPREAD CORROSIVE
CONTENT. MAGNESIUM MAY ALSO IGNITE & BURN.

=====

Reactivity Data

=====

Stability: YES
Cond To Avoid (Stability): HEAT AND ELECTRIC SHORT.
Materials To Avoid:
Hazardous Decomp Products: MOLTEN MAGNESIUM, MAGNESIUM OXIDE & ASPHALT
FUMES.
Hazardous Poly Occur: NO
Conditions To Avoid (Poly):

=====

Health Hazard Data

=====

LD50-LC50 Mixture:
Route Of Entry - Inhalation:
Route Of Entry - Skin:
Route Of Entry - Ingestion:
Health Haz Acute And Chronic:
Carcinogenicity - NTP:
Carcinogenicity - IARC:

Carcinogenicity - OSHA:

Explanation Carcinogenicity:

Signs/Symptoms Of Overexp: NONE, UNLESS BATTERY RUPTURES.

Med Cond Aggravated By Exp:

Emergency/First Aid Proc: SKIN & EYES: FLUSH WITH COPIOUS AMOUNTS OF WATER. GET IMMEDIATE ATTENTION FOR EYES. WASH SKIN WITH SOAP & WATER.

=====

Precautions for Safe Handling and Use

=====

Steps If Matl Released/Spill: IN EVENT OF BATTERY RUPTURE, COLLECT ALL RELEASED MATERIAL IN PLASTIC BAG FOR DISPOSAL.

Neutralizing Agent:

Waste Disposal Method: DO NOT INCINERATE. DISPOSE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS IN AN APPROVED TOXIC MATERIALS LANDFILL SITE.

Precautions-Handling/Storing: STORE IN A DRY PLACE.

Other Precautions: DO NOT ATTEMPT TO RECHARGE. BATTERY CONTAINS HEXAVALENT CHROMIUM, A SUSPECTED CARCINOGEN.

=====

Control Measures

=====

Respiratory Protection: NOT APPLICABLE

Ventilation:

Protective Gloves:

Eye Protection:

Other Protective Equipment:

Work Hygienic Practices:

Suppl. Safety & Health Data: MFG. LISTS HEXAVALENT CHROMIUM, A SUSPECTED CARCINOGEN, AS A COMPONENT.

HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 009 (580DS101)
Marine Corps Base, Camp Lejeune
1. GENERATOR NAME
2. FACILITY ADDRESS
North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID
NC 6170022580
4. GENERATOR STATE ID
same
6. TECHNICAL CONTACT
Mr. John Riggs
7. TITLE
Env. Control Spec.
PHONE
(919) 451-1482
B. 1. NAME OF WASTE
Magnesium Batteries
2. USEPA/STATE WASTE CODE(S)
D007
3. PROCESS GENERATING WASTE
Spent Batteries from Military Equipment
4. PROJECTED ANNUAL VOLUME/UNITS
unknown / lbs
5. MODE OF COLLECTION
Drums
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 REFERENCE STANDARDS _____

PART II

**1. MATERIAL CHARACTERIZATION
(OPTIONAL-NOT REQUIRED DATA)**

 COLOR _____
 DENSITY _____ BTU/LB _____
 TOTAL SOLIDS _____ ASH CONTENT _____
 LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

 PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER
 TREATMENT GROUP: WASTEWATER NON-WASTEWATER
 IGNITABLE (D001) REACTIVE (D003)
 FLASH POINT (F) _____
 HIGH TOC (> 10%) WATER REACTIVE
 LOW TOC (< 10%) CYANIDE REACTIVE
 SULFIDE REACTIVE
 CORROSIVE (D002) TOXICITY CHARACTERISTIC
 pH _____ (SEE REVERSE FOR LISTING)
 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)

 COPPER < 1 PHENOLICS N/A
 NICKEL < 1 TOTAL HALOGENS N/A
 ZINC < 1 VOLATILE ORGANICS N/A
 CHROMIUM-HEX N/A PCBs N/A
 (OTHER) _____

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
Magnesium Perchlorate		7%
Carbon black/Graphite (cathode)		4%
Barium Chromate		1%
Mangnese Dioxide (electrolyte)		28%
Lithium Chromate		.0004%
Casing: Metal, Plastic, Cardboard		60%
TOTAL	100	100%

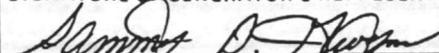
5. SHIPPING INFORMATION

 DOT HAZARDOUS MATERIAL? YES NO
 PROPER SHIPPING NAME Hazardous Waste
Soild, N.O.S. (Chromium)
 Label: Class 9
 HAZARD CLASS 9 U.N. or N.A. NO. NA 3077
 ADDITIONAL DESCRIPTION PGIII
 METHOD OF SHIPMENT BULK DRUM OTHER: Box
 CERCLA REPORTABLE QUANTITY (RQ) 10 lbs
 EMERGENCY RESPONSE GUIDE PAGE _____
 DOT PUBLICATION 5800.4 PAGE NO. 31 EDITION (YR) 1990
 SPECIAL HANDLING INFORMATION _____

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)
 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) 49 CFR, MSDS

 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL
 (Print or Type Name)

 ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED
 IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE

DATE
20 Oct 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3.-BUTADIENE	D033	_____
<input type="checkbox"/> BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
<input type="checkbox"/> BENZENE	D018	_____	<input type="checkbox"/> LEAD	D008	_____
<input type="checkbox"/> CADMIUM	D006	_____	<input type="checkbox"/> LINDANE	D013	_____
<input type="checkbox"/> CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
<input type="checkbox"/> CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
<input type="checkbox"/> CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	_____
<input type="checkbox"/> CHLOROFORM	D022	_____	<input type="checkbox"/> NITROBENZENE	D036	N/A
<input checked="" type="checkbox"/> CHROMIUM	D007	< 1000	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
<input type="checkbox"/> O-CRESOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
<input type="checkbox"/> M-CRESOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
<input type="checkbox"/> P-CRESOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
<input type="checkbox"/> CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
<input type="checkbox"/> 2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027	_____	<input type="checkbox"/> TRICHLOROETHYLENE	D040	_____
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,45-TP (SILVEX)	D017	_____
<input type="checkbox"/> ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
<input type="checkbox"/> HEXACHLOROBENZENE	D032	_____			

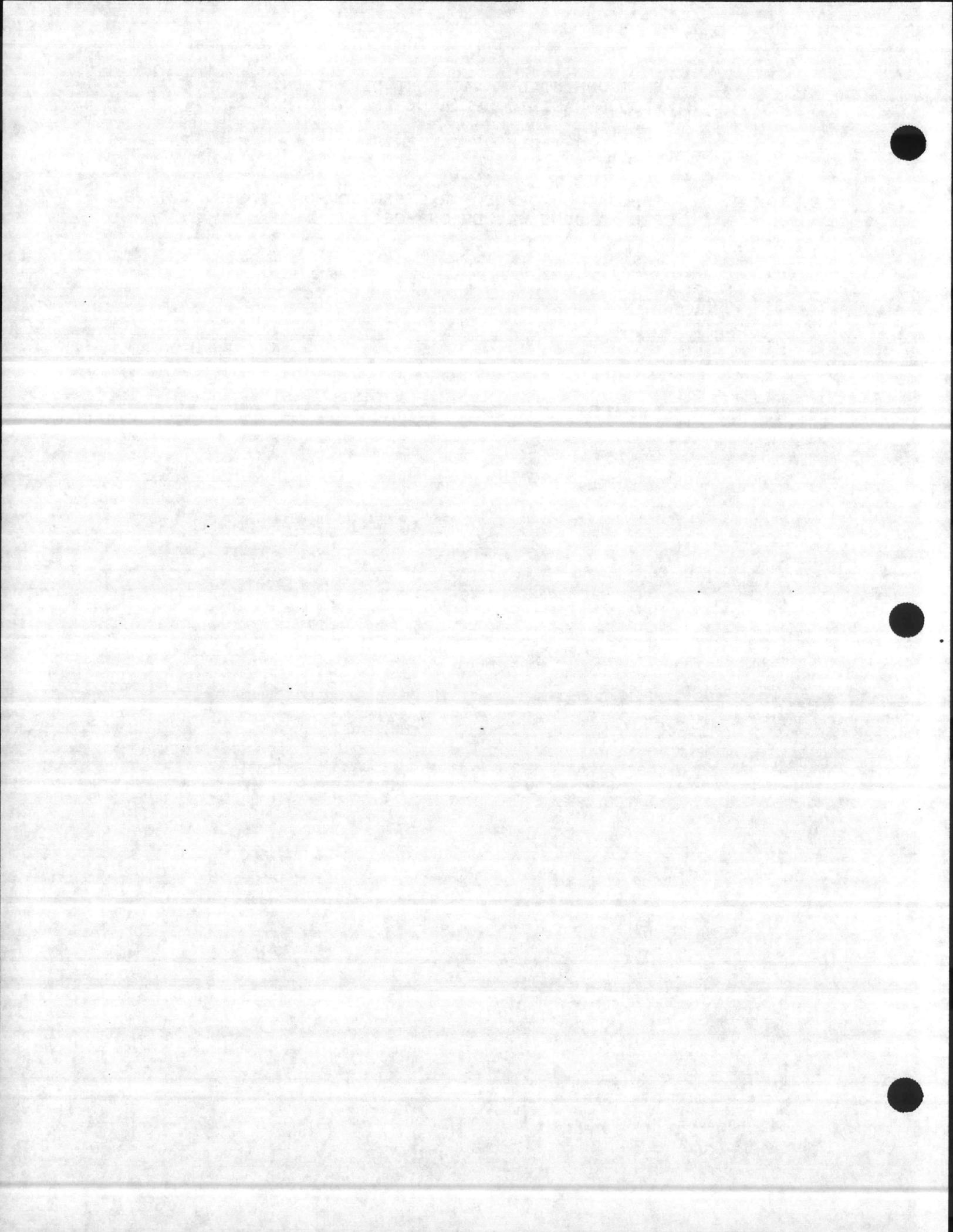
PART III

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

TABLE OF CONTENTS

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SECTION 9.	DISPOSAL GUIDANCE FOR OTHER COMMON TYPES OF HAZARDOUS WASTES ON MCB (EX. DS2)	277-294
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U.S. ARMY CHEMICAL
RESEARCH, DEVELOPMENT
AND ENGINEERING CENTER

DATE: 4 April 1990
HCSDS NO: 20059A

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:

Diethylenetriamine (70%)

Sodium Hydroxide (2%)

Ethylene Glycol
Monomethyl Ether (28%)

SYNONYMS:

Bis (2-Aminoethyl) amine
DETA

Caustic soda

Methyl Cellosolve
2-Methoxyethanol
EGME

TRADE NAME AND SYNONYMS:

Decontaminating Agent, DS2
DS2
Decon Agent DS2

CHEMICAL FAMILY: Mixture

FORMULA/CHEMICAL STRUCTURE:

Diethylenetriamine - NH₂ (CH₂)₂ NH (CH₂)₂ NH₂
Sodium Hydroxide - NaOH
Ethylene Glycol Monomethyl Ether - CH₃ OCH₂ CH₂ 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

Diethylenetriamine - 69-71%
Sodium Hydroxide - 1.9-2.1%
Ethylene Glycol
Monomethyl Ether - 26.9-29.1%

TLV: 4 mg/m³ (1 ppm) (skin)
TLV: 2 mg/m³ (ceiling)
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 teratogenesis) 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 to 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 artificial 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 than 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 canister. (i.e. gas mask)

o any NIOSH approved escape type SCBA

Greater than 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., o-
veralls & long sleeve jacket, or one- or two-piece chemical splash suit) and
chemical resistant boots. Military personnel will use standard issue equip-
ment 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 re-
quirements 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.

HAZARDOUS CHEMICAL WARNING LABEL

1. CHEMICAL/COMMON NAME:		2. HAZARD CODE: C2	
3. NSN/LSN: 6850007534870	4. PART NUMBER: DECONTAMINATING AGENT DS2		
5. ITEM NAME: DECONTAMINATING AGENT			
6. HAZARDS: (X all that apply)	(1) Acute (Immediate)	(2) Chronic (Delayed)	
	NONE SLIGHT MODERATE SEVERE		
a. HEALTH:		3	3
b. CONTACT:		3	3
c. FIRE:	2		
d. REACTIVITY:	1		
7. SPECIFIC HAZARDS & PRECAUTIONS: (Including Target Organ Effects)			
<p>ACUTE: CORROSIVE TO TISSUE & HIGHLY IRRITANT TO RESPIRATORY TRACT; CHRONIC: REPEATED EXPOSURE TO "DETA" CAN CAUSE SKIN SENSITIZATION & ASTHMA; SUFFICIENT EXPOSURE TO "EGMB" MAY CAUSE "CNS" DEPRESSION & LIVER DAMAGE. ALTHOUGH NOT DEFINITELY ESTABLISHED IN HUMANS, REPRODUCTIVE EFFECTS ARE ALSO A MAJOR CONCERN. NO TOX. DATA AVAILABLE ON DS2. HOWEVER, DS2: ALKALI WHICH ON CONTACT WILL CORRODE TISSUE. EFFECTS EXHIBITED ARE A FUNCTION OF ROUTE OF EXPOS., AMT. OF SUBST. PRESENT & DURATION OF EXPOSURE; HEALTH EFFECTS RANGE FROM MILD BURNS & PRIMARY IRRITATION TO CORNEAL OPACIFICATION, SEVERE BURNS, NAUSEA, VOMITING (SEE SUPPL DATA)</p> <p align="center">(See MSDS for further information)</p>			
8. PROTECT: (X all that apply) <input checked="" type="checkbox"/> EYES <input checked="" type="checkbox"/> SKIN <input checked="" type="checkbox"/> RESPIRATORY			
9. CONTACT			
a. COMPANY NAME: U.S. ARMY ARMAMENT, MUNITIONS & CHEMICAL COMMAND			
b. ADDRESS			
Street : ATTN: SMCCR-SFS, HDQ. BLDG. B5101			
P.O.Box:			
City: ABERDEEN PROVING GROUND			
State: ND Zip Code: 21010-5423 Country: US			
c. EMERGENCY TELEPHONE NUMBER: 301-671-4411 (0800 - 1630 EST)			
10. PROCUREMENT YEAR FOR HAZARDOUS CHEMICAL:			

DD Form 2521, DEC 88

HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 020

Marine Corps Base, Camp Lejeune

1. GENERATOR NAME
2. FACILITY ADDRESS

North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID

NC 6170022580

4. GENERATOR STATE ID

same

6. TECHNICAL CONTACT

Mr. John Riggs

7. TITLE

Env. Control Spec.

PHONE

(919) 451-1482

B. 1. NAME OF WASTE
DS-2
2. USEPA/STATE WASTE CODE(S)
D002
3. PROCESS GENERATING WASTE
NBC Decontamination Discarded Product
4. PROJECTED ANNUAL VOLUME/UNITS unknown / 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 REFERENCE STANDARDS _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)

 COLOR Milky

 DENSITY .98 BTU/LB 2000-4000

 TOTAL SOLIDS <1% ASH CONTENT <1

 LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

 PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER

 TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001)

 FLASH POINT (F) 168°
 HIGH TOC (> 10%)

 LOW TOC (< 10%)

 REACTIVE (D003)

 WATER REACTIVE

 CYANIDE REACTIVE

 SULFIDE REACTIVE

 CORROSIVE (D002)

 pH >12.5
 CORRODES STEEL

 TOXICITY CHARACTERISTIC
(SEE REVERSE FOR LISTING)

3. CHEMICAL COMPOSITION (ppm or mg/L)

 COPPER <10 PHENOLICS N/A

 NICKEL <10 TOTAL HALOGENS N/A

 ZINC <10 VOLATILE ORGANICS 25-30

 CHROMIUM-HEX N/A PCBs N/A

(OTHER) _____

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

4. MATERIAL COMPOSITION

COMPONENT	CONCENTRATION	RANGE
diethylene triamine		65-75%
ethylene glycol monomethyl ether		25-30%
sodium hydroxide		1-4%
TOTAL	<u>100</u>	<u>100%</u>

5. SHIPPING INFORMATION

 DOT HAZARDOUS MATERIAL? YES NO

 PROPER SHIPPING NAME Waste, Caustic Alkali Liquid, N.O.S. (diethylene triamine)

 Label: Corrosive

 HAZARD CLASS 8 U.N. or N.A. NO. UN 1719

 ADDITIONAL DESCRIPTION PGI

 METHOD OF SHIPMENT BULK DRUM OTHER: _____

 CERCLA REPORTABLE QUANTITY (RQ) 100lbs

EMERGENCY RESPONSE GUIDE PAGE _____

 DOT PUBLICATION 5800.4 PAGE NO. 60 EDITION (YR) 1990

SPECIAL HANDLING INFORMATION _____

6. GENERATOR CERTIFICATION
BASIS FOR INFORMATION
 CHEMICAL ANALYSIS (ATTACH TEST RESULTS)

 USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) MSDS, Chemical Dictionary, DRMS Guidelines (DRMS-4160.3)

 I, Sammy D. Gwynn, HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL
(Print or Type Name)

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE

287

DATE

26 Oct 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3.-BUTADIENE	D033	_____
<input type="checkbox"/> BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
<input type="checkbox"/> BENZENE	D018	_____	<input type="checkbox"/> LEAD	D008	_____
<input type="checkbox"/> CADMIUM	D006	_____	<input type="checkbox"/> LINDANE	D013	_____
<input type="checkbox"/> CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
<input type="checkbox"/> CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
<input type="checkbox"/> CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	_____
<input type="checkbox"/> CHLOROFORM	D022	N/A	<input type="checkbox"/> NITROBENZENE	D036	N/A
<input type="checkbox"/> CHROMIUM	D007	_____	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
<input type="checkbox"/> O-CRESOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
<input type="checkbox"/> M-CRESOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
<input type="checkbox"/> P-CRESOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
<input type="checkbox"/> CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
<input type="checkbox"/> 2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027	_____	<input type="checkbox"/> TRICHLOROETHYLENE	D040	_____
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,45-TP (SILVEX)	D017	_____
<input type="checkbox"/> ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
<input type="checkbox"/> HEXACHLOROBENZENE	D032	_____			

PART III

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 · LARGE QUANTITY GENERATORS
29 MAR 91 · SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	10	<input type="checkbox"/> HEXACHLORO-1,3-BUTADIENE	D033	
<input type="checkbox"/> BARIUM	D005	250	<input type="checkbox"/> HEXACHLOROETHANE	D034	
<input type="checkbox"/> BENZENE	D018		<input type="checkbox"/> LEAD	D008	2500
<input type="checkbox"/> CADMIUM	D006	50	<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input type="checkbox"/> MERCURY	D009	1
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input type="checkbox"/> CHROMIUM	D007	1500	<input type="checkbox"/> PENTACHLOROPHENOL	D037	
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024		<input type="checkbox"/> SELENIUM	D010	10
<input type="checkbox"/> P-CRESOL	D025		<input type="checkbox"/> SILVER	D011	50
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

PART III

COMPONENT

RANGE

- | | |
|--|---------|
| 1) Paint (50% Sludge) consisting of a binder, organic pigment, solvent or thinner (ex: Naptha, mineral spirits MEK, Turpentine) and fine metal particles (ex: Zinc, Aluminum) in the case of metallic paint | 60-100% |
| 2) Non Halogenated Solvents | 0-20% |
| 3) Halogenated Solvents | 0-10% |
| 4) Water | 0-10% |
| 5) Cresols | 0-10% |

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF AUGUST 1992

For U.S. Government Use Only

FSC: 4240

NIIN: 001655026

Manufacturer's CAGE: 1DA66

Part No. Indicator: A

Part Number/Trade Name: ASC-T ACTIVATED CARBON

=====

General Information

=====

Item Name: FILTER ELEMENT FOR THE M17 CHEMICAL-BIOLOGICAL MASK

Manufacturer's Name: CALGON CARBON CORPORATION

Manufacturer's Street: N/K

Manufacturer's P. O. Box: 717

Manufacturer's City: PITTSBURGH

Manufacturer's State: PA

Manufacturer's Country:

Manufacturer's Zip Code: 15230-0717

Manufacturer's Emerg Ph #: (412) 787-6700

Manufacturer's Info Ph #: (412) 787-6822

Distributor/Vendor # 1:

Distributor/Vendor # 1 Cage:

Distributor/Vendor # 2:

Distributor/Vendor # 2 Cage:

Distributor/Vendor # 3:

Distributor/Vendor # 3 Cage:

Distributor/Vendor # 4:

Distributor/Vendor # 4 Cage:

Safety Data Action Code:

Safety Focal Point: F

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status:

Date MSDS Prepared: 25JUN85

Safety Data Review Date: 18JUN91

Supply Item Manager:

MSDS Preparer's Name: S. D. CIFRULAK

Preparer's Company: CALGON CARBON CORPORATION

Preparer's St Or P. O. Box: N/K

Preparer's City: PITTSBURGH

Preparer's State: PA

Preparer's Zip Code: 15230-0717

Other MSDS Number:

MSDS Serial Number: BKHGD

Specification Number:

Spec Type, Grade, Class:

Hazard Characteristic Code:

Unit Of Issue:

Unit Of Issue Container Qty:

Type Of Container:

Net Unit Weight:

ARC/State License Number:

Net Explosive Weight:

Net Propellant Weight-Ammo:

Coast Guard Ammunition Code:

Ingredients/Identity Information

Proprietary: NO
Ingredient: GRAPHITE, SYNTHETIC
Ingredient Sequence Number: 01
Percent: 86%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: FF5250100
CAS Number: 7440-44-0
SHA PEL: 10 MG/M3 TDUST
CGIH TLV: 2 MG/M3 TDUST; 9192
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: COPPER (SARA III)
Ingredient Sequence Number: 02
Percent: 7%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: GL5325000
CAS Number: 7440-50-8
SHA PEL: 0.1MG/M3 FUME/1 DUST
CGIH TLV: 0.2MG/M3 FUME; 9192
Other Recommended Limit: 1 MG(CU)/M3 (DUST)

Proprietary: NO
Ingredient: CHROMIC ACID (SOLID OR SOLUTION), CRO3, CHROMIUM (VI) OXIDE,
R-03
Ingredient Sequence Number: 03
Percent: 5%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: GB6650000
CAS Number: 1333-82-0
SHA PEL: 0.1 MG/CUM (CRO3)
CGIH TLV: 0.05 MG/CUM (CR)
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: TRIETHYLENEDIAMINE
Ingredient Sequence Number: 04
Percent: 1%
Ingredient Action Code:
Ingredient Focal Point: F
NIOSH (RTECS) Number: HM0354200
CAS Number: 280-57-9
SHA PEL: N/K
CGIH TLV: N/K
Other Recommended Limit: N/K

Proprietary: NO
Ingredient: SILVER (SARA III)
Ingredient Sequence Number: 05
Percent: <0.1%
Ingredient Action Code:

Ingredient Focal Point: F
NIOSH (RTECS) Number: VW3500000
CAS Number: 7440-22-4
SHA PEL: 0.01 MG/M3
ACGIH TLV: 0.1 MG/M3; 9192
Other Recommended Limit: 10 UG/CUM

=====

Physical/Chemical Characteristics

=====

Appearance And Odor: BLACK PARTICULATE SOLID.

Boiling Point: N/R

Melting Point: N/K

Vapor Pressure (MM Hg/70 F): N/R

Vapor Density (Air=1): N/R

Specific Gravity: 2.3

Decomposition Temperature: N/K

Evaporation Rate And Ref: N/K

Solubility In Water: NEGLIGIBLE

Percent Volatiles By Volume: N/R

Viscosity:

pH: N/R

Radioactivity:

Form (Radioactive Matl):

Magnetism (Milligauss):

Corrosion Rate (IPY): N/K

Autoignition Temperature:

=====

Fire and Explosion Hazard Data

=====

Flash Point: N/R

Flash Point Method: N/R

Lower Explosive Limit: N/K

Upper Explosive Limit: N/K

Extinguishing Media: WATER

Special Fire Fighting Proc: FLOOD W/PLENTY OF WATER.

Unusual Fire And Expl Hazrds: CONTACT W/OZONE/LIQUID OXYGEN/CHLORINE/
PERMANGANATE MAY RESULT IN FIRE. DUE TO THE METALS, THIS CATALYTIC REACTION
IS ACCELERATED FOR THE ASC-T DUST OR FINES.

=====

Reactivity Data

=====

Stability: YES

Cond To Avoid (Stability): N/K

Materials To Avoid: STRONG OXIDIZERS SUCH AS OZONE, LIQUID OXYGEN,
CHLORINE, & PERMANGANATE.

Hazardous Decomp Products: CO & NITROGEN OXIDE.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): N/K

=====

Health Hazard Data

=====

LD50-LC50 Mixture: ORAL LD50 (RAT): 700 MG/KG

Route Of Entry - Inhalation: NO

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: NO

Health Haz Acute And Chronic: EYE: IRRITATION. PRODUCT IS NON-TOXIC.

Carcinogenicity - NTP: YES

Carcinogenicity - IARC: YES
Carcinogenicity - OSHA: YES
Explanation Carcinogenicity: CHROMIUM VI IS SUSPECTED TO BE CARCINOGENIC.
Signs/Symptoms Of Overexp: EYE: IRRITATION.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES: FLUSH W/PLENTY OF WATER FOR AT LEAST 15
MINS. SKIN: WASH W/SOAP & WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

=====

Precautions for Safe Handling and Use

=====

Steps If Matl Released/Spill: SWEEP UP UNUSED CARBON & DISCARD IN REFUSE
CONTAINER OR REPACKAGE.
Neutralizing Agent: N/K
Waste Disposal Method: DISPOSE OF UNUSED CARBON IN REFUSE CONTAINER.
DISPOSE OF IN ACCORDANCE W/LOCAL/STATE/FEDERAL REGS. WASTE MATERIAL SHOULD
BE MANIFESTED AS D007 FOR EXTRACTABLE CHROMIUM. DAMAGED/UNUSABLE ITEMS
CONTAINING CARBON ARE CLASSIFIED AS RCRA HAZARDOUS WASTE.
Precautions-Handling/Storing: DUST/FINES ARE MORE SUSCEPTIBLE TO CATALYTIC
REACTION THAN THE LARGE MESH PRODUCT. AVOID GENERATION OF DUST/FINES.
Other Precautions: TAKE SAMPLES & PROCEDURES FOR LOW OXYGEN LEVELS BEFORE
ENTERING CONFINED SPACES. FINES GENRATED BY ATTRITION DURING HANDLING
CONTAIN A HIGHER LEVEL OF IMPREGNATE THAN THE ACTUAL PRODUCT. HAZARDOUS
CONDITION MAY BE ACCELERATED.

=====

Control Measures

=====

Respiratory Protection: USE A NIOSH APPROVED PARTICULATE FILTER RESPIRATOR
IF EXCESSIVE DUST IS GENERATED.
Ventilation: LOCAL EXHAUST/MECHANICAL (GENERAL) VENTILATION: RECOMMENDED
Protective Gloves: RUBBER
Eye Protection: SAFETY GLASSES, GOGGLES
Other Protective Equipment: AS REQUIRED
Work Hygienic Practices: WASH THOROUGHLY AFTER HANDLING.
Suppl. Safety & Health Data: WET ACTIVATED CARBON REMOVES OXYGEN FROM AIR
CAUSING A SEVERE HAZARD TO WORKERS INSIDE CARBON VESSELS, ENCLOSED OR
CONFINED SPACES. CARBON IMPREGNATED W/COPPER, CHROMIUM, SILVER & TEDA.

HAZARDOUS WASTE PROFILE SHEET

PART I

A. GENERAL INFORMATION

 WASTE PROFILE NO. 310
Marine Corps Base, Camp Lejeune
1. GENERATOR NAME
2. FACILITY ADDRESS
North Carolina

 5. ZIP CODE
28542
3. GENERATOR USEPA ID
NC 6170022580
4. GENERATOR STATE ID
same
6. TECHNICAL CONTACT
Mr. John Riggs
7. TITLE
Env. Control Spec.
PHONE
919 451-1482
B. 1. NAME OF WASTE Air Purification Filters
2. USEPA/STATE WASTE CODE(S) D004-D011 (only Codes that apply will be manifested)
3. PROCESS GENERATING WASTE Discarded Filters
4. PROJECTED ANNUAL VOLUME/UNITS unknown / lbs **5. MODE OF COLLECTION** Drums/Boxes
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 **REFERENCE STANDARDS** _____

PART II

1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)

 COLOR _____
 DENSITY _____ BTU/LB _____
 TOTAL SOLIDS _____ ASH CONTENT _____
 LAYERING: MULTILAYERED BILAYERED SINGLE PHASE

2. RCRA CHARACTERISTICS

 PHYSICAL STATE: SOLID LIQUID SEMI-SOLID
 GAS OTHER

 TREATMENT GROUP: WASTEWATER NON-WASTEWATER

 IGNITABLE (D001) REACTIVE (D003)
 FLASH POINT (F) _____
 HIGH TOC (> 10%) WATER REACTIVE
 LOW TOC (< 10%) CYANIDE REACTIVE
 SULFIDE REACTIVE

 CORROSIVE (D002) TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)
 pH _____
 CORRODES STEEL

3. CHEMICAL COMPOSITION (ppm or mg/L)

 COPPER < 10 PHENOLICS N/A
 NICKEL < 10 TOTAL HALOGENS N/A
 ZINC < 10 VOLATILE ORGANICS N/A
 CHROMIUM-HEX N/A PCBs N/A
 (OTHER) _____

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

COMPONENT	CONCENTRATION	RANGE
Filter: Carbon Charcoal Media, Cardboard, Plastic, Metal Screen, Cotton, Rubber		60-80%
Casing, Metal Alloy		20-40%
TOTAL	100	100%

5. SHIPPING INFORMATION

 DOT HAZARDOUS MATERIAL? YES NO

 PROPER SHIPPING NAME Hazardous Waste Solid, N.O.S

Label: Class 9

 HAZARD CLASS 9 U.N. or N.A. NO. NA 3077

 ADDITIONAL DESCRIPTION PGIII

 METHOD OF SHIPMENT BULK DRUM OTHER: _____

 CERCLA REPORTABLE QUANTITY (RQ) 11b

EMERGENCY RESPONSE GUIDE PAGE _____

 DOT PUBLICATION 5800.4 PAGE NO. 31 EDITION (YR) 90

SPECIAL HANDLING INFORMATION _____

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BASIS FOR INFORMATION
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 I, Sammy D. Gwynn

(Print or Type Name)

HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL

ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTE TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.

SIGNATURE OF GENERATOR'S REPRESENTATIVE

DATE

20A.A 93

TOXICITY CHARACTERISTIC LIST

EFFECTIVE 25 SEP 90 - LARGE QUANTITY GENERATORS
29 MAR 91 - SMALL QUANTITY GENERATORS

CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
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<input checked="" type="checkbox"/> BENZENE	D018		<input checked="" type="checkbox"/> LEAD	D008	< 500
<input checked="" type="checkbox"/> CADMIUM	D006	< 20	<input type="checkbox"/> LINDANE	D013	
<input type="checkbox"/> CARBON TETRACHLORIDE	D019		<input checked="" type="checkbox"/> MERCURY	D009	< 3
<input type="checkbox"/> CHLORDANE	D020		<input type="checkbox"/> METHOXYCHLOR	D014	
<input type="checkbox"/> CHLOROBENZENE	D021		<input type="checkbox"/> METHYL ETHYL KETONE	D035	
<input type="checkbox"/> CHLOROFORM	D022		<input type="checkbox"/> NITROBENZENE	D036	
<input checked="" type="checkbox"/> CHROMIUM	D007	< 250	<input type="checkbox"/> PENTACHLOROPHENOL	D037	
<input type="checkbox"/> O-CRESOL	D023		<input type="checkbox"/> PYRIDINE	D038	
<input type="checkbox"/> M-CRESOL	D024		<input checked="" type="checkbox"/> SELENIUM	D010	< 10
<input type="checkbox"/> P-CRESOL	D025		<input checked="" type="checkbox"/> SILVER	D011	< 25
<input type="checkbox"/> CRESOL	D026		<input type="checkbox"/> TETRACHLOROETHYLENE	D039	
<input type="checkbox"/> 2,4-D	D016		<input type="checkbox"/> TOXOPHENE	D015	
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027		<input type="checkbox"/> TRICHLOROETHYLENE	D040	
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028		<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029		<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030		<input type="checkbox"/> 2,45-TP (SILVEX)	D017	
<input type="checkbox"/> ENDRIN	D012		<input type="checkbox"/> VINYL CHLORIDE	D043	
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031				
<input type="checkbox"/> HEXACHLOROBENZENE	D032				

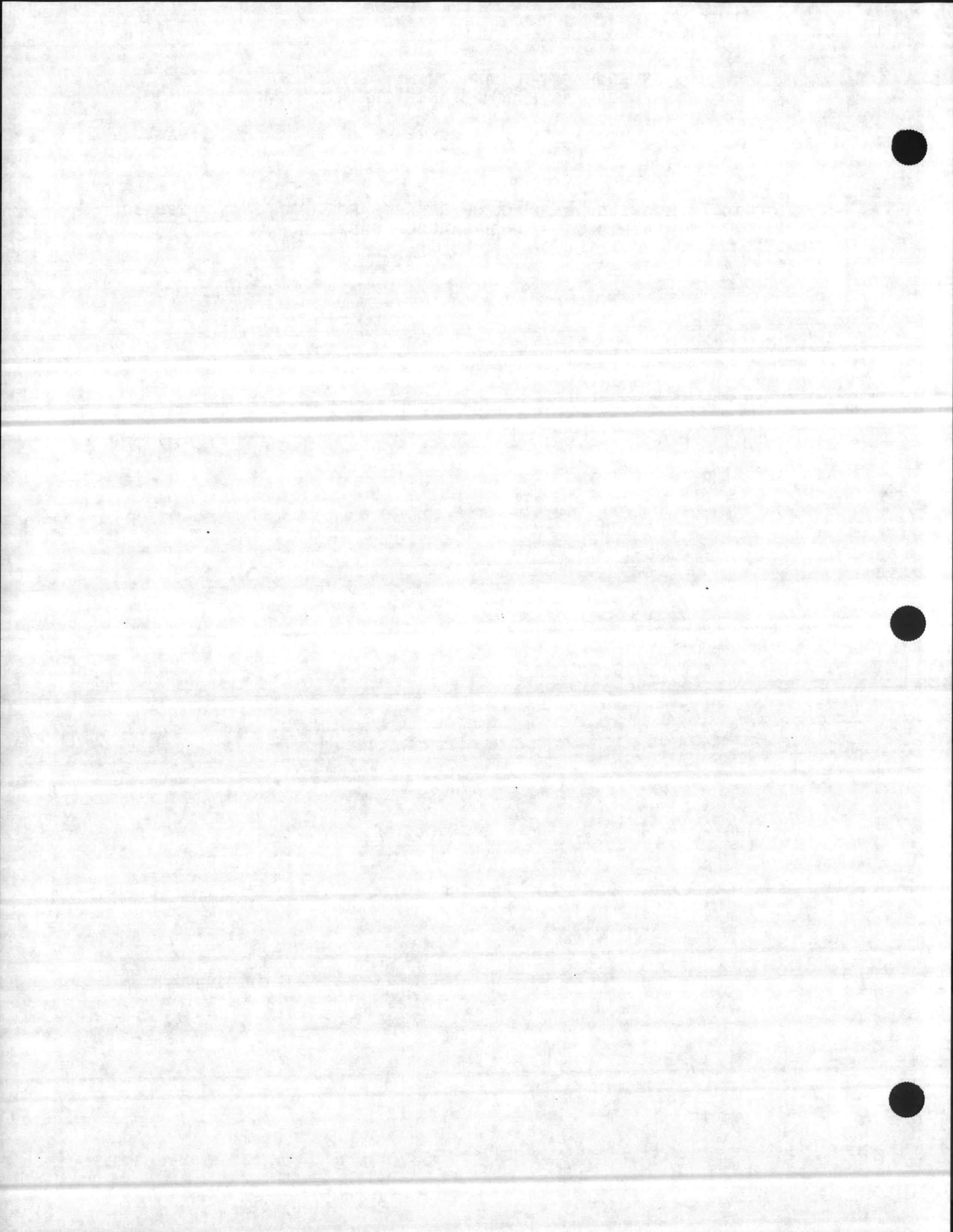
PART III

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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SECTION 10.	MCO 6280.8 AND REQUIREMENTS FOR MINIMIZATION OF HAZARDOUS WASTES	295-320
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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.

PCN 102 094938 DC

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) include 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) Tightening 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.

MCO 6280.8
23 Jul 1987

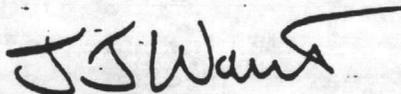
c. Biennial Report and Exception Reports.

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 Logistics

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HAZARDOUS WASTE MINIMIZATION TECHNIQUES

<u>Industrial Operation or Process</u>	<u>Hazardous Waste Generated</u>	<u>Hazardous Waste Reduction Techniques</u>
Metal working/ heat treating	coolants; quenching oils; salt baths	filtration, centri- fuge for reuse; fuel supplements; neutral- ization
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; Poly- chlorinated 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 pre- cipitation; non- cyanide baths

MCO 6280.3
23 Jul 1987

<u>Industrial Operation or Process</u>	<u>Hazardous Waste Generated</u>	<u>Hazardous Waste Reduction Techniques</u>
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; delist- ing; regeneration; incineration
Fuel storage	tank bottoms; contam- inated or excess POL	biological treat- ment; fuel suppl- ment; reblend; recycle
Munitions demil	OB/OD residues; contaminated soil	burning pads; con- tainment facilities; delisting; down- grade; reuse; incineration

ENCLOSURE (1)

HAZARDOUS WASTE MINIMIZATION

I. DEFINITION: HAZARDOUS WASTE MINIMIZATION is the practice of reducing the amount of hazardous waste requiring disposal by either:

- 1) **Source Reduction:** Reducing the amount of hazardous waste generated at the source typically through process changes, material substitutions or better control of inventory.
- 2) **Recycling:** Reuse and recycle wastes for the original or some other purpose, such as materials recovery or energy production.

II. INCENTIVES FOR HAZARDOUS WASTE MINIMIZATION: There are a number of compelling reasons to conduct hazardous waste minimization that apply to most generators of hazardous waste:

A. ECONOMICS: It is usually cheaper to conduct minimization than to have to pay for the disposal of hazardous wastes, particularly as the costs for landfill disposal and treatment of HW continues to escalate. Further, minimization can result in less cost for purchases of new material.

B. LIABILITY: Handling HW on site poses a liability for worker safety and poses a risk of a spill of a controlled substance. Disposal of HW entails a liability for the material should it be improperly disposed of. HW minimization reduces the liability for both.

C. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY: Regulations in the United States require that all generators of HW have hazardous waste minimization programs in place to ensure that the volume and/or toxicity of their waste is reduced; Indeed when the generator ships HW off site for disposal he must certify on the shipping documents (termed the HW manifest) that he has a HW minimization program in place. Further landfill disposal of many HWs has been severely restricted by the U.S. EPA and pretreatment is required prior to disposal in many cases with associated high disposal costs.

D. U.S. NAVY REGULATIONS AND POLICY: Several Navy instructions mandate that forces afloat and ashore institute HW minimization programs.

E. PUBLIC IMAGE AND ENVIRONMENTAL CONCERN: By reducing the amount of HW that must be disposed of the potential impact on the environment can be reduced. This point can be used in maintaining good public relations.

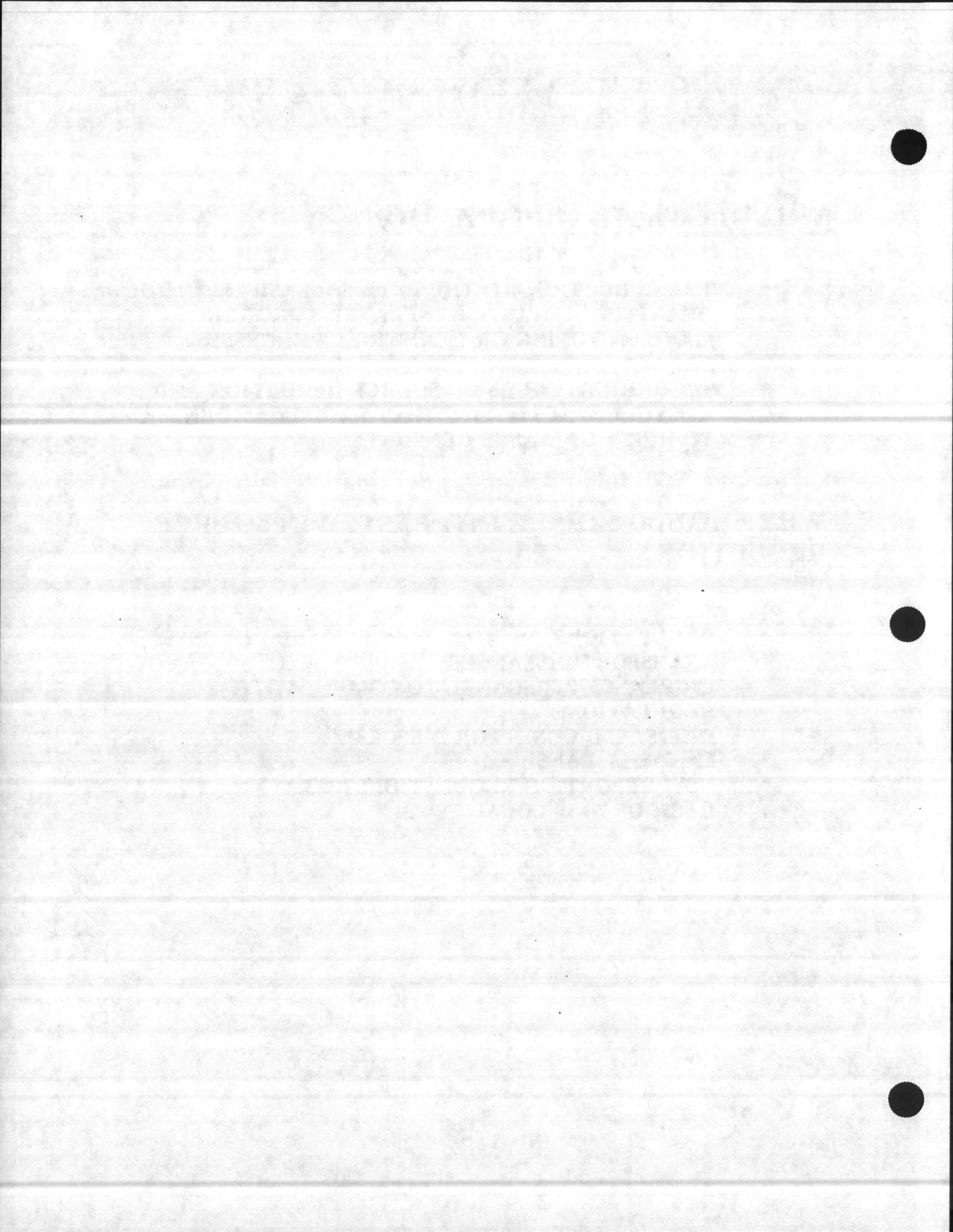
WASTE MINIMIZATION

WHAT IS WASTE MINIMIZATION?

- * THE REDUCTION, TO THE EXTENT FEASIBLE, IN THE QUANTITY OF WASTE GENERATED THROUGH MANUFACTURING OR INDUSTRIAL PROCESSES.
- * TECHNIQUES FOCUS ON SOURCE REDUCTION AND RECYCLING ACTIVITIES THAT REDUCE AMOUNTS OR TOXICITY OF WASTE GENERATED.

WHY SHOULD YOU BE INTERESTED IN SOURCE REDUCTION?

- * REGULATIONS ON TRANSPORTERS AND DISPOSERS
- * TRANSPORT DISTANCES
- * INCREASED PERSONNEL TO COMPLY WITH REGULATIONS
- * INCREASED COSTS FOR DISPOSAL
- * LANDFILL BANS
- * NEW REPORTING REGULATIONS (SARA)
- * LACK OF NEW LOCAL TSD'S.



WASTE MINIMIZATION

FIVE CLASSES OF WASTE REDUCTION

1. **RECYCLING OF A (POTENTIAL) WASTE OR PART OF IT, AT THE SITE OF ITS GENERATION;**
2. **IMPROVEMENTS IN PROCESS TECHNOLOGY AND EQUIPMENT THAT ALTER THE PRIMARY SOURCE OF WASTE GENERATION;**
3. **IMPROVEMENTS IN PLANT OPERATIONS (e.g., BETTER HOUSEKEEPING, IMPROVED MATERIALS HANDLING, AND EQUIPMENT MAINTENANCE, BETTER MONITORING OF PLANT PROCESS EQUIPMENT, AND IMPROVED WASTE TRACKING OR MASS BALANCE).**
4. **SUBSTITUTING RAW MATERIALS THAT INTRODUCE FEWER HAZARDOUS SUBSTANCES OR SMALLER QUANTITIES OF SUCH SUBSTANCES INTO THE PRODUCTION PROCESS; AND**
5. **REDESIGN OR REFORMULATION OF END PRODUCTS.**

WASTE MINIMIZATION

SOLVENTS - REDUCING, REUSING, AND RECYCLING

- * **TRY TO FIND AND USE ONE MULTI-PURPOSE SOLVENT;**
- * **USE LESS HAZARDOUS SOLVENT CLEANERS, SUCH AS WATER BASED CLEANERS, WATER SOLUBLE CUTTING FLUIDS, OR INSTALL A PRESSURE WASH SYSTEM;**
- * **EXTEND THE LIFE OF SOLVENT BATHS, BY PRE-CLEANING PARTS W/RAGS (THEN HAVE RAGS CLEANED FOR REUSE), OR USE OLD SOLVENT AS A PRE-SOAK TO REMOVE MOST OF THE DIRT OR GREASE;**
- * **MINIMIZE THE LOSE OF CLEANING SOLVENT, THRU THE USE OF A DRIP TRAY;**
- * **USE ON-SITE RECOVERY TECHNIQUES, TO MAKE SOLVENT REUSABLE THRU;**
 - **DECANTING, FILTRATION, OR DISTILLATION.**

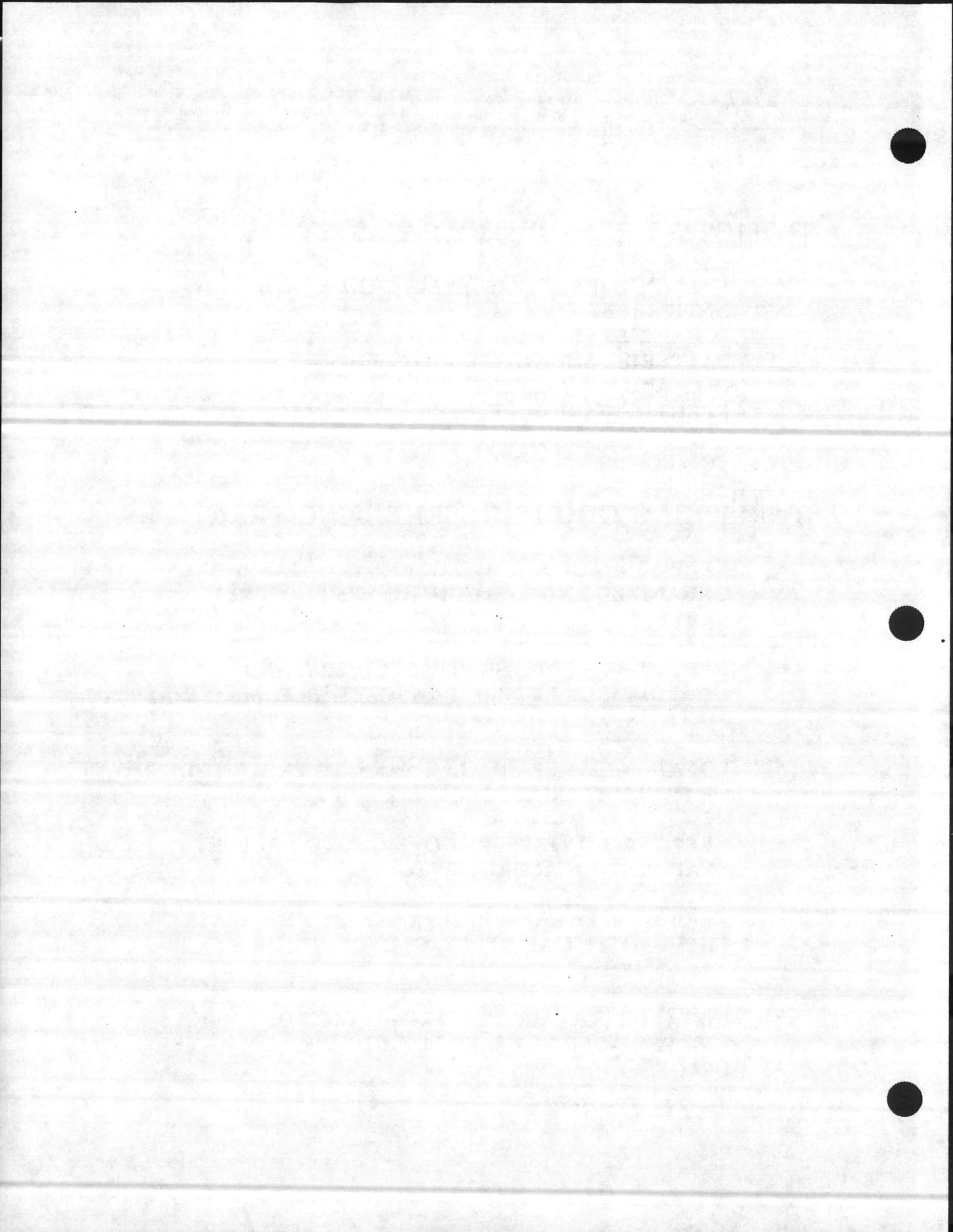
WASTE MINIMIZATION

AUTOMOTIVE REPAIR SHOPS WASTE;

- * SOLVENTS (PAINTS AND PAINT THINNERS)
- * ANTIFREEZE
- * SCRAP METAL
- * BATTERIES AND OTHER AUTO PARTS
- * OILS AND OIL FILTERS
- * FUELS OF VARIOUS TYPES
- * ACIDS AND ALKALIS (CONTAMINATED RAGS AND TOWELS)

ESTABLISHING GOOD HOUSEKEEPING PRACTICES

- * KEEP STORAGE AND WORK AREAS CLEAN, WELL ORGANIZED AND ALL CONTAINERS PROPERLY LABELED;
- * INSPECT MATERIALS UPON DELIVERY, AND IMMEDIATELY RETURN UNACCEPTABLE MATERIALS TO THE SUPPLIER;
- * LOCATE AND REPAIR ALL LEAKS, TO PREVENT LOSS OF RAW MATERIALS;
- * KEEP ALL CONTAINERS COVERED, TO PREVENT EVAPORATION AND/OR SPILLAGE;
- * KEEP WASTE STREAMS SEPARATE, TO INCREASE THEIR POTENTIAL REUSE, RECYCLING, OR TREATMENT;
- * INSTALL FLOW METERS, FLOW CONTROL DEVICES, AND SHUT-OFF NOZZLES TO CUT DOWN ON WATER USAGE.



SHELF LIFE MANAGEMENT CHART

These are the steps in Shelf Life Management:

Shelf Life Management Chart

=====

HAZARDOUS MATERIAL SHELF-LIFE MANAGEMENT

1. The proliferation of hazardous waste has become a serious problem for the Navy. It is harmful to the environment, unsafe for our personnel, difficult to handle, and disposal is extremely expensive. You can be instrumental in helping the Navy solve the problem by recognizing its seriousness and taking immediate action within your command to minimize the generation of hazardous waste.

2. An effective waste minimization program must include active life-cycle management of hazardous material before it turns into hazardous waste. One of the best and highest payback methods of doing that is establishment of a good shelf-life extension program for hazardous materials.

3. Approximately 70 percent of the hazardous material turned in for disposal is unused and in its original packaging. It has simply reached the end of its designated shelf-life before being used. Your command can do a lot to help the Navy change that situation.

4. All shelf-life material is either Type I or Type II. Approximately ten percent is Type I and can not be extended. Ninety percent, on the other hand, is Type II with an extendable life. Instead of automatic disposal when the shelf-life on Type II material expires, every effort must be made to extend the life of the material until it gets used.

5. Shelf-life extension programs are the single most neglected aspect of shelf-life management. Organizations (users as well as suppliers) generally do not conduct in-house inspections or tests to extend the shelf-life of their material. They either don't extend shelf-life at all or rely on the monthly DOD Quality Status Listing (QSL) to tell them what shelf-life material can be extended and for how long. When the QSL is used, extension efforts often consist solely of re-marking material with the new expiration dates published in the QSL. There is nothing wrong with that and it needs to be done but the QSL primarily lists only DLA-managed items that require laboratory testing. Items that require only visual checks are not listed. Neither are GSA managed items. There is a DOD initiative underway to extend the QSL into a DOD listing that will include material managed by DLA and all military services, but it will be some time before it becomes fully integrated and it will never list items that require only visual checks to do extensions.

6. In-house inspections and tests are good enough for most of

your material. It is, however, often difficult for personnel to find descriptions of the specific inspections or tests required to extend the shelf-life of particular items. There is no single source of test information to go to. GSA and all military services except the Navy have developed separate storage standards with extension criteria for the material they manage and each DLA Inventory Control Point (ICP) has developed storage standards for material managed by that particular ICP. Every command should have a collection of those standards. Taken together, they represent the existing universe of shelf-life extension test and inspection guidelines. Individual product specifications are the only other source of inspection and test information. Storage Standard Points of Contact are listed in DOD 4140.27-M (Shelf-Life Item Management Manual). You should get the standards if you don't already have them.

7. Since the Navy has not yet developed storage standards, shelf-life extension inspections and tests on Navy-managed material must rely on locally developed instructions and procedures. In the absence of specific guidelines, use good, old-fashioned common sense. For most Type II material, shelf-life extension tests are not complicated, do not require a laboratory, and can be done on the spot by anyone with a minimum of training. They are usually nothing more than visual checks for damage or deterioration.

8. Navy Item Managers refer callers to Fed-Std-793 (Depot Storage Standards) when asked what tests need to be conducted to extend the life of particular products. You can use that as a guide for developing local procedures. A sample generic storage standard based on Fed-Std-793 is enclosed. Personnel can use it to test most Type II hazardous materials in the absence of other specific instructions.

9. Shelf-life management can make or break our hazardous waste minimization efforts. Please give it your attention and support. Your help is needed.

10. Point of Contact is Ross Thompson, SUP 4521A, DSN 327-0312 or Commercial (703) 607-0312.

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NAVY GENERIC STORAGE STANDARD
HAZARDOUS MATERIAL SHELF-LIFE
INSPECTION/TEST AND EXTENSION CRITERIA

The following generic storage standard is designed to be used by Navy activities when specific hazardous material shelf-life extension criteria are unknown.

1. SCOPE. This standard details storage conditions and inspection/test instructions (shelf-life extension criteria) for Navy-managed hazardous material shelf-life items.

2. REFERENCED DOCUMENTS.

a. NAVSUP PUB 4105 [List of Items Requiring Special Handling (LIRSH)].

b. MIL-STD-105 (Sampling Procedures and Tables for Inspection by Attributes).

3. DEFINITIONS.

a. Shelf-life Item. Item of material possessing deteriorative or unstable characteristics to the degree that a storage time period must be assigned to assure that item will perform satisfactorily in service. Shelf-life Items are of two types:

(1) Type I. An item of supply which is determined through an evaluation of Technical Test Data and/or actual experience to be an item with a definite non-extendable period of shelf-life. The single digit shelf-life code designating Type I material is a letter (A-S).

(2) Type II. An item of supply having an assigned shelf-life time period that may be extended after completion of an inspection, test, or restorative action. The single digit shelf-life code designating Type II material is a number (1-9).

b. Acceptable Quality Level. The maximum percent defective (or the maximum number of defects per hundred units) that for purposes of sampling inspection can be considered satisfactory as a process average.

c. Condition Code. A code assigned to classify material in terms of its readiness for issue and use or to identify action underway to change the status of material. The condition codes used by stocking activities in shelf-life procedures are listed below. "Users" of the material normally do not downgrade condition codes in this manner. They leave the material in "A" condition until the shelf-life has expired.

When Shelf-life Remaining is: Assign Condition Code:

More than six months	A
Three to six months	B
Less than three months	C
Expired, awaiting testing	J
Expired, awaiting disposal	H

d. Shelf-life Code. A code assigned to a shelf-life item to indicate its storage time period. Shelf-life codes are standard within the Department of Defense (DOD). Items used by the Navy which have an assigned shelf-life code are listed monthly in reference (a). Codes and definitions are also provided in conjunction with the Ships Hazardous Materials List on this CD-ROM disk.

e. Shelf-life Action Code (SLAC). A code assigned to a shelf-life item to specify the type of inspection, test, or restorative action to be taken when the item has reached the end

of its designated shelf-life. It also specifies the allowed extension period for the item after the inspection, test, or restorative action has been completed. Reference (a) indicates the Shelf-life Action Code (SLAC) for items used by the Navy having an assigned shelf-life code.

4. INSTRUCTIONS FOR SAMPLING AND INSECTION/TEST.

a. Sampling.

(1) Whenever possible, sampling shall be in accordance with MIL-STD-105, Inspection Level S-2, single sampling plan for normal inspection [reference (b)].

(2) When on-hand quantities of the item are too low to allow statistically valid sampling, inspect/test enough of the material to give you confidence in the overall condition of the lot/batch.

(3) Acceptable Quality Level: 4.0 percent defective.

b. Shelf-life Extension Criteria.

(1) The material being inspected/tested shall be sampled as specified in paragraph 4.a(1)-(3).

(2) Unit, intermediate, and shipping containers shall be secure and free from leaks, rust or other contaminants, dents, bulges or other distortion.

(3) Unit containers will be securely sealed.

(4) Container contents shall show no evidence of deterioration.

(5) There shall be no evidence of reaction of the contents with the container.

(6) Liquid products shall be homogeneous solutions with no separation, sediment, or other degradation of components.

(7) Contents shall not have evaporated.

(8) Solid materials (powders, etc.) shall be free-flowing with no significant water absorption or other contamination.

(9) Aerosols/sprays will spray as designed.

(10) Markings on all containers shall be securely attached, clear, and legible.

(11) The material will perform its intended function.

c. Length of Shelf-life Extension. When the shelf-life of an item is extended, the new reinspection date will be as designated by the item's Shelf-Life Action Code (SLAC). The SLAC

specifies the type of inspection, test, or restorative action required and the extension period allowed after the inspection, test, or restorative action has been completed. The SLAC for a particular item can always be found on the item's issue/receipt documentation (DD 1348-1) and/or Material Movement Document (MMD). If the paperwork is not available, use reference (a) to find the Shelf-Life and Shelf-Life Action Codes for the item.

d. Maximum Time The Shelf-Life Can Be Extended.

(1) The shelf-life of Type I material can not be extended. The material goes to disposal at the end of its shelf-life.

(2) The shelf-life of Type II material can be extended as many times as the required inspection/test shows that the material is still in usable condition. In order to minimize the disposal of functional material, stock points and end-users are authorized and encouraged to inspect/test shelf-life items by this standard or by practical, end-use related tests to determine if the items still meet the intended use of that activity. The shelf-life may be extended as long as the item performs satisfactorily for the end-users needs.

5. STORAGE CONDITIONS. Adhesives and sealants must be stored in temperature and humidity controlled areas. Unless otherwise specified on the package label or marking, all other products may be stored in uncontrolled temperature and humidity locations.

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REGIONAL SHELF-LIFE COORDINATORS

Local assistance with shelf-life problems is available from Regional Shelf-life Coordinators. They have been placed at the major CONUS home ports to assist all Navy commands in their area. All you have to do is call them and they will come to your location. They can assist with shelf-life extensions, offload and disposal problems, or any other aspect of shelf-life management. Their goal is to reduce hazardous waste disposals by increasing consumption of hazardous materials. Shelf-life assistance is a big part of that goal. Navy Shelf-life Coordinators can be reached at the following telephone numbers:

REGION	COORDINATOR	COMMERCIAL	DSN
Norfolk	Jim Merritt	(804) 444-1096	564-1096
Charleston	Joe Berard	(803) 743-6821	563-6821
Mayport	Robert Erwin	(904) 270-5562	960-5562
Oakland	Tom Nelms	(510) 302-4302	
Puget Sound	Terry Bledsoe	(206) 476-4441	439-4441
San Diego	Carolyn Wright	(619) 556-0428	526-0428

Shelf-Life Coordinator position for Pearl Harbor is still in the process of being established. The position should be in place by September 92. For information, call Ross Thompson, SUP 4521A, (703) 607-0312 or DSN 327-0312.



6240
BEMD
5 JUL 1990

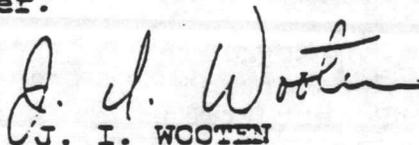
From: Commanding General, Marine Corps Base, Camp Lejeune

Subj: OILY RAGS DISPOSAL

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

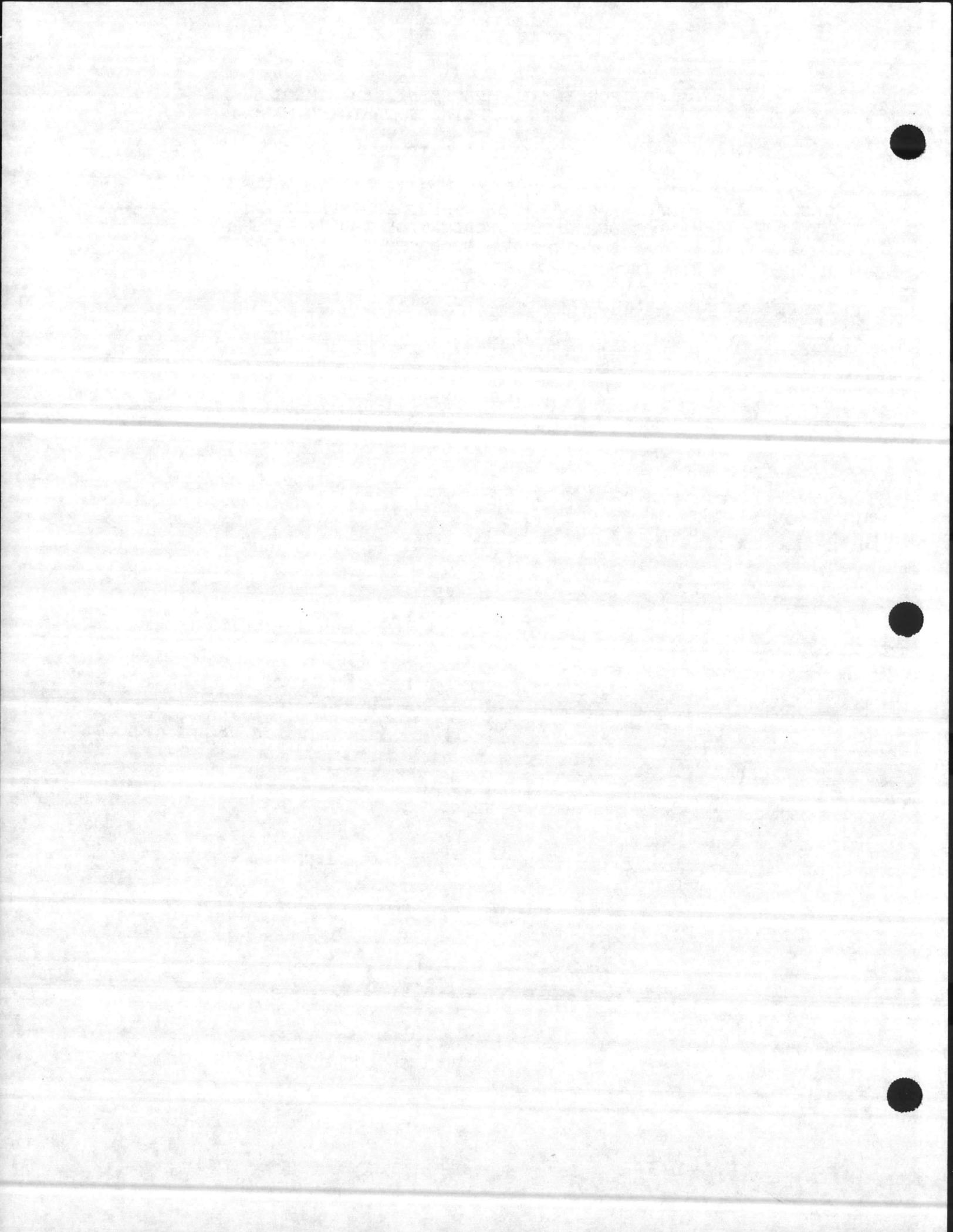
Encl: (1) Oily Rags Disposal/Recycle Cost Review

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 disposal 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 (EMDCs) and base hazardous material disposal officer (EMDO) 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
By direction

ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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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).

BO 11090.1B

28 MAY 1981

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
J. R. FRIDELL
Chief of Staff

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28 MAY 1981

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).

ENCLOSURE (1)

28 MAY 1981

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 representative 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.

ENCLOSURE (2)

(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 absorption 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, absorbents, 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.

ENCLOSURE (2)

MATERIALS AND EQUIPMENT FOR OIL SPILL
CONTAINMENT AND COUNTERMEASURE

<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>
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 - ½" diameter ½" diameter ¾" 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.

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/ODS/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
J. R. FRIDELL
Chief of Staff

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SUBJ/OIL SPILL REPORT//

RMKS/1. DATE: _____ 1993, TIME: _____

2. SOURCE: _____

3. LOCATION: BLDG _____

LATITUDE: 34. _____ N, LONGITUDE: 77. _____ W

4. AMOUNT: _____ GALLONS

5. TYPE: _____

6. SAMPLES TAKEN: NONE

7. SLICK DESCRIPTION: NONE

8. ACTION TAKEN: _____

9. ON SCENE WEATHER: CLEAR

10. OIL SPILL MOVEMENT: NONE

11. DAMAGE: NONE

12. POTENTIAL DANGER: NONE

13. CAUSE OF SPILL: _____

14. PARTIES PERFORMING SPILL REMOVAL: _____

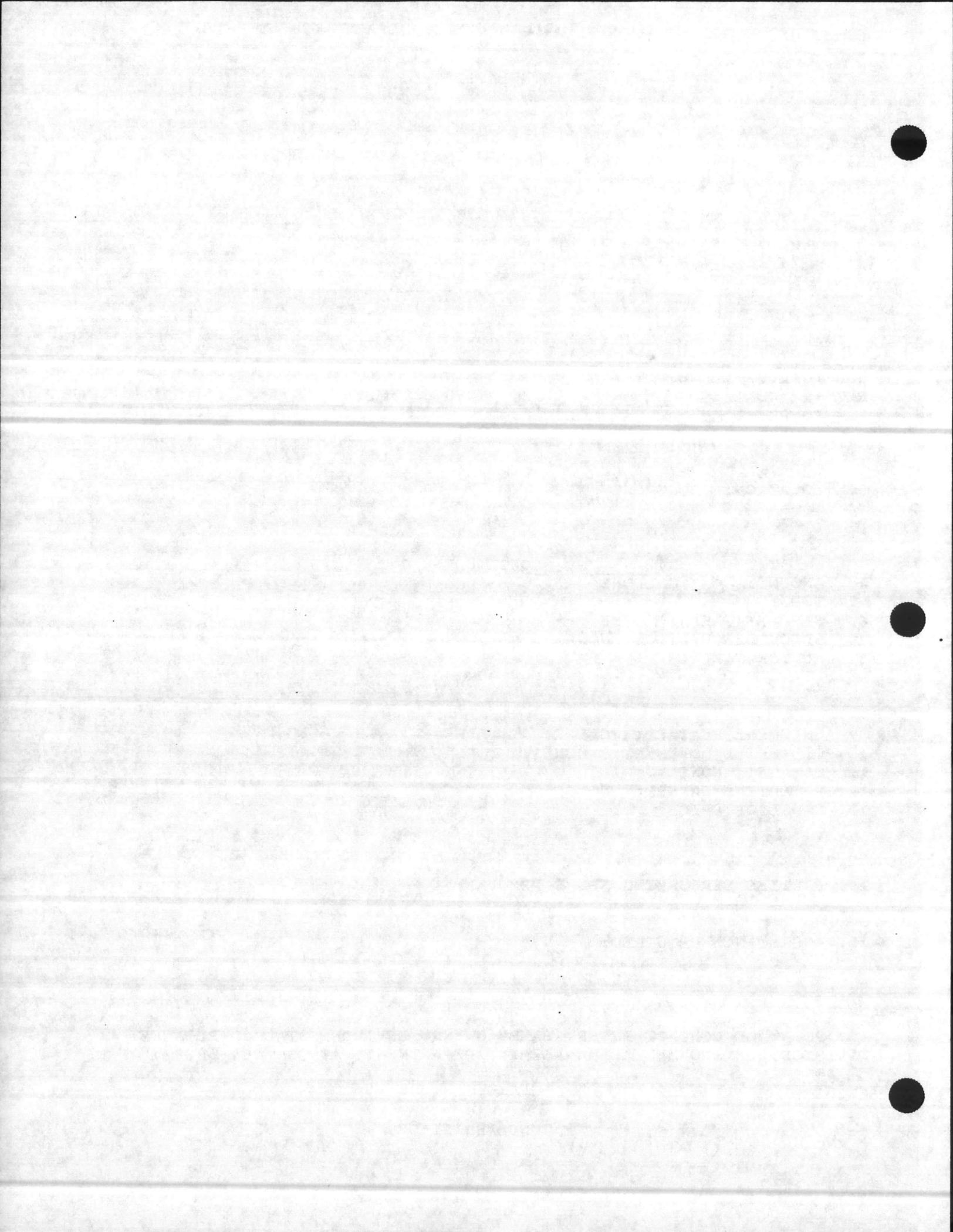
15. ASSISTANCE REQUIRED: _____

16. POINT OF CONTACT IS MR. SAMMY GWYNN, ENVIRONMENTAL COMPLIANCE
DIVISION, ENVIRONMENTAL MANAGEMENT DEPARTMENT, AT DSN 484-5878//

BT

#0001

UNCLASSIFIED



FIRE PROTECTION DIVISION
MARINE CORPS BASE
CAMP LEJEUNE, N. C. 28542-5000

BO11090.1B MAY 1981
HANDOUT # 12

I. HOW AND WHEN TO REPORT A SPILL

A. Following substance are examples of substances which must be reported if spilled on the ground or in the water in any amounts.

1. Lube oils
2. Gasoline(Mogas)
3. Kerosene
4. Lube Grease
5. JP4
6. JP5
7. Hydraulic Fluid
8. Acids
9. # 2 fuel oil
10. Paint thinner
11. Organic solvents
12. Cleaning solutions
13. Poisonous Chemicals
14. # 6 Fuel oil

B. To report a spill call 911

1. Report to Base Fire Department
2. Give Location
3. Substance spilled(name, any identification)
4. Approximate amount(ex: Container Size)
5. Your Name and Phone #
6. Any dangerous properties of the material
7. Any exposures that are in danger
8. For unknown materials don't experiment but try to describe by looks

II. Initial Action When a Spill Occurs

A. Remain on Scene-DON'T LEAVE!

1. If safe keep personnel out of spill area
2. Call Fire Department
3. Collect any information possible on substance spilled(ex: material safety data sheets, empty containers)
4. Do not wash down with water
5. If safe block material runoff with dirt, sand, or absorbent material
6. Keep material from entering drains or ground water
7. Be prepared to assist the fire department with manpower or cleanup materials

8. Always remember to be safe don't take any action that would endanger the safety of you or others
9. Minimize the size of spill by cutting off or plugging the source

III. When the Fire Department Arrives

A. Senior Fire Official Assumes Command

1. HMDO, or GSO should report to the fire department official
2. Furnish any information possible about the material
3. Stay with the fire department official until he secures you
4. Fire Department will contact EMD, Base safety and any other agencies needed

B. Fire Departments Role

1. Life safety and fire hazards
2. Coordinating all on scene activities
3. Containment of material

IV. Spill Cleanup

A. According to the Commanding General's Memo of March 1989:

1. Personnel assigned to the worksite can cleanup the majority of small spills
2. This includes providing manpower, equipment and supplies
3. The organization shall be able to store the Hazardous Waste until disposal
4. Disposal is according to Natural Resources Guidelines

B. In the event the spill is too large or unsafe for the responsible organization to clean up the fire department will request the equipment, supplies, and personnel support from Base Maintenance, EMD and appropriate other resources

C. On All Spills

1. Notify Fire Department
2. Do not flush with water
3. Prevent Runoff with sand, dirt, absorbant materials
4. Prevent spill from entering a drain, basin, manhole, or ground water
5. Notify fire department if spill has entered any drains

D. Spills on Surface Waters

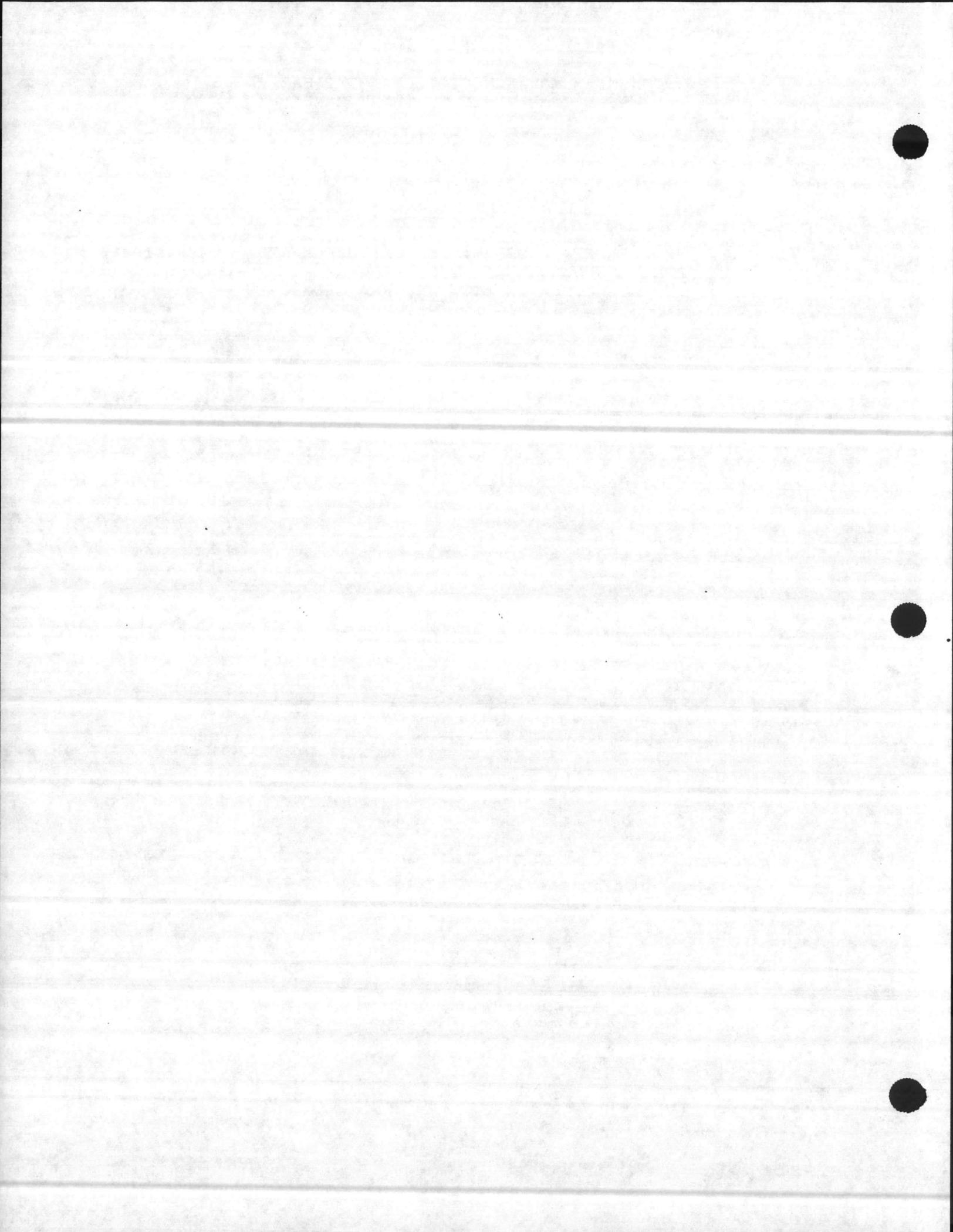
1. Call Fire Department
2. Emphasize that the spill is on the water
3. Check discharge site and cut off any further leakage
4. Do not allow boats or people into the spill area

ENVIRONMENTAL MANAGEMENT DEPARTMENT HAZARDOUS
WASTE COMPLIANCE TRAINING MANUAL

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Hazwoper: Bridging OSHA and EPA

Hazardous waste and emergency response personnel are protected under 29 CFR 1910.120. Some changes in the standard are expected, but its intent remains the same.

By Margaret C. Samways

Margaret C. Samways is director of training programs at NUS Corp. in Pittsburgh, Pa., where she develops environmental and occupational health and safety training programs for government and industry. She has managed the development and implementation of a nationwide PBS interactive teleconference on Right-to-Know issues, is past chair of the American Industrial Hygiene Association committee on training and communications, and lectures annually at the University of Pittsburgh Graduate School of Education. From 1972 to 1985, Ms. Samways was manager of the Health and Safety Educational Department for Gulf Oil Corp.'s 59,000 employees worldwide. She is an editorial advisor for Environmental Protection.

The Hazardous Waste Operations and Emergency Response (Hazwoper) Standard, 29 CFR 1910.120, is designed to protect the health and safety of a diverse population of employees. It addresses workers at abandoned hazardous waste site cleanups; RCRA corrective action sites; voluntary cleanups by potentially responsible parties (PRPs); routine operations at some treatment, storage or disposal (TSD) facilities; and all emergency response operations at sites where hazardous substances have been or may be released, including transportation accidents.

The final rule (54 FR 42, pp. 9294-9336) appeared on March 6, 1989, and the compliance deadline was March 6, 1990.

Occupational Safety and Health Administration (OSHA) standards are generally well understood by the time the compliance date falls due and there is a clear course of action to follow, often because there are precedents in earlier standards.

Hazwoper, however, has been a notable exception. This is particularly true for those parts of the standard that apply to workers at hazardous waste TSD facilities, to the training requirements for

emergency response operations and to the accreditation criteria proposed on Jan. 26, 1990, by OSHA (55 FR 2776).

Some sections of the standard are easily understood. Hazwoper clearly requires covered employers to develop and implement safety and health programs. These and other program details were "borrowed" from a guidance document issued jointly by four government entities (National Institute for Occupational Safety and Health, OSHA, the U.S. Coast Guard and the U.S. Environmental Protection Agency) in 1985.

But because these guidelines were applicable only to abandoned hazardous waste sites, the new Hazwoper rule was expanded to cover employees who deal with hazardous substances and hazardous wastes.

Because the parts of the standard that dealt with workplaces other than abandoned hazardous waste sites were new and untried, the standard has been and continues to be a moving target. Some interpretive shifts already have taken place; others are still being discussed.

In response to many questions and requests, OSHA



Hazardous materials technicians, protected by 29CFR 1910.120, excavate methyl bromide cylinders buried in the 1950s. Photo courtesy Earth Resources Corp.

published a number of clarifications and corrections on April 13, 1990, including a new and increased estimate of compliance costs. Despite the publication of corrections, some issues continue to be contested, and the standard will continue to evolve until it reaches a point of equilibrium satisfactory to all.

One of the major corrections issued on April 13 involves the status of TSD facilities. OSHA did not initially make it clear which of these facilities were required to comply with OSHA's requirements for programs on safety and health, hazard communication, training and emergency response.

The correction notice states that those facilities regulated by 40 CFR, parts 264 and 265, or by state law must comply. However, "conditionally exempt" small-quantity generators do not have to meet most of the requirements. Only those exempted employers who direct their employees to engage in emergency response must comply with the OSHA emergency response requirements; all those who direct their employees to evacuate the site in an emergency are now exempt.

This clarification provides a much stronger "bridge" between the language and organization of the EPA requirements for TSD facilities and the

OSHA standard.

A second major clarification issued by OSHA involves the definition of "hazardous substance" as any biological agent and other disease-causing agent as defined in Section 101(33) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The agency specifically includes petroleum products and gases under the umbrella of hazardous substances, and, as has already been noted, was quick to apply Hazwoper training requirements at oil spill cleanup sites.

A spokesperson for the agency has reaffirmed that the hazardous substances umbrella is extremely broad, and covers anything that could or will cause adverse health effects. Because of OSHA's focus on employee health, hazardous wastes are perceived only as a subset of hazardous substances. For example, investigations of underground storage tanks (USTs) are not covered by Hazwoper unless a leak is suspected. Remediation of sites where USTs have leaked is definitely covered, since there is a potential threat to human health.

The interface between Hazwoper and OSHA's Hazard Communication Standard (29 CFR

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1910.1200), although not formally addressed in the corrections, has been partially clarified in conversations with agency personnel. When Hazwoper was first issued, in March 1989, the emergency response provisions of the standard were widely thought to apply to any spill or leak in the workplace, no matter how insignificant.

This interpretation appeared to escalate minor spills, already addressed in the material safety data sheets available under the Hazard Communication Standard, into major emergency response events requiring higher levels of training.

It now has been made clear by agency personnel that if employees, properly trained under the Hazard Communication Standard, can handle small, routine releases, the requirements of Hazwoper are not invoked. Two criteria characterize a Hazwoper incident: the release must pose a true emergency, and the

response must come from outside the immediate release area.

Although these criteria are helpful, the employer who has hazardous substances in the workplace and who is attempting to define Hazwoper emergency response training needs may still be faced with a problem. If the employer feels confident that no emergency releases will ever occur, and also has an effective hazard communication program, he or she might then assume that no Hazwoper training is necessary.

These assumptions will be difficult to justify, however, when the rare emergency incident occurs. Rather than run this risk of after-the-fact noncompliance with Hazwoper, many employers have opted to conduct at least the two lowest (First Responder Awareness and Operations) levels of emergency response training in their workplaces.

The Awareness level of training is often presented as a hazard communication refresher course, with additional

emphasis on steps to be taken if an employee witnesses a significant release or spill. These steps usually include hazard recognition, emergency telephone numbers, evacuation routes and other site-specific procedures.

The Operations level of emergency response training, which is a prescribed eight hours under Hazwoper, is administered to those employees who must take defensive measures to control and contain releases until the emergency response team arrives. Depending upon the nature of the workplace and the potential hazards, many employees or only a few might require this level of training. Some employers have effectively trained in-house instructors to conduct these two lowest levels of Hazwoper emergency response training on an ongoing basis for new and transferred employees.

The Hazard Communication/Hazwoper interface is not a factor in the

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decisions that employers must make with respect to the three upper (Technician, Specialist, Incident Commander) levels of Hazwoper emergency response training. Here, the decision involves weighing the benefits of using an outside fire department or other emergency response specialists against the initiation or continuation of an in-house team.

Whichever route is selected, most companies have recognized the need to train a small cadre of in-house incident commanders, covering all work shifts, to be responsible for initiating and terminating the response, taking care of all required notifications and other

duties as defined by Hazwoper.

The Hazwoper standard, because it embraces so many different kinds of workplaces and interfaces with so many other standards and regulations, has inevitably undergone change. Further adjustments in related standards, such as the recent OSHA suggestion that material safety data sheets should follow a standardized format, will in turn have an impact on Hazwoper.

The intent of the standard, however, is clearly not subject to change. The mantle of OSHA's worker health and safety protection has been extended to all employees in operations involving hazardous substances.



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

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.

6. 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 provided 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 5707/2107, 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.

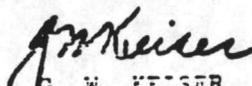
(5) Ensure that all process tanks, equipment and portable containers are clearly labeled with the name of the contents and appropriate hazard information.

(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

Occupational Safety and Health Standards for General Industry

(29 CFR PART 1910)

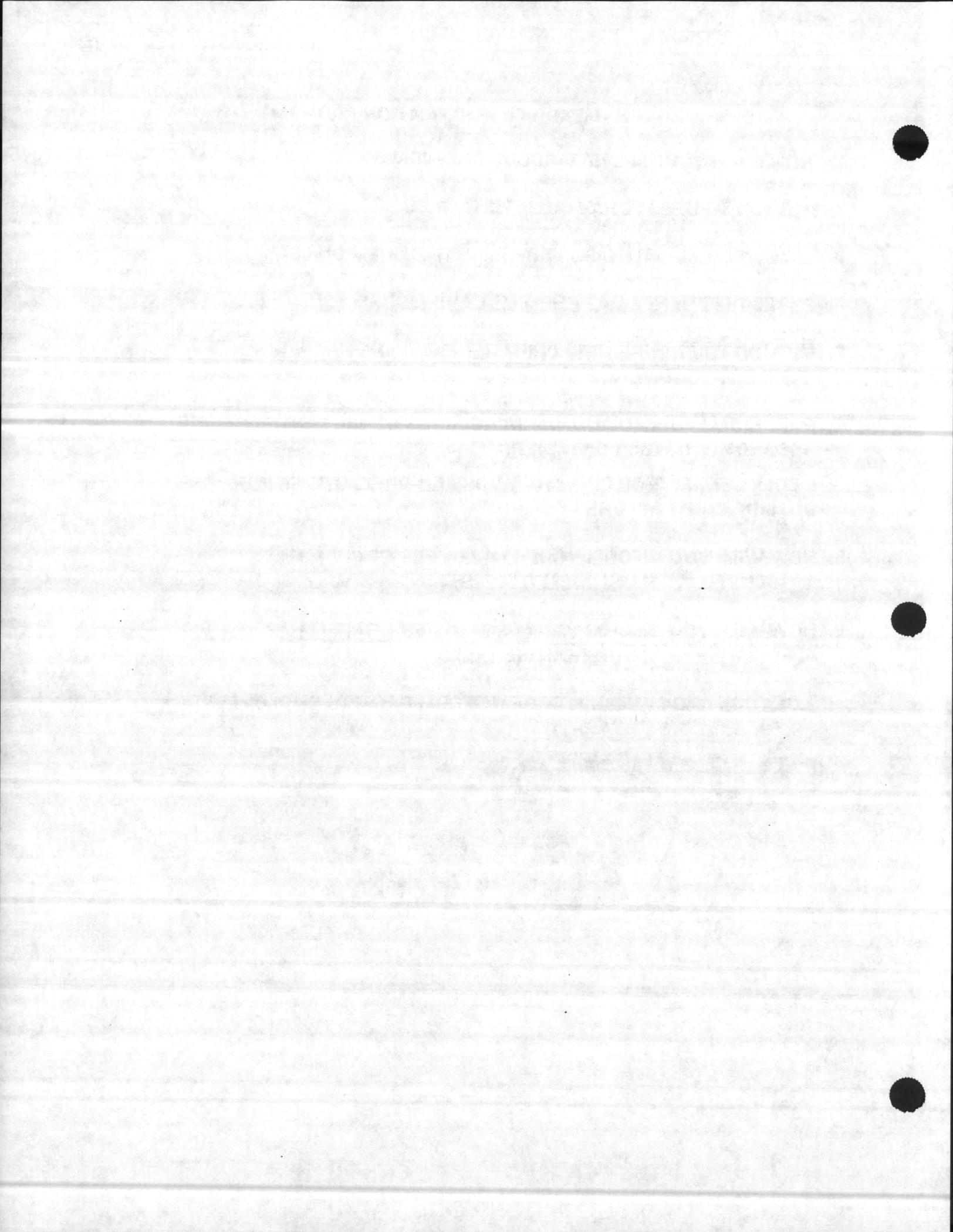
***With Amendments as of December 6, 1991
Promulgated by the
Occupational Safety and Health Administration
United States Department of Labor***



WRITTEN HAZARD COMMUNICATION PROGRAM

1. WRITTEN LIST OF ALL HAZARDOUS CHEMICALS
2. METHOD TO UPDATE HAZ CHEM LIST
3. HAVE AN UP-TO-DATE MSDS FOR EACH HAZ CHEM ON LIST
4. CROSS REFERENCE HAZ CHEM LIST AND MSDS'S
5. METHOD TO ENSURE NEW CHEM RECEIVED ARE PROPERLY LABELED AND HAVE MSDS
6. PROPERLY LABELED AND WARNING SIGNS OF BULK STORAGE AND SECONDARY USAGE CONTAINERS
7. A COMPLETE LIST OF CHEM HAZARDS AND PRECAUTIONS FOR OUTSIDE CONTRACTORS
8. HOW WILL YOU INFORM YOUR EMPLOYEES OF CHEM HAZ ASSOCIATED WITH UNLABELED PIPES
9. HOW WILL YOU INFORM YOUR EMPLOYEES OF CHEM HAZ ASSOCIATED WITH NON-ROUTINE TASKS
10. LOCATION AND AVAILABILITY OF HAZ COM PRGM TO EMPLOYEES

EDUCATION & TRAINING



HAZARD COMMUNICATION PROGRAM
29 CFR 1910.1200
EMPLOYERS COMPLIANCE CHECKLIST

THE WRITTEN HAZARD COMMUNICATION PROGRAM

- _____ 1. Do you use, store, handle or have within the workplace hazardous chemicals?
- _____ 2. Have you prepared a written list of all the hazardous chemicals present in the workplace? At a minimum the list should contain:
 - (a). the complete name of the chemical/product;
 - (b). the name of the manufacturer or distributor and;
 - (c). the National Stock Number (NSN) or product identification number.
- _____ 3. Do you have the up-to-date Material Safety Data Sheet (MSDS) by manufacturer for those chemicals on your Hazardous Material Information List (HMIL)?
- _____ 4. Is the HMIL cross referenced with the MSDS's for easy accessibility in case of an emergency, maintenance and updating?
- _____ 5. Have you developed a system to ensure that all incoming hazardous chemicals are received with proper labels and MSDS's?
- _____ 6. Do you have procedures in your workplace to ensure proper labeling or warning signs for bulk storage or secondary usage containers that hold hazardous chemicals?
- _____ 7. Do you have a complete list of the chemical hazards and precautions that you can give to outside contractors?
- _____ 8. Do you have written procedures on how you will inform your employees of chemical hazards associated with unlabeled pipes?
- _____ 9. Have your employees been informed of the hazards associated with performing non-routine tasks (i.e. confined space, repair and maintenance operations)?
- _____ 10. Is your hazard communication program in writing and available to your employees?

INFORMATION AND TRAINING

Have you developed an employee information and training program which includes the following:

- _____ 11. Does the training cover all types of harmful chemicals with which the employee may come into contact under normal usage and foreseeable emergency?
- _____ 12. Are your workers familiar with the different types of chemicals and major hazards associated with them (i.e. solvents, acids, corrosives)?
- _____ 13. Are your employees aware of the specific requirements in the Hazard Communication Program.

- _____ 14. Does your program train employees in:
 - (a) operations where hazardous chemicals are present;
 - (b) location and availability of your written hazard communications program including lists of chemicals and MSDS's?
- _____ 15. Does your training program include the explanation of labels and warnings that have been established in their work areas?
- _____ 16. Do your employees understand methods to detect presence or release of chemicals in the work place?
- _____ 17. Does your training program provide information on the appropriate first aid procedures in the event of an emergency?
- _____ 18. Are employees trained in the proper work practices and personal protective equipment in relation to hazardous chemicals in the work area?
- _____ 19. Does the training include an explanation of the labeling system and MSDS's the employee can obtain and use?
- _____ 20. Have you worked out a system to ensure new employees are properly trained?
- _____ 21. Have you developed a system with purchasing or other staff to make sure that additional training is provided if a new hazardous substance is introduced into the work area?
- _____ 22. Do you have a system to ensure that the current (up-to-date) MSDS's are in the work areas where the chemicals are used?
- _____ 23. If the employers becomes aware of new hazards relating to the chemical in use, do you have a system for informing the employees?

EMPLOYEE TRAINING GUIDELINES

- I. Prepare objectives.
 - a. Develop safety attitude.
 - b. Make employees aware of the hazardous chemicals.
 - c. Motivate employees to protect themselves by preventing exposure to hazardous chemicals.
 - d. Learn how to read and understand MSDS's and labels.
 - e. Make employees aware of the Hazard Communication Standard.

- II. Design training program.
 - a. Identify what and where hazardous chemicals are found in the work area.
 - b. The nature (odor or visual appearance) and hazard of the chemical, including local and systemic toxicity.
 - c. The specific nature of the operation involving hazardous chemicals that might result in employee exposure.
 - d. Specific information that might aid the employee in the recognition and evaluation of conditions and situation which may result in the release of hazardous chemicals.
 - e. Purpose for and description of detection or monitoring devices.
 - f. The purpose for and application of specific first aid procedures and practices.
 - g. The type, use and limitations of personal protective equipment. This includes location and availability.
 - h. Review of the Hazard Communication Standard.

- III. Techniques used in the training program.
 - a. Handout material.
 - b. Audiovisual - example of labels and MSDS's
 - c. Demonstration of protective equipment, what it is, how to wear it, where it is located.
 - d. Tests or quiz.
 - e. Attendance records.

- IV. Assessing effectiveness.
 - a. Were training objectives met?
 - b. What part of training program needs to be revised?
 - c. What part of the program was already known and consequently unnecessary?
 - d. What material was confusing?
 - e. What material was missing?
 - f. How often should training be repeated?
 - g. What did the employee learn and/or fail to learn?

MODEL WRITTEN HAZARD COMMUNICATION PROGRAM

1. GENERAL INFORMATION

In order to comply with 29 CFR 1910.1200 Hazard Communication, the following written Hazard Communication Program has been established for _____

(Work Center or Operation)

The written program will be available in the _____
for review by any interested employee. (Location)

A. Container Labeling

The _____ shall verify that all
(person/position)

containers received for use will:

-Be clearly labeled as to contents.

-Note the appropriate hazard warning.

-List the name and address of the manufacturer.

The _____ in each section will insure that
(person/position)

all secondary containers are labeled with either an extra copy of the original manufacturers label or with a generic label which have a block for identity and blocks for the hazard warning. Contact your safety representative for assistance in obtaining labels for federally procured National Stock Numbered (NSN) items through the Hazardous Material Information System (HMIS) CD-ROM system.

The _____ will review the work centers
(person/position)
labeling system _____ and update as required.
(time period)

B. Material Safety Data Sheets (MSDS)

The _____ will be responsible for obtaining
(person/position)
and maintaining the data sheet system for the work center.

The _____ will review incoming data sheets
(person/position)
for new and significant health/safety information. He/she will ensure that any new information is passed on to the affected employees.

Copies of MSDS's for all hazardous chemicals to which employees may be exposed will be kept in _____
(location)

MSDS's will be available to all employees in their work area for review during each work shift. If MSDS's are not available or new chemicals in use do not have MSDS's, immediately contact:

(person/position)

C. EMPLOYEE TRAINING AND INFORMATION

The _____ is responsible for the employee
(person/position)

training program. He/she will ensure that all elements specified below are carried out. Prior to starting work each new employee

will attend a health and safety orientation and will receive information and training on the following:

- An overview of the requirements contained in the Hazard Communication Standard 29 CFR 1910.1200.
- Chemicals present in their workplace operations,
- Location and availability of our written hazard program,
- Physical and health effects of the hazardous chemicals,
- Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area,
- How to lessen or prevent exposure to these hazardous chemicals through usage of control/work practices and personal protective equipment,
- Steps that have been taken to lessen or prevent exposure to these chemicals,
- Emergency procedures to follow if they are exposed to these chemicals,
- How to read labels and review MSDS's to obtain appropriate hazard information,
- Location of MSDS file and location of hazardous chemical list.

After attending the training class, each employee will sign a form to verify that they attended the training, received any written materials, and understood our policies on Hazard Communication. Prior to a new chemical hazard being introduced to the work center, each employee in that work center will be given information as outlined above. The _____ is responsible (person/position) for ensuring that MSDS on the new chemical(s) are available.

2. LIST OF HAZARDOUS CHEMICALS

The following is a list of all known Hazardous Chemicals located in this work center. Further information on each noted chemical can be obtained by reviewing the Material Safety Data Sheets located in _____.

PRODUCT/CHEMICAL NAME NSN/PRODUCT I.D. NO. MANUFACTURER MSDS NO

3. HAZARDOUS NON-ROUTINE TASKS

Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will be given information by their section supervisor about hazardous chemicals to which they may be exposed during such activity.

This information will include:

- Specific chemical hazards,
- Protective/safety measures the employee can take,
- Measures the work center has taken to lessen the hazards including ventilation, respirators, presence of another employee, and emergency procedures.

Examples of non-routine tasks performed by this work center:

<u>Task</u>	<u>Hazardous Chemicals</u>
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4. INFORMING CONTRACTORS

It is the responsibility of _____ to
(person/position)

provide contractors (with employees) the following information:

- Hazardous chemicals to which they may be exposed while on the job site,
- Precautions the contractors may take to lessen the possibility of exposure by usage of appropriate protective measures.

It is the responsibility of _____ for
(person/position)

contacting the contractor before work is started in the work center to gather and disseminate any information concerning chemical hazards that the contractor is bringing into the work center.

-Methods that will be used to provide other employer(s) with a copy of the Material Safety Data Sheet or to inform them of the location of the MSDS, in the work center for each hazardous chemical the other employer(s) employees may be exposed to while working.

M S D S

What Must Be On Them

- **IDENTITY AS USED ON THE LABEL**
- **PHYSICAL & CHEMICAL CHARACTERISTICS**
(bp vp fp etc.)
- **PHYSICAL HAZARDS OF HAZARDOUS CHEMICAL**
potential for fire explosion & reactivity
- **HEALTH HAZARDS OF HAZARDOUS CHEMICAL(S)**
signs,symptoms of exposure + medical condition
that could be aggravated by exposure
- **PRIMARY ROUTE(S) OF ENTRY**
- **OSHA PERMISSIBLE EXPOSURE(PEL),T L V OR THE MANUFACTURE'S**
- **WHETHER CHEMICAL IS LISTED BY:**
NTP-ANNUAL REPORT ON CARCINOGENS
APC-MONOGRAPHS (potential carcinogen)
OSHA
- **GENERAL PRECAUTIONS FOR SAFE HANDING & USE**
hygienic practices,protective measures-repair or
maintenance of contaminated equipment.,clean up - spill leaks
- **GENERAL APPLICABLE CONTROL MEASURE**
engineering controls,work practices,ppe
- **EMERGENCY & FIRST AID PROCEDURES**
- **DATE OF PREPARATION OR LAST CHANGE**
- **NAME,ADDRESS,TELEPHONE NUMBER**
of responsible party -provide additional information
and appropriate emergency procedures



SECTION 1. MATERIAL IDENTIFICATION
MATERIAL NAME: -SULFURIC ACID, CONCENTRATED

OTHER DESIGNATIONS: Oil of Vitriol, Hydrogen Sulfate; H₂SO₄; CAS #7664-93-9

MANUFACTURER/SUPPLIER: Available from many suppliers, including:
 Allied Corporation, PO Box 2064R, Morristown, NJ 07960; Telephone: 800 631-8050

HMIS
 H: 3
 F: 0
 R: 2
 PPE: *
 * Sec Sect. 8

R 1
 I 3
 S 4
 K 0



SECTION 2. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Hydrogen Sulfate (H ₂ SO ₄)	93-98	8-hr TWA: 1 mg/m ³
Water	Balance*	Human, Mist Inhalation, TCLo: 3 mg/m ³ , 24 wk (Toxic Mouth Effects)
<p>* Material is obtained by the reaction of SO₃ and water. Can contain low impurity levels, such as 0.02% max of iron as Fe. Properties vary with H₂SO₄ content.</p> <p>Current OSHA standard and ACGIH (1985-86) TLV. NIOSH has a 10-hr TWA, 40-hr. work week, of 1 mg/m³.</p>		<p>Rat, Oral, LD₅₀: 2140 mg/kg</p>

SECTION 3. PHYSICAL DATA

	93.19% H ₂ SO ₄	98.33% H ₂ SO ₄	100% H ₂ SO ₄
Boiling Point, 1 atm, deg C	ca 281	ca 338	ca 330 (dc)
Specific Gravity (60/60 F)	1.8354	1.84	1.84
Volatiles, % @ 340°C	ca 100	ca 100	ca 100
Melting Point, deg C	ca -34	ca 3	10.4
Water Solubility - Complete Miscible			
Vapor Pressure, mm Hg @ 100°F	<1 (93.19% H ₂ SO ₄); Deg. Baume - 66 (93.19% H ₂ SO ₄) - Density of H ₂ SO ₄ is often reported in degrees Baume Be). Formula is Be-145 [145/sp gr for liquids heavier than water].		
Appearance and odor:	Clear, colorless, hygroscopic, oily liquid with no odor. Mists greater than 1 mg/m ³ are easily recognizable. Those at 5 mg/m ³ are distinctly objectionable.		

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air	LOWER	UPPER
None - Nonflammable	NA	NA	NA	NA

Sulfuric acid is nonflammable; however, it is a strong oxidizing agent and may cause ignition by contact with combustible materials. Small fires may be smothered with suitable dry chemical. Cool exterior of storage tanks of H₂SO₄ with water to avoid rupture if exposed to fire. Do not add water or other liquid to the acid! The acid, especially when diluted with water, can react with metals to liberate flammable hydrogen gas. Sulfuric acid mists and vapors from a fire area are corrosive (see sect. 5). Fire fighters must wear self-contained breathing equipment and fully protective clothing.

SECTION 5. REACTIVITY DATA

Sulfuric acid is stable under normal conditions of use and storage. It does not undergo hazardous polymerization. It is a strong mineral acid reacting with bases and metals. The concentrated acid is also a dehydrating agent, picking up moisture readily from the air or other materials. Hydrogen gas may be generated within a H₂SO₄ container. Vent drums cautiously. This material reacts exothermically with water. (Acid should always be added slowly to water. Water added to acid can cause boiling and uncontrolled splashing of the acid.) Sulfur oxides can result from decomposition and from oxidizing reactions of sulfuric acid.

SECTION 6. HEALTH HAZARD INFORMATION | TLV

Concentrated sulfuric acid is a strong mineral acid, an oxidizing agent, and a dehydrating agent that is rapidly damaging to all human tissue with which it comes in contact. Ingestion may cause severe injury or death. Eye contact produces severe or permanent injury. Inhalation of mists can damage both the upper respiratory tract and the lungs. Sulfuric acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

FIRST AID: EYE CONTACT: Immediately flush eyes (including under eyelids) with plenty of running water for at least 15 minutes. Speed in diluting and rinsing out acid with water is extremely important if permanent eye damage is to be avoided. Obtain medical help as soon as possible.

SKIN CONTACT: Immediately flush affected areas with water, removing contaminated clothing while under the safety shower. Continue washing with water and get medical attention.

INHALATION: Remove to fresh air. Restore breathing. Call a physician immediately. **INGESTION:** Dilute acid immediately with large amounts of milk or water, then give milk of magnesia to neutralize. Never give anything by mouth to an unconscious person. Do not induce vomiting; if it occurs spontaneously, continue to administer fluid. Obtain medical attention as soon as possible.

Maintain observation of patient for possible delayed onset of pulmonary edema.

• GET MEDICAL HELP = In plant, paramedic, community.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Handle major spills by a predetermined plan. Contact supplier for assistance in this planning, in meeting local regulations, and for disposing of large amounts. Notify safety personnel. Provide optimum ventilation; vapors are extremely irritating. Stop leak if you can do so without risk.

Cleanup personnel need protection against inhalation or contact. Keep upwind. Contain spill. Minor leaks or spills can be diluted with much water and neutralized with soda ash or lime. If water is not available, cover contaminated area with sand, ashes, or gravel and neutralize cautiously with soda ash or lime.

DISPOSAL: Follow Federal, state, and local regulations. Runoff to sewer may create hydrogen gas, which is a fire or explosion hazard. EPA (CWA) RQ 1000 lbs. (40 CFR 117).

SECTION 8. SPECIAL PROTECTION INFORMATION

Provide general ventilation to meet current TLV requirements in the workplace. Where mists are up to 50 mg/m³, a high-efficiency particulate respirator with full facepiece is warranted; a type-C supplied-air respirator with full facepiece operated in pressure-demand mode is used to 100 mg/m³.

Avoid eye contact by use of chemical safety goggles or face shield where splashing may occur. Acid-resistant protective clothing, such as rubber gloves, aprons, boots, and suits, is recommended to avoid body contact.

Eyewash fountain and safety showers with deluge type of heads should be readily available where this material is handled or stored.

Contact lenses pose a special hazard; soft lenses may absorb and all lenses concentrate irritants. Comprehensive preplacement and annual medical examinations with emphasis on dental erosion, cardiopulmonary system, and mucous membrane irritation and cough are indicated.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Sulfuric acid in carboys or drums should be stored in clean, ventilated storage areas having acid-resistant floors with good drainage. Keep out of direct sunlight, do not store above 89.6°F (32°C). Storage facilities are to be separate from organic materials, metallic powders, chromates, chlorates, nitrates, carbides, oxidizables, etc. Soda ash, sand, or lime should be kept in general storage or work areas for emergency use. Protect containers against physical damage. Glass bottles need extra protection. Sulfuric acid is highly corrosive to most metals, especially below 77% H₂SO₄. Avoid breathing mist or vapors. Avoid contact with skin or eyes. Do not ingest. Do not add water to concentrated acid. Drums may contain hydrogen gas, so open cautiously. Use nonsparking tools free of oil, dirt, and grit and vapor-proof electrical fixtures.

DOT Classification: Corrosive Material

ID No.: UN1830

Label: Corrosive

Data Source(s) Code: 1-12, 19, 20, 24, 26, 31, 37-39, 42, 82. CK

Genium Publishing Corp. warrants as to the suitability of information herein for purchaser's purposes. Genium Publishing Corp. warrants, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's purposes or for consequences of its use.

Approvals *J. J. Curran, 6/86*

Indust. Hygiene/Safety *JW 6/86*

Medical Review *[Signature]*

HAZARDOUS CHEMICAL WARNING LABEL			
1. CHEMICAL/Common Name: SCRAM;SULFURIC ACID DRAIN CLEANER		2. HAZARD CODE: C1	
3. MSN/LSN: 6850011304766		4. PART NUMBER: SCRAM;SULFURIC ACID DRAIN CLEANER	
5. ITEM NAME: CLEANING COMPOUND,ACID,PIPELINE			
6. HAZARDS: (X all that apply)		(1) Acute (Immediate)	(2) Chronic (Delayed)
		NONE ;SLIGHT;MODERATE;SEVERE	
a. HEALTH:		X	YES
b. CONTACT:			X
c. FIRE:	X		
d. REACTIVITY:	X		
7. SPECIFIC HAZARDS & PRECAUTIONS:(Including Target Organ Effects) DANGER! POISONOUS IF INHALED OR SWALLOWED. CONTACT CAUSES SEVERE BURNS TO SKIN AND EYES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION.MAY CAUSE SEVERE IRRITATION OR BURNS OF THE RESPIRATORY SYSTEM, PULMONARY EDEMA,SEVERE BURNS TO SKIN OR EYES. MAY DAMAGE LUNGS EROSION OF TEETH. KEEP CONTAINER TIGHTLY CLOSED. STORE IN CORROSION-PROOF AREA. KEEP CONTAINERS OUT OF SUN AND AWAY FROM HEAT. ISOLATE FROM INCOMPATIBLE MATERIALS.KEEP OUT OF REACH OF CHILDREN.AVOID CONTACT WITH EYES AND SKIN.DO NOT BREATHE VAPORS/MIST.FIRST AID:IF INHALED OR INGESTED,REMOVE TO FRESH AIR,CALL A DOCTOR.FOR EYES&SKIN,FLUSH WITH WATER 15-20 MIN.GET MEDICAL HELP. (See MSDS for further information)			
8. PROTECT:(X all that apply) ;X; EYES ;X; SKIN ;X; RESPIRATORY			
9. CONTACT			
a. COMPANY NAME: STATE CHEMICAL MFG CO			
b. ADDRESS			
Street : 3100 HAMILTON AVE			
P.O.Box : N/K			
City: CLEVELAND			
State: OH Zip Code: 44114-3701 Country: US			
c. EMERGENCY TELEPHONE NUMBER: 216-861-7114			
10. PROCUREMENT YEAR FOR HAZARDOUS CHEMICAL: N/K			

DD Form 2521, DEC 88

BLDG. _____

**HAZARDOUS CHEMICAL/SUBSTANCE INVENTORY LIST
UPDATE FOR 1994**

REQ: OSHA, HAZARD COMMUNICATION PROGRAM

COMMON/TRADE NAME	CHEMICAL NAME NAT STOCK NUMBER	MANUFACTURER ADDRESS	USE OF MATERIAL QUANTITY IN STOCK QUANTITY OF USE	MSDS AVAL

Chemical Information Organizer

CAS Number:	Name:
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Special Information: (synonyms, other identification, etc.)

Section 2 - Planning and Compliance Information

2	DOT Hazardous Materials ID	DOT UN/NA ID Code	
3	RCRA Listed Waste	RCRA Code	
4	CERCLA Hazardous Substance	Reportable Quantity	
5	SARA Extremely Hazardous	Reportable Quantity	
6	Toxic Release Chemical	De minimis Concentration	

Section 3 - Health and Safety Guidelines

9	Exposure Limits	TWA	STEL	Ceiling
	OSHA			
	NIOSH			
	ACGIH			
Immediately Dangerous to Life and Health (IDLH):				
10	Carcinogen	OSHA:	HFP:	IARC:
11	HFPA Ratings	Health:	Fire:	Reactivity:

Section 4 - State Chemical Lists

13 CA:	14 MA:	15 NJ:	16 PA:
--------	--------	--------	--------

Other Information:

Date Gathered:	By:
-----------------------	------------

Summary of HMIS Ratings

I. HEALTH HAZARD RATING

- | | |
|-------------------|--|
| 0 MINIMAL HAZARD | No significant risk to health |
| 1 SLIGHT HAZARD | Irritation or minor reversible injury possible |
| 2 MODERATE HAZARD | Temporary or minor injury may occur |
| 3 SERIOUS HAZARD | Major injury likely unless prompt action is taken and medical treatment is given |
| 4 SEVERE HAZARD | Life-threatening, major or permanent damage may result from single or repeated exposures |

Note: Use of an asterisk (*) or other designation indicates that there may be chronic health effects present. See safety file on the product.

II. FLAMMABILITY HAZARD RATING

- | | |
|-------------------|--|
| 0 MINIMAL HAZARD | Materials that are normally stable and will not burn unless heated |
| 1 SLIGHT HAZARD | Materials that must be preheated before ignition will occur. Flammable liquids in this category will have flash points (the lowest temperature at which ignition will occur) at or above 200°F (NFPA Class IIIB) |
| 2 MODERATE HAZARD | Material that must be moderately heated before ignition will occur, including flammable liquids with flash points at or above 100°F and below 200°F (NFPA Class II & Class IIIA) |
| 3 SERIOUS HAZARD | Materials capable of ignition under almost all normal temperature conditions, including flammable liquids with flash points below 73°F and boiling points above 100°F as well as liquids with flash points between 73°F and 100°F (NFPA Class 1B and 1C) |
| 4 SEVERE HAZARD | Very flammable gases or very volatile flammable liquids with flash points below 73°F and boiling points below 100°F (NFPA Class 1A) |

III. REACTIVITY HAZARD RATING

- | | |
|-------------------|---|
| 0 MINIMAL HAZARD | Materials that are normally stable, even under fire conditions, and will not react with water |
| 1 SLIGHT HAZARD | Materials that are normally stable but can become unstable at high temperatures and pressures. These materials may react with water but they will not release energy violently |
| 2 MODERATE HAZARD | Materials that, in themselves, are normally unstable and will readily undergo violent chemical change but will not detonate. These materials may also react violently with water |
| 3 SERIOUS HAZARD | Materials that are capable of detonation or explosive reaction but require a strong initiating source or must be heated under confinement before initiation; or materials that react explosively with water |
| 4 SEVERE HAZARD | Materials that are readily capable of detonation or explosive decomposition at normal temperatures and pressures |

IV. CHRONIC EFFECTS INFORMATION

Chronic health effects are not rated because of the complex issues involved and the lack of standardized classifications and tests. However, based on information provided by the supplier, the presence of chronic effects may be indicated by (1) use of an asterisk (*) or other designation after the health hazard rating corresponding to other information that may be available; or (2) use of written warnings in the upper white section of the NFPA HMIS label.

V. PERSONAL PROTECTIVE EQUIPMENT

Information provided by the supplier will be used by the paint manufacturers to determine the proper personal protective equipment.

Hazardous Materials Identification System

HAZARD INDEX

- | | |
|-------------------|--|
| 4 Severe Hazard | 0 Minimal Hazard |
| 3 Serious Hazard | • An asterisk (*) or other designation corresponds to additional information on a data sheet or separate chronic effects notification. |
| 2 Moderate Hazard | |
| 1 Slight Hazard | |

PERSONAL PROTECTION INDEX

- A** 
-
- B**  + 
-
- C**  +  + 
-
- D**  +  + 
-
- E**  +  + 
-
- F**  +  +  + 

AMERICAN LABELMARK, Chicago, IL 60646 NC-EC

- G**  +  + 
-
- H**  +  +  + 
-
- I**  +  + 
-
- J**  +  +  + 
-
- K**  +  +  + 
-
- X** Ask your supervisor for specialized handling directions



Safety Glasses



Splash Goggles



Face Shield



Airline Hood or Mask



Gloves



Synthetic Apron



Dust Respirator



Vapor Respirator



Combination Dust & Vapor Respirator



Full Protective Suit



Boots

1981 National Paint & Coatings Association

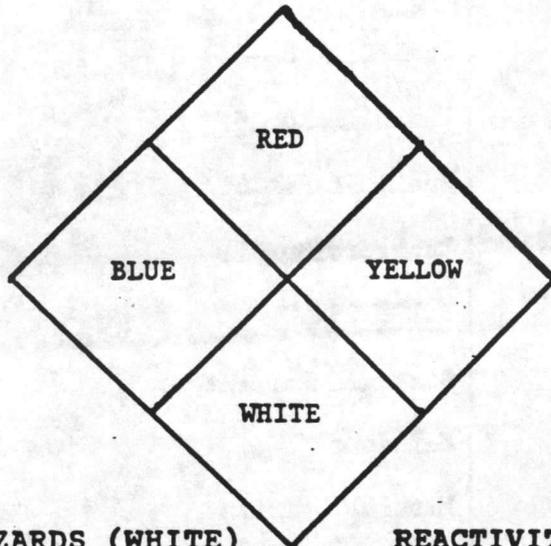
NFPA FIRE DIAMOND
FIRE HAZARD CODE 325-M
NATIONAL FIRE PROTECTION AGENCY

HEALTH HAZARD (BLUE)

- 4. DEADLY (DEATH)
- 3. EXTREME DANGER (BLINDNESS)
PERMANENT DISABILITY
- 2. HAZARDOUS (TEMPORARY ILLNESS)
- 1. SLIGHTLY HAZARDOUS (IRRITANT)
- 0. NORMAL MATERIALS

FIRE HAZARD (RED)

- 4. VERY FLAMMABLE - GASES, DUSTS
OR MISTS (ETHER)
- 3. READILY IGNITED LIQUIDS -
NORMAL TEMPERATURES (GASOLINE)
- 2. LIQUIDS/SOLIDS - MUST BE
HEATED (KEROSENE)
- 1. MOST COMBUSTIBLE SOLIDS - PRE-
HEATED TO BURN (PAPER/WOOD)
- 0. WILL NOT BURN



SPECIFIC HAZARDS (WHITE)

- OXY = OXIDIZER
- ACID = ACID
- ALKALI = ALKALI
- COR = CORROSIVE
- ~~W~~ = USE NO WATER
-  = RADIATION HAZARD

REACTIVITY (YELLOW)

- 4. MAY DETONATE
- 3. SHOCK OR HEAT MAY DETONATE
- 2. VIOLENT CHEMICAL CHANGE
- 1. UNSTABLE IF HEATED
- 0. STABLE

FLASH POINTS

FLASHPOINTS OF VARIOUS FLAMMABLE AND COMBUSTIBLE LIQUIDS

<u>PETROLEUM FUELS:</u>	<u>FLASH POINT</u> °F.
Gasoline	-45
Crude Petroleum	20-90
JP # 3 Jet Fuel	-40
JP # 4 Jet Fuel	-10
JP # 5 Jet Fuel	95-145
<u>SOLVENTS:</u>	
Ethyl Ether	-49
Carbon Disulfide	-22
Acetone	0
Gasoline	-45
Methyl Ethyl Ketone	21
Benzene	12
Toluene	40
Wood Alcohol (Methyl)	52
Methyl Isobutyl Ketone	73
Grain Alcohol	55
V.M. & P. Naphtha	28
Allyl Alcohol	70
Xylene	63
Styrene	90
Butyl Alcohol - N	84

<u>PETROLEUM FUELS:</u>	<u>FLASH POINT</u> °F.
Diesel Fuel Oil (1-D)	100
Diesel Fuel Oil (2-D)	125
Diesel Fuel Oil (4-D)	130
Fuel Oil No. 1 (Kerosene)	110 - 162
Fuel Oil No. 2	126 - 204
Fuel Oil No. 4	142 - 240
Fuel Oil No. 5	156 - 336
Fuel Oil No. 6	150 - 270
Lubricating Oil	300 - 450
<u>SOLVENTS:</u>	
Stoddard Solvent	138
Kerosene	100
Mineral Spirits	104

FLASH POINTS could mean an explosion
when sparks or flame are near.

KNOW YOUR LIQUIDS!

NOTE: FLASH POINT IS THE BASIC CHARACTERISTIC USED BY NFPA TO CLASSIFY THE RELATIVE HAZARDS OF LIQUIDS.

HAZARD COMMUNICATION PROGRAM EXERCISE

TURN TO PAGE IN THE HAZ. WASTE TRAINING MANUAL TO ANSWER THE FOLLOWING QUESTIONS ON MATERIAL SAFETY DATA SHEET (MSDS).

1. WHAT TYPE OF ODOR DOES THIS CHEMICAL EXHIBIT:

2. IS THIS CHEMICAL FLAMMABLE:

3. WHAT TYPE OF PROTECTIVE EYE WEAR MUST BE WORN:

4. IF THIS CHEMICAL GETS INTO YOUR EYES WHAT IS THE MINIMUM AMOUNT OF TIME YOU ARE REQUIRED TO FLUSH THEM WITH WATER:

5. IF A SPILL OCCURS CLEANUP PERSONNEL NEED PROTECTION AGAINST:

TURN TO PAGES & TO THE NFPA LABEL TO ANSWER THE FOLLOWING QUESTIONS.

1. WHAT COLOR CODE IS USED FOR THE IDENTIFICATION FOR REACTIVITY:

2. THE NUMERAL FOUR IN THE BLUE AREA INDICATES WHAT:

3. IF NO NUMBER IS ASSIGNED TO AN AREA IT GENERALLY MEANS IT'S:

4. THE LETTER W WITH A LINE THROUGH IT (-W-) MEANS:

5. WHAT NUMBER IS ASSIGNED TO MATERIALS THAT MUST BE PRE-HEATED BEFORE THEY WILL BURN:

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 not be compatible within that type. Wastes should always be reviewed individually for compatibility and, if incompatible, should not be stored together.

Cargo Compatibility

Cargo Groups

	REACTIVE GROUPS																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
	NON-OXIDIZING MINERAL ACIDS	SULFURIC ACID	NITRIC ACID	ORGANIC ACIDS	CAUSTICS	AMMONIA	ALIPHATIC AMINES	ALKANOL AMINES	AROMATIC AMINES	AMIDES	ORGANIC ANHYDRIDES	ISOCYANATES	VINYL ACETATE	ACRYLATES	SUBSTITUTED ALLOYS	ALKYLENE OXIDES	EPICHLOROHYDRIN	KETONES	ALDEHYDES	ALCOHOLS, GLYCOLS	PHENOLS, CRESOLS	CAPROLACTAM SOLUTION		
1																							1	
2	X																							2
3		X																						3
4			X																					4
5	X	X	X	X																				5
6	X	X	X	X																				6
7	X	X	X	X																				7
8	X	X	X	X																				8
9	X	X	X	X																				9
10	X	X	X																					10
11	X	X	X		X	X	X	X	X													X		11
12	X	X	X																					12
13	X	X	X																					13
14	X	X	X																					14
15																								15
16	X	X	X	X	X	X	X	X	X															16
17	X	X	X	X	X	X	X	X	X															17
18	X	X	X																					18
19	X	X	X																					19
20	X	X	X																					20
21	X	X	X																					21
22	X				X																			22
30		X	X																					30
31																								31
32				X																				32
33				X																				33
34		X	X																					34
35																							X	35
36		X																						36
37																								37
38																								38
39																								39
40		X																						40
41		X	X																					41
42						X	X	X	X	X														42
43		X											X											43

FIGURE 1

TABLE 3-A

Water-Reactive Materials

MATERIALS WHICH LIBERATE HYDROGEN			
Material	Formula	State	Action
Calcium	Ca	Solid	Moderate
Lithium	Li	Solid	Moderate
Sodium	Na	Solid	Vigorous, may explode
Potassium	K	Solid	Usually explodes
Calcium Hydride	CaH ₂	Solid	Moderate to vigorous
Lithium Hydride	LiH	Solid	Moderate to vigorous
MATERIALS WHICH LIBERATE HYDROCARBON			
Aluminum tri-ethyl	Al(C ₂ H ₅) ₃	Liquid	Vigorous, ethane formed, generally explodes
Aluminum di-ethyl mono chloride	Al(C ₂ H ₄) ₂ Cl	Liquid	
Calcium carbide	CaC ₂	Solid	Moderate to vigorous, acetylene formed which may detonate if confined.
MATERIALS WHICH LIBERATE OXYGEN			
Flourine	F ₃	Gas	Violent, ozone and acid fumes formed.
Sodium peroxide	Na ₂ O ₂	Solid	Moderate on heating.

TABLE 3-B

MATERIALS WHICH GENERATE STEAM AND FUMES			
Material	State	Material	State
Acetyl chloride	Liquid	Silicon tetrachloride	Liquid
Aluminum chloride	Solid	Sulphuric acid	Liquid
Phosphorus pentachloride	Solid	Sulphuryl chloride	Liquid
Phosphorus pentoxide	Solid	Thionyl chloride	Liquid
Phosphorus trichloride	Liquid	Titanium tetrachloride	Liquid
MATERIALS WHICH GENERATE STEAM ONLY			
Calcium oxide - quicklime	Solid	Activated silica	Solid
Activated alumina	Solid	Activated molecular sieves	Solid
Sodium hydroxide	Solid	Potassium hydroxide	Solid

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 lists 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. 66) served as the starting reference. The primary sources of information consisted of published reports (Ref. 1, 7, 12, 13, 16, 32, and 32) 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	
3	Acetaldehyde	
3	Acetic acid	
107	Acetic anhydride	
19	Acetone	Dimethyl ketone
4, 26	Acetone cyanohydrin	Hydroxylsbutyronitrile
26	Acetonitrile	Methyl cyanide
19	Acetophenene	
13	Acetoxybutane	Butyl acetate
13	Acetoxypentane	Amyl acetate
19	Acetyl acetone	

RGN	Names	Synonyms
107	Acetyl azide	
30	Acetyl benzoyl peroxide	
17, 107	Acetyl bromide	
17, 107	Acetyl chloride	
28	Acetylene	
27, 107	Acetyl nitrate	
30	Acetyl peroxide	
5, 103	Acrolein	Aqualin
3, 103	Acrylic acid	
26, 103	Acrylonitrile	
3	Adipic acid	
26	Adiponitrile	
	Agallol	
26	Agaloretan	Methoxyethylmercuric chloride Methoxymethylmercuric chloride
26	Agaloretan	Temik*
9, 20	Aldicarb	
17	Alkalin	
107	Alkyl aluminum chloride	
101	Alkyl resins	
28	Allene	
6	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
13, 107	Aluminum fluoride	
103	Aluminum hydride	
107	Aluminum hypophosphide	
107	Aluminum phosphide	
8	Aluminum tetraazideborate	
7	Aminobenzene	Aniline
7	Aminobutane	Butylamine
7, 17	Aminochlorotoluene	Chlorotoluidine
7	Aminodiphenyl	
7	Aminomethane	Ethylamine
6, 7	Aminoethanol	
7	Aminomethanamine	
7	Aminobenzene	Hexylamine
7	Aminomethane	Methylamine
7	Aminopentane	Amlyamine
7, 31	Aminophenol	

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
7	Aminopropane	Isopropyl amine
7, 26	Amino propionitrile	
7, 8	Aminothiazole	
7	Aminotoluene	Toluidine
10	Ammonia	
24	Ammonium arsenate	
102	Ammonium azide	
13	Ammonium bifluoride	
102, 104	Ammonium chlorate	
24, 102	Ammonium dichromate	
13	Ammonium fluoride	
24, 102	Ammonium hexanitrocobaltate	
10	Ammonium hydroxide	
103	Ammonium hypophosphite	
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, 103	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	Andline	
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, 23	Antimony nitride	
24	Antimony oxychloride	
24	Antimony oxide	Antimony trioxide
24	Antimony pentachloride	
24	Antimony pentasulfide	
24, 33, 103	Antimony pentasulfide	
24, 104	Antimony perchlorate	
24	Antimony potassium tartrate	

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
24	Antimony sulfate	Antimony trisulfate
24, 33, 103	Antimony sulfide	Antimony trisulfide
24, 107	Antimony tribromide	
24, 107	Antimony trichloride	Antimony chloride
24, 107	Antimony trichloride	Antimony fluoride
24, 107	Antimony trichloride	
24	Antimony trioxide	Antimony oxide
24	Antimony trisulfate	Antimony sulfate
24, 33	Antimony trisulfide	Antimony sulfide
24, 107	Antimony trivinyl	
3, 103	Aqualin	Acrolein
106	Aqueous solutions & mixtures	
	Arctan®	Methylxyethylmercuric chloride
24		Polychlorinated biphenyl
17	Arcochlor®	
24	Arsenic	
24, 107	Arsenic bromide	Arsenic tribromide
24, 107	Arsenic chloride	Arsenic trichloride
24, 33, 103	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, 103	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, 103	Arsenic trisulfide	
24, 103	Arsine	
17	Askarel	Polychlorinated biphenyl
101	Asphalt	
8, 102	Azidocarbonyl guanidine	
8	Azido-s-triazole	
32	Azinox ethyl	
7, 103	Azridine	Ethylenimine
8, 26	α,α'-Azodisobutyronitrile	
32	Azodrin®	Monocrotophos
101	Bakelite®	
9	Banol	Carbanolate
21, 24, 107	Barium	
24, 102	Barium azide	
24, 104	Barium bromate	
24, 103, 107	Barium carbide	
24, 104	Barium chlorate	
24	Barium chloride	
24, 104	Barium chromate	
13, 24	Barium fluoride	
24	Barium fluosilicate	

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>	<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
24, 103	Barium hydride		10, 24	Beryllium hydroxide	
10, 24	Barium hydroxide		24	Beryllium oxide	
24, 103	Barium hypophosphite		33, 103	Beryllium sulfide	
24, 104	Barium iodate		24, 103, 107	Beryllium tetrahydroborate	
24	Barium iodide		32	Bixin ^o	
10, 24, 107	Barium monoxide	Barium oxide	22, 23, 24	Bismuth	
24, 104	Barium nitrate		24	Bismuth chromate	
10, 24, 107	Barium oxide	Barium monoxide	24	Bismuthic acid	
24, 104	Barium perchlorate		24, 25, 102	Bismuth nitride	
24, 104	Barium permanganate		24, 107	Bismuth pentaffluoride	
24, 104	Barium peroxide		24	Bismuth pentaoxide	
24	Barium phosphate		24, 33, 103	Bismuth sulfide	
24	Barium stearate		24	Bismuth tribromide	
24, 33, 103, 107	Barium sulfide		24	Bismuth trichloride	
24	Barium sulfite		24	Bismuth triiodide	
9	Bassa ^o	BFMC	24	Bismuth trioxide	
32	Bayer 23141	Fensulfothion	24, 33, 103	Bismuth trisulfide	
9	Baygon ^o		32	Blada-fum ^o	Sulfotepp
6	Benzadox	Topcide ^o	24	Blue vitriol	Copper sulfate
17	Benzal bromide		32	Bonyl	
17	Benzal chloride		24, 107	Borane	
9	Benzaldehyde		24	Bordeaux arsenites	
16	Benz-a-pyrene		1	Boric acid	
16	Benzene		24, 103	Boron arsenotribromide	
8, 102	Benzene diazonium chloride		24, 107	Boron bromodiodide	
107	Benzene phosphorus dichloride		24, 107	Boron dibromodiodide	
7	Benzidine		24, 25	Boron nitride	
3	Benzolic acid		24, 107	Boron phosphide	
24	Benzonitrile		24, 102	Boron triazide	
19	Benzophenone		24, 107	Boron tribromide	
19	Benzoquinone	Quinone	24, 107	Boron trichloride	
8, 102	Benzotriazole		24, 107	Boron trifluoride	
17	Benzotribromide		24, 107	Boron triiodide	
17	Benzotrichloride		24, 33, 103	Boron trisulfide	
17	Benzotrifluoride	Trifluoromethylbenzene	9	BFMC	Bassa ^o
107	Benzoyl chloride		23	Brass	
30, 102	Benzoyl peroxide	Dibenzoyl peroxide	2	Bromic acid	
4	Benzyl alcohol		104	Bromine	
7	Benzylamine		102	Bromine azide	
16	Benzyl benzene	Diphenylmethane	11	Bromine cyanide	Cyanogen bromide
17	Benzyl bromide	Bromotoluene	104, 107	Bromine monofluoride	
17	Benzyl chloride	Chlorotoluene	104, 107	Bromine pentafluoride	
17	Benzyl chlorocarbonate	Benzyl chloroformate	104, 107	Bromine trifluoride	
17	Benzyl chloroformate	Benzyl chlorocarbonate	17	Bromoacetylene	
103, 107	Benzyl allane		6, 19	Bromobenzoyl acetanilide	
103	Benzyl sodium		17	Bromobenzoyl trifluoride	
24	Beryllium		103	Bromindiborane	
24	Beryllium copper alloy		107	Bromodimethylaluminum	
13, 24	Beryllium fluoride		14	Bromodimethoxyaniline	
24, 103, 107	Beryllium hydride		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	Bromotrifluoromethane	
17	Bromotrifluoromethane	
17	Bromoxynil	3,3-Dibromo-4-hydroxy benzonitrile
17, 26, 31		
23	Bronze	
101	Buna-N ^a	
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 cellulose ^a	
105	Butyl dichloroborane	
14	Butyl ether	Dibutyl ether
13	Butyl 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 peroxyisovalate	
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 ^a	
24	Cacodylic acid	Dimethylarsenic acid
23, 24	Cadmium	
24, 105, 107	Cadmium acetylde	
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	
9	Capric acid	

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>	<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
3	Caproic acid	Hexanoic acid	3, 17	Chloroacetaldehyde	
3	Caprylic acid		3, 17	Chloroacetic acid	Monochloroacetic acid
30	Caprylyl peroxide	Octyl peroxide	17, 19	Chloroacetone	Monochloroacetone
31	Carbacrol		17, 19	Chloroacetophenone	Phenyl chloromethyl ketone
9	Carbaryl		107	Chloroacetyl chloride	
6	Carbetamide		102	Chloroacetylene	
9	Carbarylolate	Banol	17, 26	Chloroacrylonitrile	
9	Carbofuran	Furadan [®]	8, 17	Chloroazodin	
31	Carbolic acid	Phenol	17	Chlorobenzene	
31	Carbolic oil		8, 17	Chlorobenzotriazole	
101	Carbon, activated, spent		17, 30	Chlorobenzoyl peroxide	
20	Carbon bisulfide	Carbon disulfide	17, 26	Chlorobenzylidene malononitrile	
20	Carbon disulfide	Carbon bisulfide	17, 26	Chlorobutyronitrile	
17	Carbon tetrachloride	Tetrachloromethane	24, 104, 107	Chloro chromic anhydride	Chromyl chloride
17	Carbon tetrafluoride		17, 31	Chloro cresol	
17	Carbon tetraiodide		103	Chlorodiborane	
7	Castrix	Crimidine	103, 107	Chlorodisobutyl aluminum	
31	Catechol		103	Chlorodimethylamine diborane	
10	Caustic potash	Potassium hydroxide	17, 27	Chlorodinitrobenzene	Dinitrochlorobenzene
10	Caustic soda	Sodium hydroxide	17, 27	Chloro dinitrotoluene	
12	CDEC		103	Chlorodipropyl borane	
101	Cellulose		17	Chloroethane	Ethyl chloride
27, 102	Cellulose nitrate	Nitro cellulose	9, 7	Chloroethanol	
22	Cerium		17	Chloroethylenimine	
103	Cerium hydride		17	Chloroform	Trichloromethane
33, 103	Cerium trisulfide		17	Chlorohydrin	
103	Cerous phosphide		17	Chloromethane	Methyl chloride
21	Cesium		17	Chloromethyl methyl ether	
107	Cesium amide		3, 17	Chloromethyl phenoxycetic acid	
102	Cesium azide		17, 27	Chloronitroaniline	
103	Cesium carbide		17, 27	Chloronitrobenzene	Nitrochlorobenzene
13	Cesium fluoride		17	Chloropentane	Amyl chloride
103	Cesium hexahydroaluminate		31	Chlorophenol	
103, 107	Cesium hydride		17, 18, 107	Chlorophenyl isocyanate	
107	Cesium phosphide		17, 27, 102	Chloropicrin	Chloropicrin, Trichloronitromethane
33, 103	Cesium sulfide		17	Chloropropane	Isopropyl chloride
3	Chloral hydrate	Trichloroacetaldehyde	17	Chloropropene	Allyl chloride
17	Chlordane		17, 34	Chloropropylene oxide	Epichlorohydrin
17	Chlorestol	Polychlorinated biphenyl	103	Chlorosilane	
32	Chlorfenvinphos		1	Chlorosulfonic acid	
2, 104	Chloric acid		17, 32	Chlorothion [®]	
104	Chlorine		17	Chlorotoluene	Benzyl chloride
102	Chlorine azide		7, 17	Chlorotoluidine	
102, 104, 107	Chlorine dioxide		17, 27, 102	Chlorotrinitrobenzene	Picryl chloride
102, 104	Chlorine fluoroxide		24	β -Chlorovinyl dichloroarsine	Lewisite
104, 107	Chlorine monofluoride		17, 27, 102	Chloropicrin	Trichloronitromethane
104	Chlorine monoxide		2, 24, 104	Chromic acid	Chromic anhydride, Chromium trioxide
104, 107	Chlorine pentafluoride				
104, 107	Chlorine trifluoride				
102, 104	Chlorine trioxide				

RGN	Names	Synonyms
	Chromic anhydride	Chromium trioxide, Chromic acid
2, 24, 104	Chromic chloride	Chromium trichloride
15, 24	Chromic fluoride	Chromium trifluoride
	Chromic oxide	
	Chromic sulfate	Chromium sulfate
23, 24	Chromium	
	Chromium sulfate	Chromic sulfate
24, 33, 103	Chromic sulfide	
	Chromium trichloride	Chromic chloride
15, 24	Chromium trifluoride	Chromic fluoride
	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
	Cobalt chloride	Cobaltous chloride
24	Cobalt nitrate	Cobaltous nitrate
24, 104	Cobaltous bromide	Cobalt bromide
	Cobaltous chloride	Cobalt chloride
24, 104	Cobaltous nitrate	Cobalt nitrate
	Cobaltous resinate	Cobalt resinate
24	Cobaltous sulfate	Cobalt sulfate
	Cobalt resinate	Cobaltous resinate
24	Cobalt sulfate	Cobaltous sulfate
27	Collodion	Pyroxylin
23, 24	Copper	
	Copper acetoarsenite	Paris Green
24, 102, 103, 107	Copper acetylde	
	Copper arsenate	Cupric arsenate
	Copper arsenite	Cupric arsenite
	Copper chloride	Cupric chloride
	Copper chlorotetrazole	
11, 24	Copper cyanide	Cupric cyanide
24, 104	Copper nitrate	Cupric nitrate
24, 25	Copper nitride	
	Copper sulfate	Cupric sulfate, Blue vitriol
24, 33, 103	Copper sulfide	
17, 32	Compound 1836	Diethyl chlorovinyl phosphate
32	Coroxon®	
19	Coumaluryl	Fumarin
19	Coumatetrayl	
31	Cresol	
34	Cresol glydicyl ether	
31	Cresote	
7	Crimidine	Castrix

RGN	Names	Synonyms
3	Crotonaldehyde	Butenal
4	Crotyl alcohol	
17	Crotyl bromide	
17	Crotyl chloride	
16	Cumene	Isopropyl benzene
30	Cumene hydroperoxide	Dimethylbenzyl hydroperoxide
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	Cupric sulfide	
7, 24	Cupriethylenediamine	Malonic nitride
3, 26	Cyanoacetic acid	
17, 26	Cyanochloropentane	
26	Cyanogen	Bromine cyanide
11	Cyanogen bromide	Surecide®
26, 32	Cyanophenphos	
102	Cyanuric triazide	
29	Cycloheptane	
29	Cyclohexane	
4	Cyclohexanol	
19	Cyclohexanone	
30	Cyclohexanone peroxide	
7	Cyclohexylamine	
107	Cyclohexenyl trichlorosilane	
31	Cyclohexyl phenol	
107	Cyclohexyl trichlorosilane	
29	Cyclopentane	
4	Cyclopentanol	
28	Cyclopentene	
29	Cyclopropane	
27, 102	Cyclotrimethylene trinitramine	RDX
16	Cymene	Miospholan
20, 32	Cyolan®	Dichlorophenoxyacetic acid
3, 17	2,4-D	Fensulfothion
32	Dasanit®	Dibromochloropropane
17	DNCP	Dichlorobenzene
17	DCB	
17	DDD	Diazodinitrophenol
8, 27, 102	DDNP	
17	DDT	
17, 32	DDVP	Dichlorovos, Vapona®
103, 107	DEAC	Diethylaluminum chloride
107	Decaborane	
29	Decahydronaphthalene	Decalin
29	Decalin	Decahydronaphthalene
29	Decane	
4	Decanol	
28	Decene	

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, 103	Diamine	Hydrazine
7	Diaminobenzene	Phenylene diamine
7	Diaminohexane	Hexamethylenediamine
8, 102	Diazdoethane	
32	Diazinon [®]	
27, 102	Diazodinitrophenol	DDNP
30, 102	Dibenzoyl peroxide	Benzoyl peroxide
103, 107	Diborane	Diboron hexahydride
103, 107	Diboron hexahydride	Diborane
14	Dibutyl ether	Butyl ether
13	Dibutyl phthalate	
17, 26, 31	3,3-Dibromo-4-hydroxybenzotrile	Bromoxynil
17	Dibromochloropropane	DBCP, Fumazone [®] , Nemagon [®]
17	Dibromoethane	Ethylene dibromide
17, 19	Dichloroacetone	
104	Dichloroamine	
17	Dichlorobenzene	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-2,4,6-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-2,4,6-trione	Dichloroisocyanuric acid
17, 32	Dichlorovos	DDVP
30	Dicumyl peroxide	
28	Dicyclopentadiene	
17	Dieldrin	
4, 7	Diethanolamine	
	Diethyl aluminum chloride	Aluminum diethylmonochloride, DEAL
103, 107	Diethylamine	
7	Diethyl benzene	
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	
	Diethylene glycol monobutyl ether acetate	
13	Diethylene triamine	
7	Diethyl ether	
14	Diethyl ketone	
19	Diethyltoluamide	
6	Diethyl zinc	Zinc ethyl
24, 103, 107	Diesel oil	
101	Difluorophosphoric acid	
1	Difluorophosphoric acid	
34	Diglycidyl ether	Bis(2,3-epoxypropyl)
28	Diisobutylene	
19	Diisobutyl ketone	
4, 17	Diisopropylamine	
30	Diisopropylbenzene hydroperoxide	
24, 104, 107	Diisopropyl beryllium	
14	Diisopropyl ether	Isopropyl ether
30	Diisopropyl peroxydicarbonate	Isopropyl percarbonate
32	Dimecron [®]	Phosphamidon
6, 32	Dimetox	Manane [®]
28	Dimethyl acetylene	
7	Dimethyl amine	
7, 8	Dimethylamino azobenzene	Methyl yellow
24	Dimethyl arsenic acid	Cacodylic acid
30	Dimethylbenzyl hydroperoxide	Cumene hydroperoxide
29	Dimethyl butane	Neohexane
28	Dimethyl butyne	
107	Dimethyl dichlorosilane	Dichlorodimethylsilane
32	Dimethyldithiophosphoric acid	
14	Dimethyl ether	
19	Dimethyl formal	
6	Dimethyl formamide	
30	Dimethylhexane dihydroperoxide	
8	Dimethyl hydrazine	UDMH
19	Dimethyl ketone	Acetone
103, 107	Dimethyl magnesium	
27	Dimethylnitrobenzene	Nitroxylene
7, 27	Dimethylnitrosoamine	N-Nitrosodimethyl
20	Dimethyl sulfide	Methyl sulfide
32	Dimeton	
27	Dinitrobenzene	
17, 27	Dinitrochlorobenzene	Chlorodinitrobenzene
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	Deinav ^o
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	Silbene
16	Diphenyl methane	Benzylbenzene
18, 107	Diphenylmethane diisocyanate	
19	Diphenyl oxide	
7, 27, 102	Dipicryl amine	Hexanitrodiphenylamine
7	Dipropyl amine	
32	Disulfoton	Disyston ^o
1	Disulfuric acid	
25, 102	Disulfur dinitride	
107	Disulfuryl chloride	
32	Disyston ^o	Disulfoton
12	Dithane ^o M-49	
32	Dithione ^o	Sulfotepp
27, 31	DNOC	Dinitrocresol
28	Dodecene	
16	Dodecyl benzene	
107	Dodecyl trichlorosilane	
9	Dowco-139 ^o	Mezcarbate
31	Dowicide I	o-Phenyl phenol
16	Dowtherm	
16	Durene	
32	Dyfonate ^o	Fonofos
101	Dynes Thinner	
27, 31	Elgetol 30	Dinitrocresol
17, 20	Endosulfan	Thodan ^o
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 ^o	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	Euothion	Endothion
31	Eugenol	
32	Fersulfothion	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	
107	Fluorine azide	
104, 107	Fluorine monoxide	Oxygen difluoride
6, 17	Fluoroacetamide	
3	Fluoroacetic acid	
1, 13	Fluoroboric acid	

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RGN	Names	Synonyms	RGN	Names	Synonyms
1, 107	Fluorosulfonic acid	Fluosulfonic acid	107	Hexadecyl trichlorosilane	
1, 107	Fluosulfonic acid	Fluosulfonic acid	32	Hexaethyl tetraphosphate	
1, 13	Fluosillicic acid		1, 13	Hexafluorophosphoric acid	
32	Formofos [®]	Dytonate [®]	103, 107	Hexahydride diborane	Diborane
3	Formaldehyde	Methanal	16	Hexamethyl benzene	Diaminohexane
6	Formamide		7	Hexamethylenediamine	
6	Formetanate hydrochloride		7	Hexamethylenetetraamine	
3	Formic acid	Methanoic acid	3	Hexanal	
32	Fostlon [®]	Prothoate	7, 27, 102	Hexanitrodiphenylamine	Dipicrylamine
17	Freon [®]		9	Hexanol	
3	Fumaric acid		3	Hexanoic acid	Caproic acid
19	Fumarin	Coumaluryl	28	Hexene	
17	Fumazone [®]	Dibromochloropropane	7	Hexylamine	Aminohexane
9	Furadan [®]	Carbofuran	107	Hexyl trichlorosilane	
14	Furan	Furfuran	28	Hexyne	
3	Furfural		102	HMX	
14	Furfuran		9	Hexocide [®]	
101	Gas oil, cracked		10	Hydrated lime	Calcium hydroxide
101	Gasoline		8, 103	Hydrazine	Diamine
33, 103	Germanium sulfide		8, 102	Hydrazine azide	
3	Glutaraldehyde		102	Hydrazoic acid	Hydrogen azide
9	Glycerin		1	Hydrofluoric acid	Hydrogen iodide
34	Glycidol		1, 107	Hydrobromic acid	Hydrogen bromide
13	Glycol diacetate		1	Hydrochloric acid	Muriatic acid
27, 102	Glycol dintrate	Ethylene glycol dintrate	1, 11	Hydrocyanic acid	Hydrogen cyanide
14	Glycol ether		1, 13	Hydrofluoric acid	Hydrogen fluoride
3	Glycolic acid		102	Hydrogen azide	Hydrazoic acid
27, 102	Glycol monolactate trinitrate		1, 107	Hydrogen bromide	Hydrobromic acid
26	Glycolonitrile		1, 11	Hydrogen cyanide	Hydrocyanic acid
103, 107	Gold acetylide		1, 13	Hydrogen fluoride	Hydrofluoric acid
102	Gold cyanate	Gold fulminate	1	Hydrogen iodide	Hydroiodic acid
102	Gold fulminate	Gold cyanate	104	Hydrogen peroxide	
33, 103	Gold sulfide		103	Hydrogen phosphide	Phosphine
101	Grease		24, 103	Hydrogen selenide	
31	Gualacol		33, 103	Hydrogen sulfide	
8, 102	Guanyl nitrosaminoguanilydene hydrazine		31	Hydroquinone	
27, 104	Guanidine nitrate		19, 31	Hydroxyacetophenone	
27, 102	Gun cotton	Nitrocellulose	3, 17	Hydroxydibromobenzolic acid	
32	Guthion [®]		31	Hydroxydiphenol	
22	Hafridum		31	Hydroxyhydroquinone	
6, 32	Hanane [®]	Dimelox	19, 31	Hydroxyacetophenone	
16	Hexamellitene		4, 26	Hydroxylsbutyronitrile	Acetone cyanohydrin
17	Heptachlor		103	Hydroxyl amine	
29	Heptane		4, 26	Hydroxypropionitrile	Ethylene cyanohydrin
3	Heptanal		2	Hypochlorous acid	
4	Heptanol		16	Indene	
19	Heptanone		22, 23, 24	Indium	
28	Heptene		17	Inertene	Polychlorinated biphr
103	Hexaborane		107	Iodine monochloride	
17	Hexachlorobenzene		104	Iodine pentoxide	

RGN	Names	Synonyms	RGN	Names	Synonyms
23	Iron		24, 27, 102	Lead trinitroresorcinate	Lead styphnate
24	Iron arsenate	Ferrous arsenate	24	Lewisite	β -Chlorovinyl dichloro
29	Isobutane		104	Lime nitrate	Calcium nitrate
6	Isobutanol		17	Lirifane	
13	Isobutyl acetate		21, 107	Lithium	
13, 103	Isobutyl acrylate		105, 107	Lithium aluminum hydride	
28	Isobutylene		10, 107	Lithium amide	
13	Isodecyl acrylate		107	Lithium ferrosilicon	
16	Isodurene		105, 107	Lithium hydride	
31	Isoeugenol		10	Lithium hydroxide	
29	Isohexane	Trimethylpentane	104	Lithium hypochlorite	
29	Isooctane		23	Lithium nitride	
28	Isooctene	Methylbutane	104, 107	Lithium peroxide	
29	Isopentane		107	Lithium silicon	
19	Isophorone	Methyl butadiene	33, 105	Lithium sulfide	
28, 103	Isoprene		24	London purple	
6	Isopropanol		10	Lye	Sodium hydroxide
13	Isopropyl acetate		21, 22	Magnesium	
28	Isopropyl acetylene		24	Magnesium arsenate	
7	Isopropylamine	Aminopropane	24	Magnesium arsenite	
16	Isopropyl benzene	Cumene	104	Magnesium chlorate	
17	Isopropyl chloride	Chloropropane	15	Magnesium fluoride	
14	Isopropyl ether	Diisopropyl ether	104	Magnesium nitrate	
20	Isopropyl mercaptan		104	Magnesium perchlorate	
9	N-Isopropylmethylcarbamate		104	Magnesium peroxide	
17, 32	α -Isopropyl methylphosphoryl fluoride	Diisopropyl peroxydicarbonate	33, 105	Magnesium sulfide	
30	Isopropyl percarbonate		32	Malathion	
101	Isotactic propylene		9	Maleic acid	Cyanoacetic acid
101	J-100		3, 26	Malonic nitrile	
101	Jet oil		12	Maneb	
101	Kerosene		22, 23, 24	Manganese	
101	Lacquer thinner		24	Manganese acetate	
9	Landrin [®]	Methomyl	24	Manganese arsenate	Manganous arsenate
9, 20	Larnate [®]		24	Manganese bromide	Manganous bromide
30	Lauroyl peroxide		24	Manganese chloride	Manganous chloride
23, 24	Lead		24	Manganese methylcyclopentadienyl-tricarbonyl	
24	Lead acetate	Lead orthoarsenate	24	Manganese nitrate	Manganous nitrate
24	Lead arsenate		24, 33, 105	Manganese sulfide	
24	Lead arsenite		24	Manganous arsenate	Manganese arsenate
24, 102	Lead azide		24	Manganous bromide	Manganese bromide
24	Lead carbonate		24	Manganous chloride	Manganese chloride
24, 104	Lead chlorite		104	Manganous nitrate	Manganese nitrate
11, 24	Lead cyanide		27, 102	Mamitol hexanitrate	Nitronamite
24, 27, 102	Lead dinitroresorcinate		9	Matacil [®]	
24, 27, 102	Lead mononitroresorcinate		24	Mayer's reagent	Mercuric potassium
24, 104	Lead nitrate	Lead arsenate	13, 27	Medinoterb acetate	
24	Lead orthoarsenate		9	Meobal	
24	Lead oxide	Lead trinitroresorcinate	8, 20	Mercaptobenzothiazole	
24, 27, 102	Lead styphnate		4, 20	Mercatoethanol	
24, 33, 104	Lead sulfide				

RGN	Names	Synonyms	RGN	Names	Synonyms
32	Mercurbam		4	Methanol	Methyl alcohol
24	Mercuric acetate		9, 20	Methoxynyl	Lannate [®]
24	Mercuric ammonium chloride	Mercury ammonium chloride	24	Methoxyethylmercuric chloride	Agallolaretan [®]
24	Mercuric benzoate	Mercury benzoate	13	Methyl acetate	
24	Mercuric bromide		101	Methyl acetone	
24	Mercuric chloride	Mercury chloride	28	Methyl acetylene	Methyl butyne
11, 24	Mercuric cyanide	Mercury cyanide	13, 103	Methyl acrylate	
24	Mercuric dioxysulfate	Mercuric subsulfate	4	Methyl alcohol	Methanol
24	Mercuric iodide	Mercury iodide	105, 107	Methyl aluminum sesquibromide	
24, 104	Mercuric nitrate	Mercury nitrate	105, 107	Methyl aluminum sesquichloride	
24	Mercuric oleate	Mercury oleate	7	Methylamine	Aminomethane
24	Mercuric oxide		13	Methyl amyl acetate	
11, 24, 102	Mercuric oxycyanide		7	N-Methyl aniline	
24	Mercuric potassium iodide	Mayer's reagent	7	Methyl aziridine	Propyleneimine
24	Mercuric salicylate	Salicylated mercury	16	Methyl benzene	Toluene
24	Mercuric subsulfate	Mercuric dioxysulfate	17	Methyl bromide	Bromomethane
24	Mercuric sulfate	Mercury sulfate	28, 103	Methyl butadiene	Isoprene
24, 33, 105	Mercuric sulfide		29	Methyl butane	Isopentane
24	Mercuric thiocyanate	Mercury thiocyanide	28	Methyl butene	
24	Mercuric thiocyanide	Mercury thiocyanate	14	Methyl butyl ether	
24	Mercuriol	Mercury nucleate	19	Methyl t-butyl ketone	
24	Mercurous bromide		28	Methyl butyne	Isopropyl acetylene
24	Mercurous gluconate		13	Methyl butyrate	
24	Mercurous iodide		17	Methyl chloride	Chloromethane
24, 104	Mercurous nitrate		13, 17	Methyl chlorocarbonate	Methyl chloroformate
24	Mercurous oxide		17	Methyl chloroform	
24	Mercurous sulfate	Mercury bisulfate	13, 17	Methyl chloroformate	Methyl chlorocarbonate
24	Mercury		14, 17	Methyl chloromethyl ether	CMME
22, 24	Mercury (vapor)		26	Methyl cyanide	Acetonitrile
24	Mercury acetate	Mercuric acetate	29	Methyl cyclohexane	
24	Mercury ammonium chloride	Mercuric ammonium chloride	24	Methyl dichloroarsine	
24	Mercury benzoate	Mercuric benzoate	107	Methyl dichlorosilane	
24	Mercury bisulfate	Mercurous sulfate	17	Methylene chloride	Dichloromethane
24	Mercury chloride	Mercuric chloride	18, 107	Methylene diisocyanate	
11, 24	Mercury cyanide	Mercuric cyanide	7, 17	4,4-Methylene bis(2-chloroaniline)	
24, 102	Mercury fulminate		17	Methyl ethyl chloride	
24	Mercury iodide	Mercuric iodide	14	Methyl ethyl ether	
24, 104	Mercury nitrate	Mercuric nitrate	19	Methyl ethyl ketone	Butanone
24	Mercury nucleate	Mercuriol	30	Methyl ethyl ketone peroxide	
24	Mercury oleate	Mercuric oleate	7	Methyl ethyl pyridine	
24	Mercury sulfate	Mercuric sulfate	13	Methyl formate	
16	Mesitylene	1,3,5-trimethylbenzene	8	Methyl formate	
19	Mesityl oxide		17	Methyl hydrazine	Monomethyl hydrazine
9	Mesurolo [®]		19	Methyl iodide	
32	Metasystox-R	Demeton-S-methyl sulfoxide	18, 107	Methyl isobutyl ketone	
12	Metham		19	Methyl isocyanate	
5	Methanal	Formaldehyde	105, 107	Methyl isopropenyl ketone	
29	Methane		105, 107	Methyl magnesium bromide	
20	Methanethiol	Methyl mercaptan	105, 107	Methyl magnesium chloride	
3	Methanoic acid	Formic acid	20	Methyl magnesium iodide	
				Methyl mercaptan	Methanethiol

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>	<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
13, 103	Methyl methacrylate		24, 107	Nickel antimonide	
16	Methyl naphthalene		24	Nickel arsenate	Nickelous arsenate
32	Methyl parathion		24	Nickel arsenite	Nickelous arsenite
13	Methyl pentanoate	Methyl valerate	24	Nickel carbonyl	Nickel tetracarbonyl
13	Methyl propionate		24	Nickel chloride	Nickelous chloride
19	Methyl n-propyl ketone		11, 24	Nickel cyanide	
28, 103	Methyl styrene		24, 104	Nickel nitrate	Nickelous nitrate
20	Methyl sulfide	Dimethyl sulfide	24	Nickelous arsenate	Nickel arsenate
107	Methyl trichlorosilane		24	Nickelous arsenite	Nickel arsenite
13	Methyl valerate	Methyl pentanoate	24	Nickelous chloride	Nickel chloride
19	Methyl vinyl ketone	Butene-2-one	24, 104	Nickelous nitrate	Nickel nitrate
7, 8	Methyl yellow	Dimethylamino azobenzene	24	Nickel selenide	
32	Mevinphos	Phosdrin [®]	24, 33, 103	Nickel subsulfide	
9	Mezcarbate	Dowco-139 [®]	24	Nickel sulfate	
101	Mineral spirits		24	Nickel tetracarbonyl	Nickel carbonyl
32	Mintacol [®]	Paraoxon	7, 27	Nitraniline	Nitroaniline
9	Mipcin [®]		2	Nitric acid	
9	Mobam [®]		7, 27	Nitroaniline	Nitraniline
32	Mocap [®]		27	Nitrobenzene	Nitrobenzol
22, 23, 24	Molybdenum		27	Nitrobenzol	Nitrobenzene
24	Molybdenum anhydride	Molybdenum trioxide	27	Nitrobiphenyl	4-NBP
24, 33, 103	Molybdenum sulfide		104	Nitrocalcite	Calcium nitrate
24	Molybdenum trioxide	Molybdenum anhydride	27, 102	Nitrocellulose	Cellulose nitrate, gum cotton
24	Molybdic acid		17, 27	Nitrochlorobenzene	Chloronitrobenzene
17, 19	Monochloroacetone	Chloroacetone	104	Nitrogen dioxide	
3, 17	Monochloroacetic acid	Chloroacetic acid	27, 102	Nitromannite	Mannitol hexanitrate
32	Monocrotophos	Azodrin [®]	7, 17	Nitrogen mustard	
4, 7	Monooethanol amine		104	Nitrogen tetroxide	
1	Monofluorophosphoric acid		27, 102	Nitroglycerin	Trinitroglycerin
4, 7	Monoisopropanolamine		2	Nitrohydrochloric acid	
8	Monomethyl hydrazine	Methyl hydrazine	27, 31	Nitrophenol	
7	Morpholine		27	Nitropropane	
101	Municipal solid waste	Refuse	7, 27	Nitrosodimethylamine	Dimethylnitrosamine
1	Muriatic acid	Hydrochloric acid	27, 102	Nitrosoguanidine	
12	Nabam		27, 102	Nitrostarch	Starch nitrate
21, 107	Nack	Sodium-potassium alloy	27	Nitroxylene	Nitroxylol, Dimethylnitrobenz
21, 107	Nak	Sodium-potassium alloy	27	Nitroxylol	Nitroxylene, Dimethylnitrobenz
101	Naptha		7, 27	N-Nitrosodimethylamine	Dimethylnitrosoamine
16	Naphthalene		31	Nonyl phenol	
31	Naphthalol		107	Nonyl trichlorosilane	
7	Naphthylamine		29	Nonane	
20	Naphthyl mercaptan		28	Nonene	
27, 102	Naphthalite	Trinitronaphthalene	19	Nonanne	
17	Nemagon [®]	Dibromochloropropane	3	Nonanal	
29	Neohexane	Dimethyl butane	6	Nonanol	
27	4-NBP	Nitrobiphenyl	107	Octadecyl trichlorosilane	
12	Niacide [®]		28	Octadecyne	
32	Nialate	Ethion	6, 32	Octamethylpyrophosphoramide	Schradan
22, 24	Nickel		3	Octanal	
24	Nickel acetate		29	Octane	

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
19	Octanone	
6	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, 104	Osmium amine nitrate	
24, 104	Osmium amine perchlorate	
9	Oxamyl	
3	Oxalic acid	
104, 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	Pentaborane	
103	Pentachlorophenol	
17, 31	Pentaerythritol tetranitrate	Pentaerythrityl tetranitrate, PETN
27, 102	Pentamethyl benzene	
16	Pentane	
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	
104	Perchloryl fluoride	
2	Periodic acid	
1	Permonosulfuric acid	
3, 30	Peroxyacetic acid	Peracetic acid
12	P-ETD	Polyram combi [®]
101	Petroleum naphtha	
101	Petroleum oil	
16	Phenanthrene	
7, 24	Phenarsazine chloride	Diphenylamine chloroarsine

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
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 [®]
103	Phosphine	Hydrogen phosphide
20, 32	Phospholan	Cyolan [®]
103, 107	Phosphonium iodide	
1	Phosphoric acid	Phosphorus pentoxide
107	Phosphoric anhydride	Phosphorus pentasulfide
33, 103, 107	Phosphoric sulfide	
103, 107	Phosphorus (Amorphous red)	
103	Phosphorus (White-Yellow)	
33, 103	Phosphorus heptasulfide	Phosphoryl bromide
104, 107	Phosphorus oxybromide	Phosphoryl chloride
104, 107	Phosphorus oxychloride	Phosphoric chloride
107	Phosphorus pentachloride	Phosphoric sulfide
33, 103, 107	Phosphorus pentasulfide	Phosphoric anhydride
107	Phosphorus pentoxide	Tetraphosphorus trisulfide
33, 103, 107	Phosphorus sesquisulfide	
107	Phosphorus tribromide	
107	Phosphorus trichloride	
33, 103, 107	Phosphorus trisulfide	Phosphorus oxybromide
104, 107	Phosphoryl bromide	Phosphorus oxychloride
104, 107	Phosphoryl chloride	
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	
104	Polyglycol ether	
101	Polyamide resin	
17	Polybrominated biphenyl	

RGN	Names	Synonyms	RGN	Names	Synonyms
28	Polybutene		13	Propiolactone	
	Polychlorinated biphenyls	PCB, Askarel, Arochlor [®] , Chlortextol, Inerteen	3	Propionaldehyde	Propanal
17			6	Propionamide	
17	Polychlorinated triphenyls		3	Propionic acid	Propanoic acid
101	Poethylene		26	Propionitrile	
101	Polyester resin		13	Propyl acetate	Propanol
101	Polymeric oil		4	Propyl alcohol	
18, 107	Polyphenyl polymethylisocyanate		7	Propylamine	Phenyl propane
28, 101	Polypropylene		16	Propyl benzene	Dichloropropane
	Polyram combi [®]	PETD	17	Propylene dichloride	
20, 101	Polysulfide polymer		4	Propylene glycol	
101	Polystyrene		4, 19	Propylene glycol monomethyl ether	
101	Polyurethane		34, 103	Propylene oxide	Methyl aziridine
101	Polyvinyl acetate		7	Propylenimine	
101	Polyvinyl chloride		14	Propyl ether	
27, 102	Polyvinyl nitrate		13	Propyl formate	Propanethiol
32	Potasan		20	Propyl mercaptan	
21, 107	Potassium		107	Propyl Trichlorosilane	Foston [®]
13	Potassium acid fluoride	Potassium fluoride	32	Prothoate	1,2,4 trimethylbenzene
10	Potassium aluminate		16	Pseudocunene	
24	Potassium arsenate		7	Pyridine	
24	Potassium arsenite		31	Pyrogallol	Disulfuryl chloride
13	Potassium bifluoride	Potassium fluoride	107	Pyrosulfuryl chloride	Collodion
24, 104	Potassium bichromate	Potassium dichromate	27	Pyroxylin	Benzoquinone
104	Potassium bromate		19	Quinone	
10	Potassium butoxide		22	Raney nickel	Cyclotrimethylene trinitramine
11	Potassium cyanide		27, 102	RDX	Municipal solid waste
104	Potassium dichloroisocyanurate		101	Refuse	
24, 104	Potassium dichromate	Potassium bichromate	101	Resins	
27, 102	Potassium dinitrobenzofuroxan		31	Resorcinol	
13	Potassium fluoride	Potassium acid fluoride	21	Rubidium	Mercuric salicylate
103, 107	Potassium hydride	Caustic potash	24	Salicylated mercury	
10	Potassium hydroxide	Salt peter	31	Saligenin	Potassium nitrate
102, 104	Potassium nitrate		102, 104	Saltpeter	Octamethyl pyrophosphorane
23	Potassium nitride			Schwadan	OMPA
104	Potassium nitrite		6, 32		Selenous acid
107	Potassium oxide		1, 24	Selenious acid	
104	Potassium perchlorate		22, 23, 24	Selenium	
24, 104	Potassium permanganate		12, 24	Selenium diethyldithiocarbamate	
104, 107	Potassium peroxide		13, 24	Selenium fluoride ;	
33, 103	Potassium sulfide		1, 24	Selenous acid	Selenious acid
9	Pronecarb		107	Silicochloroform	Trichlorosilane
3	Propanal	Propionaldehyde	107	Silicon tetrachloride	
29	Propane		13, 107	Silicon tetrafluoride	
20	Propanethiol	Propyl mercaptan	24, 102, 103, 107	Silver acetylde	
3	Propanoic acid	Propionic acid	24, 102	Silver azide	
4	Propanol	Propyl alcohol	11, 24	Silver cyanide	
17	Propargyl bromide		24, 104	Silver nitrate	
17	Propargyl chloride		24, 23, 102	Silver nitride	
4	2-Propen-1-ol	Allyl alcohol	24, 27, 102	Silver stypmate	Silver trinitroresorcinate

<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>	<u>RGN</u>	<u>Names</u>	<u>Synonyms</u>
24, 33, 103	Silver sulfide		24, 33, 103	Sodium sulfide	
24, 102	Silver tetrazeno		103	Sodium thiosulfate	
24, 27, 102	Silver trinitroresorcinate	Silver styphnate	24, 107	Stannic chloride	Tin tetrachloride
10, 107	Slaked lime	Calcium oxide	33, 103	Stannic sulfide	
102	Smokeless powder		27, 102	Starch nitrate	Nitrostarch
10, 107	Sodamide	Sodium amide	16	Stilbene	Diphenyl ethylene
104	Soda niter	Sodium nitrate	101	Stoddard solvent	
21, 103, 107	Sodium		24	Strontium	
13	Sodium acid fluoride	Sodium fluoride	24	Strontium arsenate	
10, 103	Sodium aluminate		24, 104	Strontium dioxide	Strontium peroxide
103, 107	Sodium aluminum hydride		24, 33, 103	Strontium monosulfide	
10, 107	Sodium amide	Sodamide	24, 104	Strontium nitrate	
24	Sodium arsenate		104	Strontium peroxide	Strontium dioxide
24	Sodium arsenite		24, 33, 103	Strontium tetrasulfide	
102	Sodium azide		27, 31, 102	Stylnic acid	Trinitroresorcinol
24, 104	Sodium bichromate	Sodium dichromate	16, 28, 103	Styrene	Vinylbenzene
13	Sodium bifluoride	Sodium fluoride	3	Succinic acid	
104	Sodium bromate		30	Succinic acid peroxide	
24	Sodium cacodylate	Sodium dimethylarsenate	107	Sulfonyl chloride	Sulfonyl chloride
10	Sodium carbonate		107	Sulfonyl fluoride	
104	Sodium carbonate peroxide		32	Sulfotep	Dithione*, Nlada-Fum*
104	Sodium chlorate		107	Sulfur chloride	Sulfur monochloride
104	Sodium chlorite		101	Sulfur (elemental)	
24	Sodium chromate		2, 107	Sulfuric acid	Oil of Vitriol, Oleum
11	Sodium cyanide		104, 107	Sulfuric anhydride	Sulfur trioxide
104	Sodium dichloroisocyanurate		107	Sulfur monochloride	Sulfur chloride
24, 104	Sodium dichromate	Sodium bichromate	20	Sulfur mustard	
24	Sodium dimethylarsenate	Sodium cacodylate	107	Sulfur oxichloride	Thionyl chloride
13	Sodium fluoride	Sodium acid fluoride	13, 107	Sulfur pentaffluoride	
103, 107	Sodium hydride		104, 107	Sulfur trioxide	Sulfuric anhydride
10	Sodium hydroxide	Caustic soda, Lye	107	Sulfonyl chloride	Sulfonyl chloride
10, 104	Sodium hypochlorite		107	Sulfonyl fluoride	Sulfonyl fluoride
103	Sodium hyposulfite	Sodium thiosulfate	32	Supracide*	Ultracide*
10, 107	Sodium methylate	Sodium methoxide	32	Surecide*	Cyanophenphos
10, 107	Sodium methoxide	Sodium methylate	101	Synthetic rubber	
24	Sodium molybdate		14, 17	TCDD	Tetrachlorodibenzo-p-dioxin
10, 107	Sodium monoxide	Sodium oxide	32	TEDP	Tetraethyl dithionopyrophosphat
104	Sodium nitrate	Soda niter	24	TEL	Tetraethyl lead
23	Sodium nitride		6, 32	TEPA	Tris-(1-aziridinyl) phosphine ox
104	Sodium nitrite		32	TEPP	Tetraethyl pyrophosphate
10, 107	Sodium oxide	Sodium monoxide	14	TIIF	Tetrahydrofuran
31	Sodium pentachlorophenate		7	TMA	Trimethylamine
104	Sodium perchlorate		24	TML	Tetramethyl lead
24, 104	Sodium permanganate		27, 102	TND	Trinitrobenzene
104, 107	Sodium peroxide		27, 102	TNT	Trinitrotoluene
31	Sodium phenolsulfonate		101	Tall oil	
27, 102	Sodium picramate		101	Tallow	
101	Sodium polysulfide		101	Tar	
21, 107	Sodium potassium alloy	Nak, Nack	13, 24	Tellurium hexafluoride	
24	Sodium selenate		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	Animer [®] V-101
25, 102	Tetrasulfur tetranitride	
8, 102	Tetrazene	
24	Thallium	
24, 25, 102	Thallium nitride	
24, 33, 105	Thallium sulfide	
24	Thallos 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, Methylbenzene
6	Topride [®]	Benzardox
9, 26	Tranid [®]	
6, 32	Triamphos	Wepsyn [®] 155
17	Tribromomethane	Bromoform
107	Tri-n-butylaluminum	
24, 25	Tricadmium dinitride	
25	Tricalcium dinitride	
24, 25	Tricestum nitride	
5, 17	Trichloroacetaldehyde	Chloral hydrate
107	Trichloroborane	
17	Trichloroethane	
17	Trichloroethylene	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 bisnuthine	
7	Triethylamine	
6, 32	Triethylene phosphoramidate	Tri(1-aziridinyl) phosphine oxide
7	Triethylene tetraamine	
24, 105, 107	Triethyl stibine	Triethyl antimony
17	Trifluoroethane	
17	Trifluoromethylbenzene	Benzotrifluoride
105, 107	Trisobutyl 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 bisnuthine	
29	Trimethyl pentane	Isooctane
24, 105, 107	Trimethylstibine	Trimethyl antimony
105, 107	Tri-n-butylborane	
7, 27, 102	Trinitroaniline	
14, 27	Trinitroanisole	Picramide
27, 102	Trinitrobenzene	Trinitrophenylmethy TNB

RGN	Names	Synonyms	RGN	Names	Synonyms
3, 27, 102	Trinitrobenzoic acid		17, 103	Vinylidene chloride	VC
27, 102	Trinitroglycerin	Nitroglycerin	28, 103	Vinyl toluene	
27, 102	Trinitronaphthalene	Naphlite	107	Vinyl trichlorosilane	
27, 31, 102	Trinitrophenol	Picric acid	20, 32	VX	
14, 27	Trinitrophenyl methyl ether	Trinitroanisole	106	Water	
27, 31, 102	Trinitroresorcinol	Styphnic acid	101	Waxes	
27, 102	Trinitrotoluene	TNT	6, 32	Wepsyn [®] 133	Triamphos
103, 107	Triocetyl aluminum		101	Wood	
16	Triphenyl ethylene		9	Zectran [®]	Dowco 139 [®]
16	Triphenyl methane		22, 23, 24	Zinc	
7	Tripropylamine		24, 103, 107	Zinc acetylide	
24, 107	Tripropyl stibine		24, 104	Zinc ammonium nitrate	
24, 107	Trisilyl arsine		24	Zinc arsenate	
	Tris-(1-aziridinyl) phosphine oxide	TEPA, Triethylene phosphoramidate	24	Zinc arsenite	
6, 32			24	Zinc chloride	
32	Trithlon		24, 102, 104, 107	Zinc dioxide	Zinc peroxide
24, 25	Trithorium tetranitride		24, 103, 107	Zinc ethyl	Diethyl zinc
24, 107	Trivinyl stibine		11, 24	Zinc cyanide	
9	Tsumacide [®]		24, 13	Zinc fluoborate	
24	Tungstic acid		24, 104	Zinc nitrate	
101	Turpentine		24, 104	Zinc permanganate	
8	UDMII	Dimethyl hydrazine	24, 102, 104, 107	Zinc peroxide	Zinc dioxide
32	Ultracide [®]	Supracide [®]	24, 107	Zinc phosphide	
28	Undecene			Zinc salts of dimethyl dithiocarbamic acid	
101	Unisolve		12, 24		
24, 104	Uranium nitrate	Uranyl nitrate	24	Zinc sulfate	
24, 33, 103	Uranium sulfide		24, 33, 103	Zinc sulfide	
24, 104	Uranyl nitrate	Uranium nitrate	12, 24	Zinc [®]	
5	Urea formaldehyde		20	Zinophos [®]	Thioazin
27, 102, 104	Urea nitrate		12, 24	Ziram [®]	
17, 103	VC	Vinylidene chloride	22, 23, 24	Zirconium	
5	Valeraldehyde	Pentanal	24	Zirconium chloride	Zirconium tetrachloride
6	Valeramide		24, 104	Zirconium picramate	
3	Valeric acid		24	Zirconium tetrachloride	Zirconium chloride
24	Vanadic acid anhydride	Vanadium pentoxide			
24	Vanadium oxytrichloride	Vanadic acid anhydride			
24	Vanadium pentoxide	Vanadyl sulfate			
24	Vanadium sulfate				
24	Vanadium tetroxide				
24, 107	Vanadium trichloride				
24	Vanadium trioxide	Vanadium sulfate			
24	Vanadyl sulfate	DDVP			
32	Vapona [®]				
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				

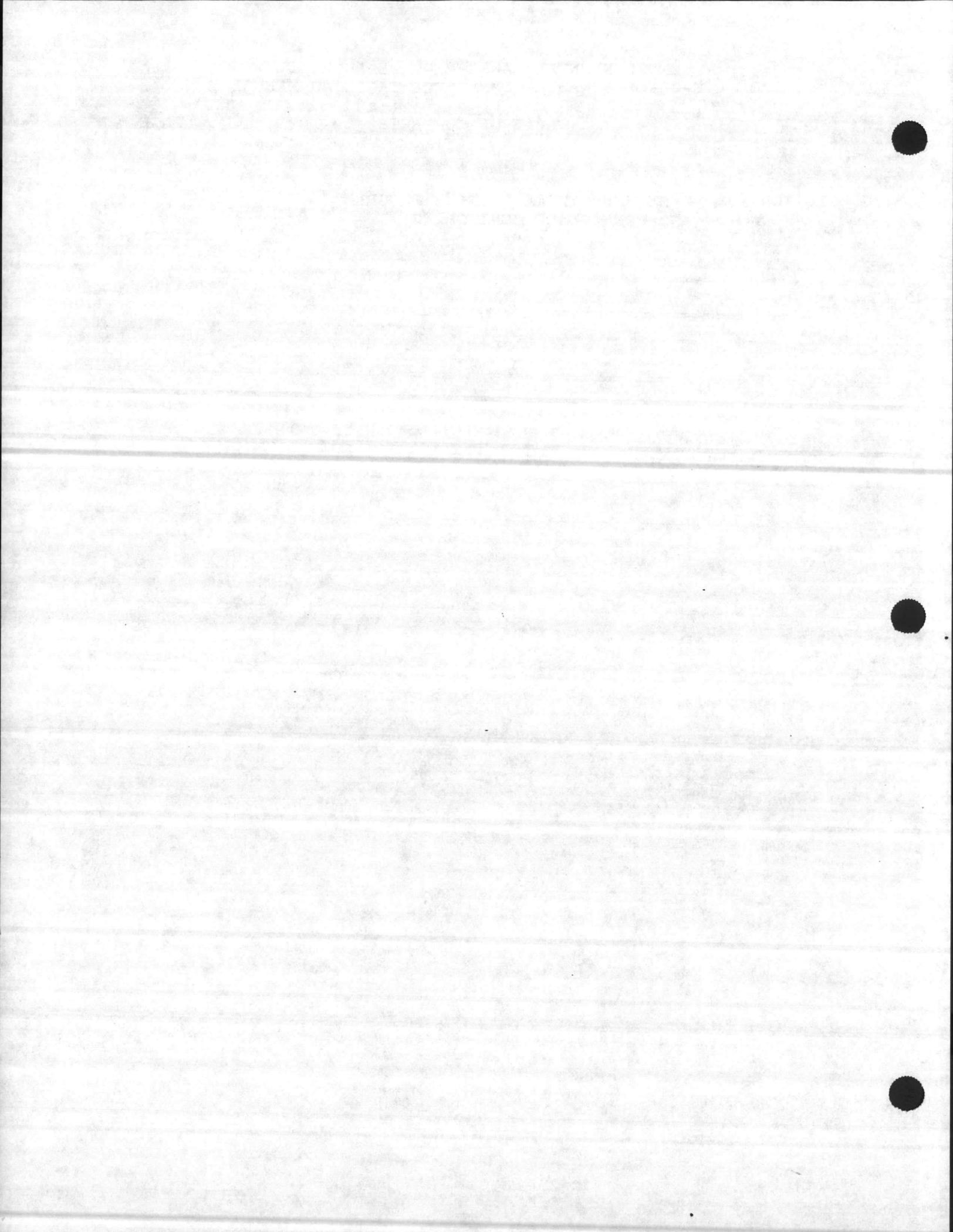
ENVIRONMENTAL MANAGEMENT DEPARTMENT
HAZARDOUS WASTE COMPLIANCE TRAINING MANUAL

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SECTION 13. BASE INDUSTRIAL HYGIENE PROGRAM
AND WORK PLACE MONITORING

389-397



SAFETY AND HEALTH INITIAL TRAINING
COMPLIANCE TRAINING FOR HMDCs AND HMDOs
SITE MANAGERS AND HANDLERS

INDUSTRIAL HYGIENE PROGRAM

Ref: (a) 29 CFR 1910.1000-1048
(b) OPNAVINST 5100.23C

I. INTRODUCTION

A. Industrial Hygiene is a department of the Occupational Health and Preventive Medicine Services Directorate of the Naval Hospital. We provide Industrial Hygiene services to most of Camp Lejeune and New River.

1. Bldg. 65, extension 2707 (6813 for MCAS, New River)

2. Our staff consists of 4-5 Industrial Hygienists, each with assigned areas of responsibility, and 4-5 Industrial Hygiene Technicians.

3. 2D FSSG commands have their own Industrial Hygiene Officer, extension 2707.

B. OUR MISSION is to ensure that all Marine Corps and Navy personnel are protected from occupational diseases. We accomplish this by IDENTIFYING potential chemical and physical health hazards, EVALUATING their potential for harm, and recommending CONTROLS for the hazard.

1. We offer the following services:

a. Baseline Industrial Hygiene Surveys - a complete assessment of all workplace hazards in a command. This would include noise, carbon monoxide, asbestos, solvents, etc.

b. Periodic Industrial Hygiene Surveys - Similar to a baseline, only involves those areas with identified hazards or new operations.

c. Special Surveys- We can measure noise, industrial ventilation, air concentrations of dusts, metals, and solvents on request. We can also take samples of material to determine if they contain asbestos. If you are planning an industrial operation such as grinding, painting, welding, or anything else, give us a call. Please plan ahead as we are always busy!

d. Training - We provide Occupational Safety and Health training in many areas: Hazard Communication, Respiratory Protection, general and specific health hazards.

2. Survey Request Letters- From: CO, Your Command--
To: CO, Naval Hospital, Attention Industrial Hygiene

**GUIDELINES FOR SAFE PRACTICES AND PROCEDURES
IN CARC PAINTING OPERATIONS**

I. Introduction. The Marine Corps has been changing its 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.

II. 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. OMC 190104Z Feb 88 states that units authorized as an organizational maintenance capability may conduct touch-up painting operations with a paint brush only.

B. Painting with CARC for cosmetic purposes is not authorized.

C. Personnel should receive training in the use, care, inspection and maintenance of personal protection equipment, as well as 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 (Cotton utilities are OK as long as personnel know to remove them immediately if they become wet with paint.)

(2) Solvent resistant gloves made of silicone rubber.

(3) Barrier creams are recommended, but not required, under the gloves to afford total skin protection.

(4) Goggles

(5) Safety boots.

(6) Respiratory protective equipment only during spray painting and mixing two component paints.

F. Contact lenses will not be worn during painting operations.

G. Material Safety Data Sheets (MSDS) for all types of CARC paint should be acquired from the respective paint manufacturers. All MSDS's shall be available to employees at their worksite. Training shall be provided on the content and use of MSDS's.

H. 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 toxic substances to be released. Do not weld or cut on CARC painted surfaces.

I. Grinding and Sanding: During grinding and sanding operations, dust containing lead, chromium, or crystalline silica may be produced. If possible, use a wet or hand sanding method. If power sanding or grinding a large area, a dust mist respirator should be worn. Personnel should wear safety goggles or a full faceshield to prevent paint chips and dust from getting into the eyes unless a full facepiece respirator is used.

J. CARC paint will not be applied to manifolds, exhaust pipes, turbo chargers, mufflers, and any other area where temperatures may reach 400 degrees Fahrenheit or above.

K. 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.

L. 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.

M. Two component CARC paints are not recommended.

N. 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.

III. 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 periodic air sampling during actual painting operations. Industrial Hygiene should be contacted at extension 2707 prior to beginning CARC painting to schedule this sampling.

SAFE WORK PRACTICES FOR ASBESTOS BRAKE & CLUTCH WORK

I. WORKER PREPARATION

1. Personnel conducting asbestos brake & clutch work must be trained annually on the hazards associated with asbestos exposures. Personnel must also know and be able to demonstrate safe work practice procedures for handling asbestos.

2. For training assistance, please contact Industrial Hygiene at extension 2707. Current point of contact is ENS Dufault.

II. PRIOR TO BEGINNING WORK

1. Isolate the work area.

2. Allow only trained personnel in the area.

3. Position a disposable drop cloth under the wheel assembly or clutch housing to catch dust.

4. Put on safety glasses or face shield to protect eyes from falling or flying debris.

III. REMOVAL OF BRAKE-PADS AND/OR CLUTCH

1. If available, use a high efficiency particulate air (HEPA) filter vacuum source with a brake enclosure or chamber.

OTHERWISE:

2. Use a water solution or Brakekleen to dampen the brake assembly (water solution should consist of a mixture of one ounce polyoxyethylene ester and 5 gallons of water). Solution may be applied using a rag or spray bottle. If a spray bottle is used, the spray must be kept at a very low pressure to avoid scattering the brake dust.

3. Remove the brake-pads. Keep the brake assembly and any dust generated as damp as possible throughout the process.

4. **DO NOT DRY BRUSH OR USE COMPRESSED AIR TO CLEAN THE BRAKES!!**

5. Upon completion of the job, **CAREFULLY** gather up the drop cloth containing the asbestos debris. Package drop cloth and other waste in a double lined plastic bag. Label and dispose of according to approved methods. Asbestos waste is hazardous and must be disposed of properly. **DO NOT DRY SWEEP!**

IV. ASBESTOS EXPOSURE PREVENTION

1. Personnel who work with or handle asbestos or asbestos containing material should wash their hands prior to eating, drinking, or smoking.
2. Personnel should not eat, smoke, or drink around brake or clutch work areas.

V. WORKER MONITORING

1. Asbestos brake/clutch workers will be monitored annually by Industrial Hygiene, to determine exposure levels. Air samples will be collected by dosimeters worn by the workers while performing the asbestos work.
2. If sampling results indicate asbestos exposures above the action level of 0.1 fibers per cubic centimeter (f/cc), the unit will notify affected workers in writing within 15 days after receipt of the results.
3. The unit shall maintain all records of air monitoring for at least 30 years.
4. In work processes where exposures exceed the action level of 0.1 fibers per cubic centimeter (f/cc), monitoring will be conducted every 6 months. Workers will also be placed in the medical surveillance program and may be required to wear respirators.

VI. RESPIRATOR USE

1. If the HEPA vacuum or wet method is used to perform asbestos brake/clutch work, workers are not required to wear respirators.
2. If personnel use respirators, they must be in the unit respiratory protection program. If the unit does not have a respiratory protection program, contact Industrial Hygiene for assistance in developing one.
3. A half-face air purifying respirator equipped with HEPA cartridges is authorized for protection against asbestos fibers when engineering controls are not available and the wet method is not used.
4. DISPOSABLE DUST RESPIRATORS (E.G. 3M 8710 or 9920) ARE NOT AUTHORIZED FOR USE DURING ANY ASBESTOS OPERATION. These type of respirators do not provide adequate protection against asbestos fibers.

CARBON MONOXIDE

IDENTIFICATION

Carbon monoxide is a colorless, odorless, tasteless gas that is somewhat lighter than air. It gives no warning of its presence. Its major source is from burning of any sort of fuel, like diesel, gasoline, or wood. Practically any engine will give off carbon monoxide, which can build up to hazardous levels inside buildings. The Occupational Safety and Health Administration (OSHA) has set a limit of 35 parts carbon monoxide per million parts air (ppm) as the level at which most people can be exposed to for 8 hours a day without any ill effects. Consider that car exhaust can contain 350,000 ppm or more of carbon monoxide.

HEALTH EFFECTS

Symptoms of carbon monoxide poisoning are headache, nausea, dizziness, weakness, rapid breathing, unconsciousness, and ultimately death. High concentrations can kill rapidly without any warning symptoms. Pregnant women are more susceptible to carbon monoxide poisoning. Carbon monoxide can aggravate existing heart or artery disease and may cause chest pain in those individuals. Smokers already inhale carbon monoxide each time they smoke, so they are more susceptible to carbon monoxide poisoning because its already in their bloodstream.

CONTROL

Anytime an engine is operated inside, exhaust ventilation should be used. Fuel burning vehicles will always emit carbon monoxide, even if there is no noticeable exhaust. Most vehicle maintenance bays here at Camp Lejeune have exhaust ducts for vehicles. Fuel-burning forklifts will emit carbon monoxide, so doors to the outside should remain open when operating the forklift inside. The best protection is to only operate fuel burning engines outside, or to have exhaust ventilation installed. Contact the Industrial Hygiene (IH) Department at 2707 to find out if ventilation is necessary, or check the IH survey report for your area.

RESPIRATORY PROTECTION

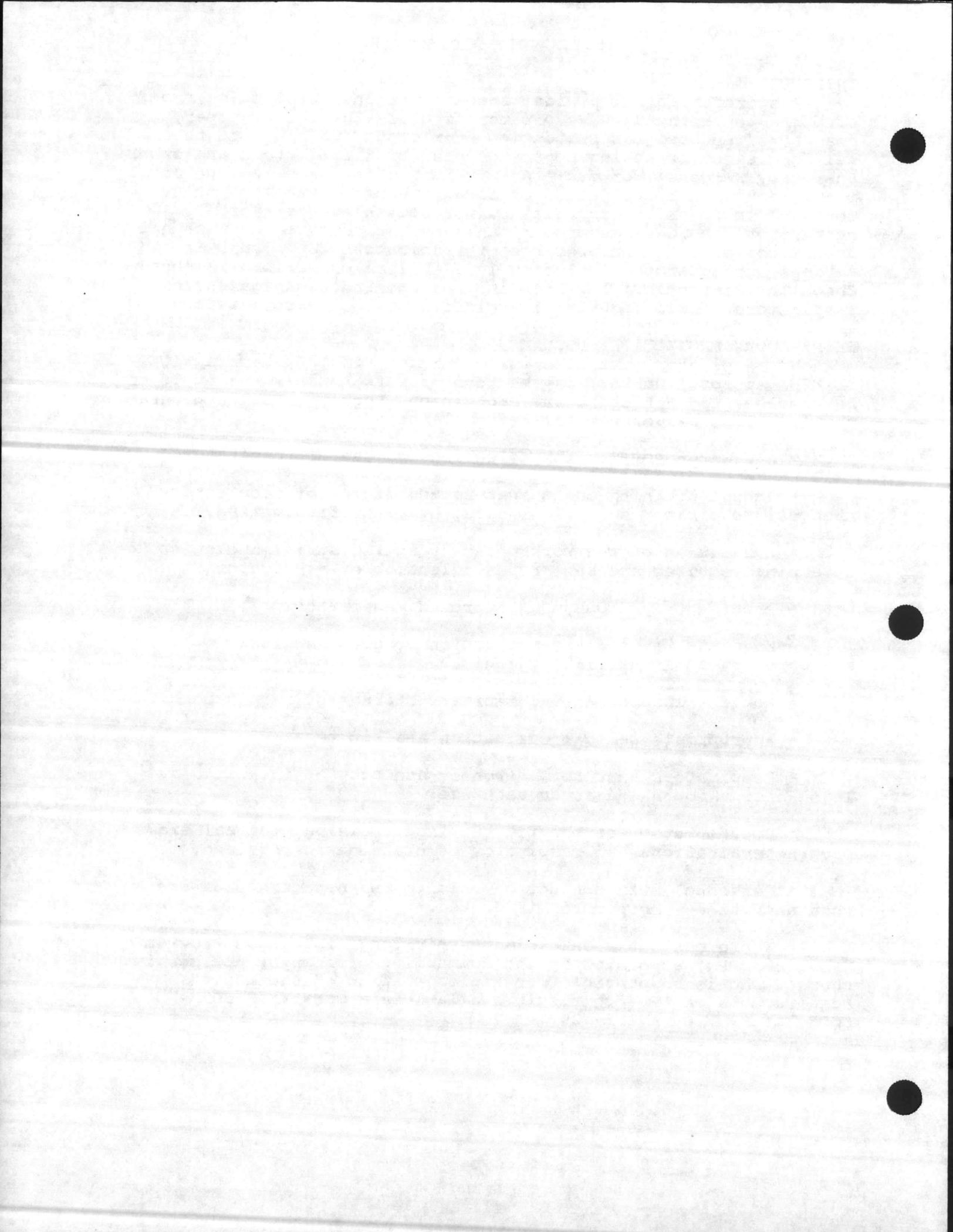
INTRODUCTION

Respirators offer a wide range of personal protection from airborne contaminants. Respirators include the white, paper, "masks" often used for protection from dusts and mists to the self-contained breathing apparatus used by firefighters and other emergency response workers. Respirators offer excellent personal protection when installation of local exhaust systems or other forms of engineering controls are not feasible. However, respirator use requires proper management to ensure they are not used incorrectly. Improper use of respirators can result in serious consequences, including loss of life or serious illness. Check the list below; how good is your command's management of respirators. Call Industrial Hygiene at ext 2707 for assistance.

RESPIRATORY PROTECTION PROGRAM

No respirator (even the white "masks", if they have a NIOSH or MSHA approval number) may be worn at work, unless the employer has implemented a Respiratory Protection Program. Such a program shall include all of the following elements:

- * A written SOP for the selection and use of respirators.
- * Annual training on the nature and degree of respiratory hazards, respirator selection, care, use, and fit testing.
- * Evaluation of the workspaces by an industrial hygienist to determine requirements and proper selection of respirators.
- * Provide only NIOSH/MSHA approved respirators.
- * Have the respiratory protection program regularly evaluated by an industrial hygienist.
- * Routine inspection and sanitary storage of respirators.
- * Appropriate medical evaluation and fit test.
- * Respirators kept for emergency use must be inspected at least once a month and after each use.
- * Documentation of the fit-testing, training, medical exams, program evaluations and respirator maintenance is required.
- * Personnel must conduct a positive and negative pressure test each time a respirator is donned.
- * There must be a certified Respiratory Protection Program Manager (RPPM) appointed by the commanding officer or officer in charge, who is responsible for implementation of the above requirements. A RPPM course is available via COMNAVAIR COMMAND, CODE Air 09-F2C, AV222-1292.



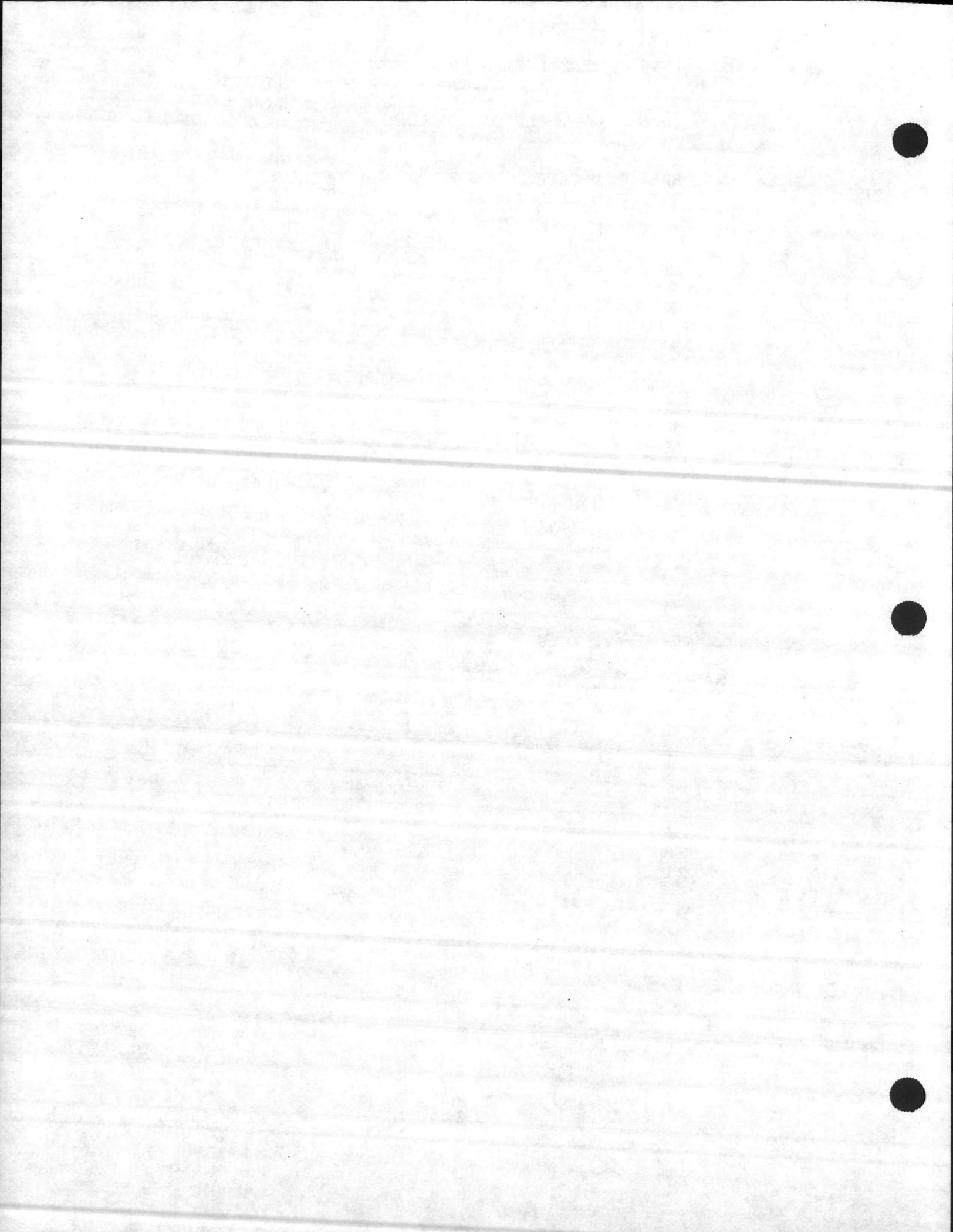
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SECTION 14. BASE RECYCLING PROGRAM AND LANDFILL
DISPOSAL REGULATIONS

399-436





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

BO 4555.1C
LOG
3 Aug 69

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.

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

<u>Class</u>	<u>Estimated Silver Percentage</u>
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.	

<u>Class</u>	<u>Estimated Silver Percentage</u>
CLASS N	10 (1.46) <u>1/</u>
Silver-bearing missile batteries encapsulated in epoxy-type plastic with metal cases and attachments.	
CLASS P	8 (1.14) <u>1/</u>
Silver recovery cartridge consisting of a spun metallic filter through which the spent hyposolution has been filtered.	
CLASS R	24 (3.50) <u>1/</u>
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

<u>Class</u>	<u>Description</u>	<u>Est. Gold % by Weight</u>
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)

<u>Class</u>	<u>Description</u>	<u>Est. Gold %</u> <u>By weight</u>
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)

UNANNOUNCED SPOT CHECKS OF RECYCLING BINS. THESE INSPECTIONS WILL FOCUS ON THE FOLLOWING SPECIAL 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 OILS SHALL BE REMOVED FROM ANY ITEMS PLACED INTO RECYCLING BINS.
- D. DISPOSAL OF CABBAGE 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. RINSEATE 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 FORM 5 (ES) 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 RINGS AND TURNED IN TO DRUM AT 3LDC 906.
- D. CONTAINERS LARGER THAN 5 GALLONS IN CAPACITY WHICH ARE BADLY DAMAGED OR WHICH CANNOT BE CLOSED USING RINGS, 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 MAJTR COMMAND HMDC VIA CHAIN OF COMMAND.

9. ADDRESSEES ARE REQUESTED TO TAKE IMMEDIATE ACTION TO LIMIT THE 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 CONSERVATION
- D. SAFETY

BT

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UNCLASSIFIED

WASTE MINIMIZATION

OFFICE WASTE;

- * **ACCOUNTS FOR A LARGE PORTION OF OVERALL SOLID WASTE GENERATED, AND INCLUDES;**
- * **VARIOUS FORMS OF PAPER, BOND, COMPUTER, COPY , AND FAX;**
- * **CARDBOARD, PLASTIC, METAL, AND FOOD.**

1. GET TO KNOW YOUR WASTE.

- * **CONDUCT A VISUAL SURVEY OF THE CONTENTS OF THE TRASH CANS IN THE OFFICE. LIST THE ITEMS THAT OCCUR IN THE GREATEST QUANTITIES THESE WILL BE THE MATERIALS TARGETED FOR REDUCTION, REUSE, OR RECYCLING.**

WASTE MINIMIZATION

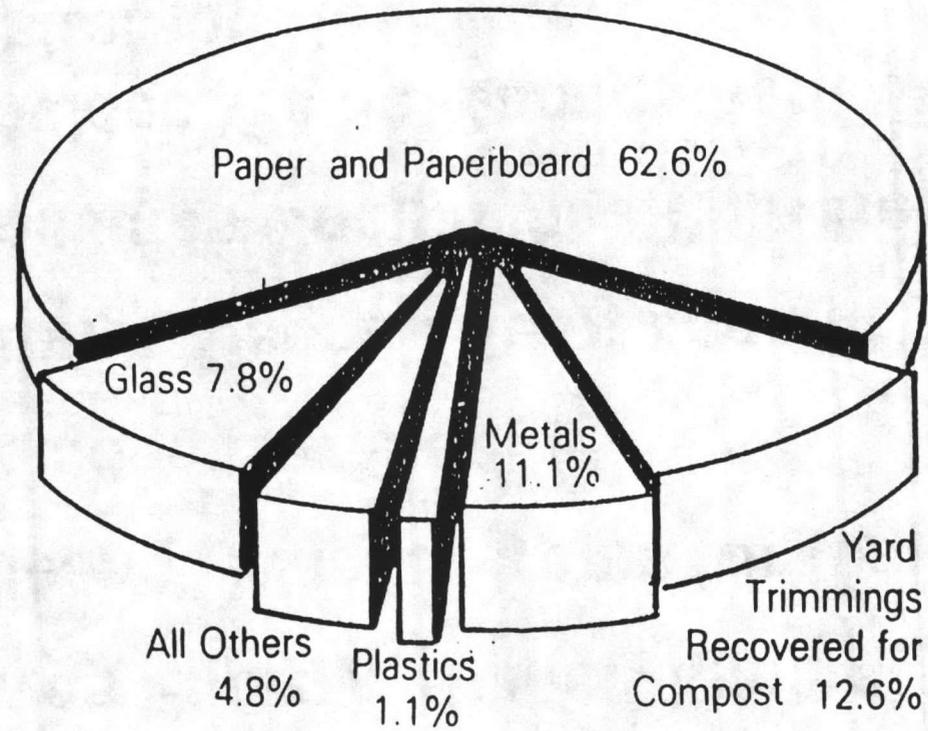
2. **LOOK FOR WAYS TO REDUCE AND TO REUSE ITEMS RATHER THAN THROW THEM AWAY;**
 - * **ENCOURAGE EMPLOYEES TO USE WASHABLE BEVERAGE CONTAINERS;**
 - * **CARRY LUNCH TO WORK IN REUSABLE CONTAINERS;**
 - * **EAT LUNCH AT THE FAST FOOD RESTAURANT, RATHER THEN BRINGING THE (HEAVILY PACKAGED) ITEMS BACK TO WORK;**
 - * **COFFEE CLUBS CAN USE LARGE CONTAINERS OF CREAMER AND SUGAR RATHER THEN SMALL PRE-PACKAGED ITEMS;**
 - * **AVOID VENDING MACHINES THAT USE DISPOSABLE CUPS;**
 - * **USE DOUBLE SIDED COPIES WHENEVER APPLICABLE;**
 - * **MAKE ONLY AS MANY COPIES AS YOU CURRENTLY NEED;**
 - * **CUT DOWN ON PAPER USAGE WITH ELECTRONIC MAIL, OR POSTING MESSAGES ON A BULLETIN BOARD, OR CIRCULATING MEMO'S;**
 - * **USE FAX MACHINES SPARINGLY, BECAUSE THE PAPER USED IS NOT RECYCLABLE. IN ADDITION, MANY MESSAGES WILL REQUIRE ADDITIONAL COPYING.**

FUTURE CAMP LEJEUNE RECYCLING REQUIREMENTS

- **MORE FEDERAL AND STATE WASTE REDUCTION AND LANDFILL RESTRICTIONS WILL MEAN INCREASED WASTE DISPOSAL REQUIREMENTS**
- **WASTE DISPOSAL AND RECYCLING REQUIREMENTS WILL BE SPELLED OUT IN CONTRACTS AND BASE ORDERS**
- **IN TIME, THESE AND OTHER WASTE DISPOSAL AND RECYCLING REQUIREMENTS WILL BECOME THE NORMAL OPERATING PROCEDURE**

PROGRAM NAME	MATERIAL COLLECTED	NUMBER OF SITES
EMD Cardboard Route	Corrugated Cardboard	57 buildings
EMD Paper Route	Computer paper, high grade office paper, newspaper, shredded paper	94 buildings
EMD Satellite Collection Collection Sites	Glass, cans, HDPE, PET, cardboard, magazines, newspaper, office and computer paper	5 locations
EMD Drop-off Site	Glass, cans, HDPE, PET, cardboard, oil, magazines, newspaper, metal drums, pallets, anti-freeze	1 location
EMD Metal Recycling	Heavy metal, light metal	65 buildings
EMD Oil Recycling	Used motor oil	150 sites
EMD Antifreeze Recycling	Used antifreeze	20 tanks
MWR Aluminum	Used beverage cans	70 buildings
Housing Recycling	Glass, Cans, HDPE, PET, mixed paper	4,450 housing units
Commissary Recycling	Corrugated Cardboard	3 buildings
MWR Cardboard	Corrugated Cardboard	3 buildings
Fats & Grease Collection	Fats and Grease	20 sites
Yard Waste Composting	Leaves, grass, pine straw	Base housing units, contractors

Recovery of Materials from the Municipal Solid Waste Stream, 1990 (By Weight)



Source: Franklin Associates (1992)



THE BENEFITS OF RECYCLING

- **Saves Energy, Timber, Minerals**
- **“Cleans” Waste Stream for Incineration**
- **Provides Revenue** 
- **Extends Useful Life of Landfill**
- **Facilitates Compliance With Regulations**
- **Provides Waste Management Services Desired by Residents**

Camp Lejeune Office Recycling Brochure



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The Environmental Management Department is expanding its office recycling program throughout Base and tenant commands. Your active participation will make this program effective and maintain Camp Lejeune's position of superior environmental leadership.

A successful Camp Lejeune recycling program is vital to meet the Marine Corps' 50% solid waste reduction goal by 1995. Collecting recyclable materials, purchasing recycled products, and reducing waste each play an important role in meeting this goal.


L. H. LIVINGSTON

Brigadier General, U.S. Marine Corps
Commanding General, Marine Corps Base

Printed on Recycled Paper

Recycle at Camp Lejeune!

This brochure provides step-by-step details on successful participation in Camp Lejeune's Office Recycling Program. Just follow these directions and your efforts will help meet the Marine Corps' 50% solid waste reduction goal by 1995.

Office waste consists mostly of paper. Recycling paper saves valuable landfill space and conserves natural resources. The processes used to recycle paper into new products produce less pollution than manufacturing paper from virgin materials.

What to Recycle at Work

Camp Lejeune's Office Recycling Program collects the following source-separated items:

1. **White Office Paper:** calculator tape; desk calendars; letterhead; bond, copy, lined notebook, note paper and other similar types of white office paper, including shredded paper;
2. **Computer Printout:** any paper used in continuous feed printers, including white, blue-bar, green-bar, red-bar, and pink-bar paper, and shredded computer paper;
3. **Newspaper:** anything that comes with the newspaper (inserts and glossy sheets are acceptable);
4. **Magazines, catalogs, paperback books:** slick or glossy paper magazines and paperback books;
5. **Telephone Directories:** any telephone directory;
6. **Corrugated Cardboard:** flattened, clean corrugated material only; and
7. **Aluminum Beverage Cans:** empty cans, flattened or whole.

There are several items that cannot be recycled with office paper. **Non-recyclable items include:** carbon paper, paper clips, gummed labels, plastic window and tabs, post-it-notes, rubber bands, slick fax paper, carbonless paper, coated or glossy paper, color paper, blue prints, waste items such as paper wrapping from copy paper, plastic, paper cups, tissue, paper towels, food-contaminated paper and any other type of paper product. **Other non-recyclable items include:** wax-coated or plastic-coated paper or cardboard.

How to Start Recycling at Work

Call the Environmental Management Department Recycling Program at 451-5068/5063. Personnel are available to conduct a recycling survey at your facility, make recommendations for setting up your office recycling program, and hold an orientation session prior to starting your recycling program.

The Environmental Management Department Recycling Program will provide exterior collection containers for recycling bagged and source-separated materials described in this brochure.

If your office already has a green corrugated cardboard collection container outdoors, you can also recycle bagged and source-separated materials described in this brochure.

How to Select Office Recycling Containers

Base Safety and the Base Fire Department have approved the following office recycling container standards for use in all Camp Lejeune offices:

- **Desk-side or Desk-top Containers:** 1 to 2 gallons in size; used for collecting paper at the work station; to be emptied when full or at the end of each work day; to be constructed of corrugated cardboard.

gated cardboard, metal or UL approved plastic.

- **Station Containers:** 5 to 15 gallons in size; used for collecting paper in high generation areas such as copiers; to be emptied when full or at the end of each work day; to be constructed of metal or UL approved plastic.
- **Consolidation Containers:** no larger than 30 gallons in size; used for storing paper from desk-side or desk-top containers and station containers; to be emptied when full; to be constructed of metal or UL approved plastic, must have lid.

How to Recycle at Work

1. **Contact:** Select a central point of contact and an alternate for your office. These individuals will receive updated office recycling information, and assist in weekly material collection.
2. **Containers:** Place office recycling containers at convenient locations for use by all employees -- by desks, copy machines and at a central collection location such as a storage area or break area.
3. **Collection:** When the consolidation containers are full, office personnel need to remove and tie the full bags, replace them with empty bags, and place the full bags in the exterior collection container. Recycling Program personnel will collect the recyclable materials from the exterior collection containers on a regular schedule. Additional pick-ups can be scheduled as needed by calling the Recycling Center at 451-1690/5468.



Close the Loop: Buy Recycled!

Products made from recycled paper include everything from office paper to paper towels. When you buy paper products, buy those containing recycled content. Purchasing such products ensures that there is a demand for the paper collected through our recycling program. Self Service stocks over 88 recycled content items.

The General Services Administration (GSA) publishes a Recycled Products Guide containing more than 700 quality recycled-content products. The catalog includes envelopes, writing and printing paper, art and drafting paper, office supplies, forms, household products, packing and shipping materials, recycling containers, remanufactured toner cartridges, and sorbent rags, pads and rolls. For more information on recycled products available through the GSA, contact them at (817) 334-5215 or DSN 739-7369.

Reduce Waste!

About one-third of the solid waste generated in the United States comes from businesses including offices, restaurants, and retail stores. This waste can be reduced through "source reduction" -- using less and reducing the amount of material thrown out every day.

Paper accounts for about 40% of the nation's waste. In 1988, corrugated cardboard, newspaper and office paper represented the three largest categories of waste paper nationwide.

Reducing paper waste reduces the amount of paper that would otherwise have to be recycled or landfilled. This saves money all the way around.

You can promote waste reduction by following these tips:

- Eliminate unnecessary copies, notes and memos.



- Use all paper on two sides, whenever possible.
- Use the blank side of used paper as scratch paper
- Single-space and double-side all publications and manuals.
- Use E-Mail or the telephone rather than using paper.
- Use reusable Post-it FAX notes available at Self Service rather than full sheets of paper.
- Reduce the amount of non-recoverable paper (colored, coated, etc.) you use through your purchasing decisions.
- Use a reusable coffee mug or thermos instead of drinking out of disposable cups.
- Buy products in returnable, reusable or recyclable containers.
- Eliminate duplicate mailings and subscriptions of periodicals and newspapers.

Buy Remanufactured!

Purchase remanufactured laser cartridges for your laser printer. Spent cartridges can be recycled by: 1) following the cartridge return directions provided with the cartridge, or 2) returning them *in the original packing box* to the Recycling Bin at Self Service. Purchasing more durable remanufactured toner cartridges generates less waste. These cartridges are recycled and reused rather than landfilled after one use. Remanufactured cartridges can make the same number of copies as the original cartridge, depending upon page coverage. Laser cartridges can be remanufactured without impacting the service warranty or service contract.

Learn More About Recycling!

Contact the Environmental Management Department's Recycling Program at 451-5063/5068 for more information on Base recycling programs. Contact the Morale, Welfare and Recreation Department's Vending Branch at 451-5631/2000 for more information on aluminum can recycling.



Glass Recycling Made Easy

Acceptable

Glass food and beverage containers can be easily recycled by glass container plants. Generally speaking, metal caps and lids should be removed but labels can remain.



Soda Bottles



Beer Bottles



Juice Containers



Ketchup Bottles



Wine and
Liquor Bottles



Food Containers

Not Acceptable

The following materials are not recycled by glass container plants and should not be mixed in with container glass.



Mirrors



Ceramic Cups
and Plates



Clay Flower
Pots



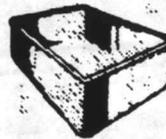
Crystal



Light Bulbs



Window Glass



Heat Resistant
Ovenware



Drinking Glasses

SOME MATERIALS PROHIBITED IN BASE LANDFILL

ITEM

Oils/petroleum products

Lead acid batteries

Ni-cad batteries

Hazardous Waste

Liquid paints

PCBs

Solvents

Whole tires

Dry sweep with oil/solvents

Over 50 fluorescent light fixtures

Infections/untreated medical wastes

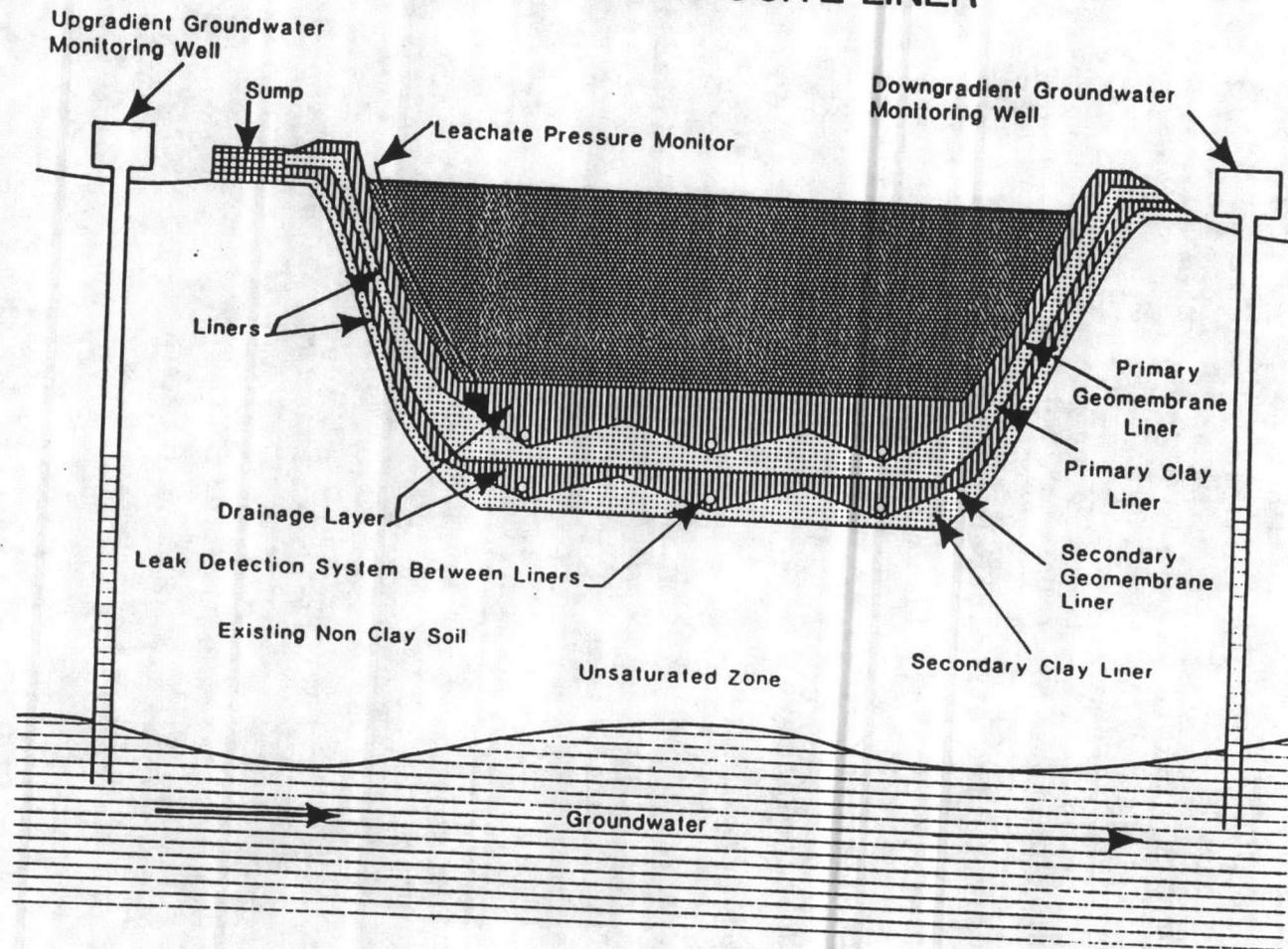
White goods (eg. appliances, refrigerators,
air conditioners)

DECOMPOSITION TIMES FOR REFUSE/LITTER

(Time depends on sunlight, oxygen, and rainwater.)

<u>ITEM</u>	<u>PERIOD REQUIRED</u>
Paper	2 to 5 months
Orange peels	6 months
Wooden stakes	4 years
Milk cartons	5 years
Filter-tips off cigarettes	10 to 12 years
Plastic bags/styrofoam cups	10 to 20 years
Leather shoes	25 to 40 years
Nylon cloth	30 to 40 years
Plastic containers	50 to 80 years
Aluminum	90 to 100 years
Tin or steel cans	100 years
Glass	NEVER
Plastic foam	NEVER
Rubber	NEVER

LANDFILL DOUBLE COMPOSITE LINER





UNITED STATES MARINE CORPS
BASE MAINTENANCE DIVISION
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542-5000

IN REPLY REFER TO:

5000
MAIN
24 Sep 93

MEMORANDUM

From: Base Maintenance Officer, Camp Lejeune, North Carolina
To: Distribution

Subj: SEPARATION OF WOOD PRODUCTS ENTERING THE LANDFILL

Ref: (a) Inspection of Base Sanitary Landfill by Solid Waste Management Division, North Carolina Department of Environmental, Health and Natural Resources 24 Jun 93
(b) Letter from State of North Carolina, Department of Environmental, Health and Natural Resources 2 Jul 93
(c) Base Order 11350.2C

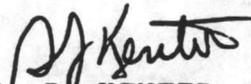
1. Solid waste disposal requirements as discussed in references a, b, and c, continue to be refined at the State and local level. Specifically the processing of scrap wood/wood products must be modified to meet current regulations and to enhance local resource recovery procedures.

2. Current state regulations do not allow for the mixing of scrap wood products with treated or painted scrap wood products. Therefore, base tenants and contractors must separate wood products from treated/painted wood products before they are sent to the sanitary landfill. A single vehicle may transport several types of wood products to the landfill but each type (treated or untreated) must be clearly segregated in the vehicle.

3. Not only will the above procedures allow us to stay within compliance of state regulations, but they will also allow for efficient processing of wood products into revenue generating wood chips. Wood chipping will reduce our solid waste stream by as much as 20 - 25% which will keep the base in compliance of directives from higher headquarters and the State of North Carolina.

4. As a reminder, mount out boxes and pallets are reused and must be taken to Bldg. 913. Unserviceable boxes and pallets having been screened by PP & P personnel may be taken to the landfill. Mount out boxes will be broken down to ensure that live ammunition is not dumped at the landfill as has happened in the past.

5. Request the cooperation and assistance of all personnel, activities and contractors that use the Base Sanitary Landfill. For further information your point of contact is Gene Price, Base Maintenance Sanitation Foreman or Tim Jewell, Ground Structures General Foreman ext. 5258/3446.


G. J. KENTER

Distribution A

WELCOME

Marine Corp Base Camp Lejeune's sanitary landfill is located in the northeast quadrant of the base, near the intersection of Main Service Road and Sneads Ferry Road. The landfill is divided into two major zones; putrescible wastes and non-putrescible wastes. There are additional areas within the landfill that are used for the disposal of asbestos, yard waste, treated and untreated lumber, concrete and asphalt debris. At present, the landfill has reached approximately 65% of its capacity.

Base Maintenance working with EMD has set a goal to reduce the landfill input in FY93 by 25%. This reduction will in turn be recycled or in the case of wood products, shredded/ground and reused.

To accomplish this goal will require a unified effort. The end result of this briefing is to have each participant leave with a new awareness of landfill practices, base environmental incentives, and a renewed spirit of cooperation.

G. J. KENTER

LAND FILLABLE CONSTRUCTION PRODUCTS

1. SOLID WASTE AREA

2. ASBESTOS:

-Permitted Asbestos Area #2

-Asbestos covered piping will be taken in its entirety but must be double wrapped with 6 mil plastic and piping must be no longer than 10 foot lengths identified with asbestos awareness stickers.

-Dumped in the rear of landfill Area #10

3. WOOD PRODUCTS:

-Scrap wood, poles, pallets, etc.

(a) Scrap wood, pallets - all burnable material goes to the wood pile Area #3

(b) Treated wood - staged behind the scrap wood area that creosote, CCA, Pentachlorophinol Area #3

4. TREE LIMBS/STUMPS:

-Dumped behind the scrap wood Area #5

5. WOOD CHIPS AREA:

6. YARD WASTE:

-Leaves, pinestraw, small tree branches are stored in the compost Area #6

7. FLY ASH AREA:

8. GRINDING MACHINE:

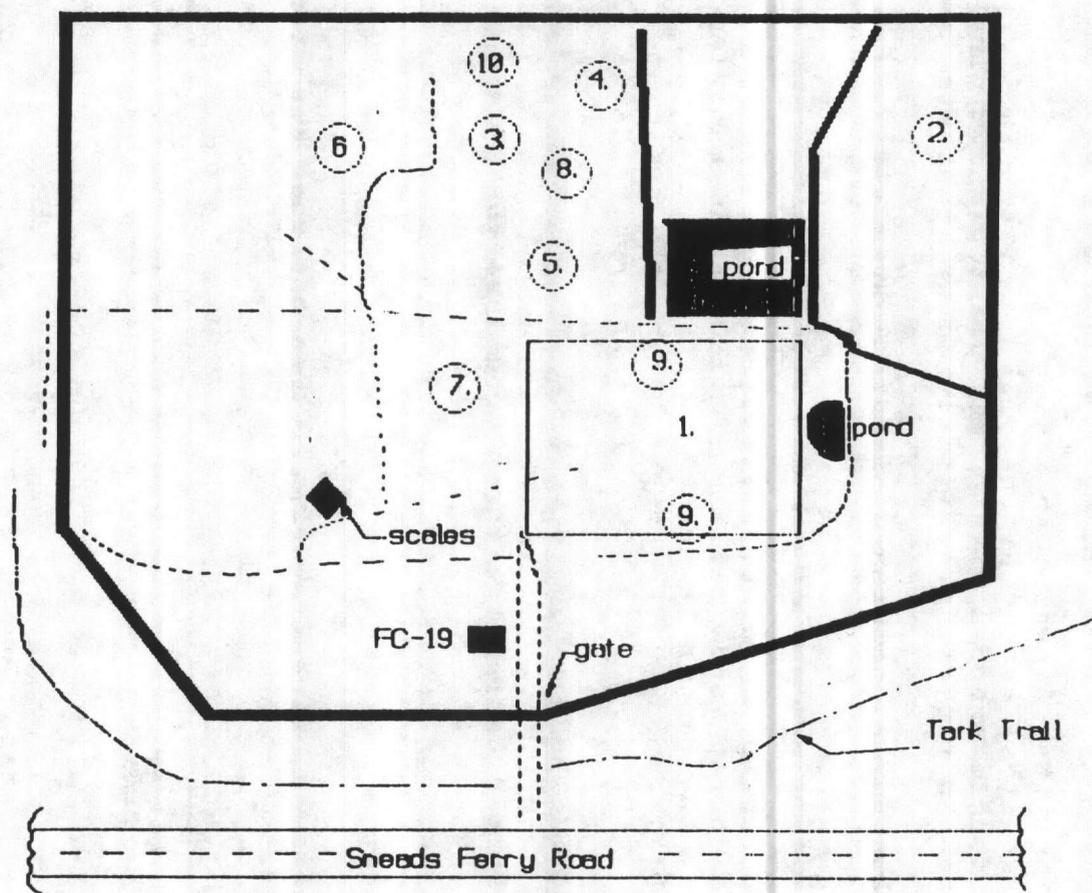
9. CONCRETE:

-All shapes and sizes are dumped in the rear of the landfill Area #9

10. SALT TREATED AND CREOSOTE AREA:

CAMP LEJEUNE SANITARY LANDFILL

as of 13 September 1993



- | | |
|----------------------------|-------------------------------|
| 1. Solid Waste | 6. Compost area |
| 2. Permitted asbestos area | 7. Fly ash |
| 3. Scrap wood area | 8. Grinding Machine |
| 4. Trees & Stumps | 9. Concrete |
| 5. Wood Chips Area | 10. Salt treated and creosote |

Drawn By: D. Hinkle
 Operations Section
 Base Maintenance

430



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

BO 11350.2C
MAIN
22 JUL 91

BASE ORDER 11350.2C

From: Commanding General
To: Distribution List

Subj: REFUSE DISPOSAL PROCEDURES

Ref: (a) BO P11101.32G
(b) BO 4100.8A
(c) BO P11014.1G
(d) DOD Disposal Manual 4160.21 (NOTAL)

Encl: (1) Definitions

1. Purpose

a. To establish procedures and implement regulatory requirements for the separation, collection and proper disposal of refuse.

b. To establish policies and procedures for the disposal of excess/waste wood products and for obtaining unsalable wood products.

2. Cancellation. BO 11350.2B and BO 4570.1E.

3. Responsibilities

a. Area commanders, commanding officers and supervisors of facilities.

(1) Prevent the placing of hazardous wastes into any trash receptacle container or at the Base Sanitary Landfill.

(2) Maintain the cleanliness of all types of dumpsters.

(3) Police areas around collection stations.

(4) Ensure proper segregation and conservation of recyclable materials, which are readily identifiable. Questions concerning the proper disposition of such materials should be directed to the Environmental Management Department. Recyclable material will be segregated at the point of origin, e.g., heavy iron, light sheetmetal, aluminum, cast iron, batteries, etc., and these items will be free of trash and debris to expedite turn-in. Special containers have been located in designated locations throughout the Base by the Environmental Management Department. Specific guidance regarding the collection and disposition of recyclable material is contained in reference (b).

(5) In cases of fire or vandalism notify the Base Maintenance Operations Branch, telephone extension 3001.

(6) Ensure compliance with the procedures set forth in Paragraph 6 below relating to the proper disposal of wood products.

b. Supervisors and managers of food preparation activities (to include service clubs, cafeterias, snack bars and other similar operations):

(1) Ensure proper separation of trash, inedible and edible waste.

22 JUL 91

(2) Ensure proper cleaning of all containers and GI cans (including Dempster Dumpsters) after they are emptied. Washing or scrubbing down of these containers will be accomplished only at locations which have proper drains for the disposal of water and food particles. Galvanized GI cans will not be painted.

(3) Ensure that wet refuse or waste is not placed in containers unless it is first put into waterproof bags which have been sealed at the top. Triple waterproof plastic bags for the consolidated mess system and other activities may be purchased from the Self-Service Center, Building 1606. The use of these waterproof bags will greatly reduce the amount of cleaning required.

c. Family Housing Director. Appraise family housing occupants of current procedures for the segregation and collection of refuse, leaves, recyclable materials, etc. Regulations pertaining to refuse collection for housing areas are currently contained in reference (a).

d. Public Works Officer. Ensure that contractor personnel comply with current procedures for refuse disposal at the Base Sanitary Landfill.

4. Refuse Collection

a. Collection station locations for refuse are established by the Base Maintenance Officer. Additional locations will only be established when properly justified by written request from requesting activities.

b. Collection stations are to be used only for refuse generated aboard Marine Corps Base, Camp Lejeune or Marine Corps Air Station, New River.

c. Collection stations for edible waste, grease and bones, are established by a contract administered by the Defense Reutilization and Marketing Office (DRMO), Building 906, extension 5613.

d. Collection stations for recyclable waste are identified in reference (b).

e. Refuse collections are performed on a regularly scheduled basis. Justifiable irregular collections may be provided by calling extension 3001. Requirements for additional or temporary Dempster Dumpster support must be submitted on a Work Request in accordance with reference (c).

f. Collections at messhalls are provided daily. Irregular collections of edible waste, grease and bones may be scheduled by calling the Defense Reutilization and Marketing Office, extension 5613.

g. Due to the inaccessibility of many of the training areas and the resulting damage to container trucks, Dempster Dumpsters will no longer be provided at field site locations. Organizations will be required to bag and remove unit generated refuse and deliver the refuse materials to the Base Sanitary Landfill. Organizations deploying to the field for extended periods or deploying with field messes can request dumpster support in advance by submitting a work request in accordance with reference (c).

h. Disposing of refuse of any type on roads, road shoulders, in wooded areas, or any other place except at designated collection stations and the Base Sanitary Landfill is prohibited.

i. Family Housing occupants are to utilize refuse collection services provided by the Family Housing Division.

5. Use and Care of Dempster Dumpsters. Efficient and reliable refuse collections are dependent upon the support and cooperation of the Dempster Dumpster users. The following DO's and DON'Ts will greatly assist in providing better service:

a. DO crush or flatten all cardboard boxes before placing them in any container.
Note: Organizations being issued furniture or equipment items that will generate

large quantities of cardboard packing material should request from Environmental Management Division that a temporary cardboard container be placed at their location.

- b. DO NOT over-fill containers.
- c. DO NOT place grass, leaves, pine straw, lumber, tires, metal, pallets, dirt, or other weighty materials in the containers. These materials will be removed by the using units. All other trash will be taken to the Base Sanitary Landfill.
- d. DO NOT place any type of explosives or ammunition in the containers.
- e. DO NOT place fire, matches, or hot ashes in these containers.
- f. DO NOT park in front of the containers.
- g. DO NOT run water into containers in an attempt to pack down the trash.
- h. DO NOT break glass bottles, jars, etc., when placing them in containers.
- i. DO NOT wash inside of containers with excessive amounts of water; this creates rusting and corrosion problems.
- j. DO NOT leave top or side doors open.
- k. DO report anticipated heavy refuse-producing situations (such as the deployment of a unit) as far in advance as possible to the Base Maintenance Operations Section, extension 3001.
- l. DO containerize loose paper/cards prior to being placed in dumpsters to prevent scattering.
- m. DO police around Dempster Dumpsters.

6. Excess/Waste Wood Products. Reference (d) requires that excess lumber, boxes, or wood products, to include pallets, not required for the foreseeable needs of the generating activity or unit, or in such condition as to be acceptable for further use, be disposed of by retail or other sales methods. When because of insufficient size, shape or condition, residual lumber is determined to be unsuitable for salvage or sale, it will be released on a first-come, first-served basis to military personnel, government employees, and civilians. These items will not be placed in refuse containers, but will be handled as indicated below.

a. Disposal procedures

(1) Deliver all resalable or reusable pallets to the Recycling Center, Building 913 during the hours of 0800-1145 and 1230-1530 daily for inspection. Pallets with remaining usefulness will be retained and the remainder will be delivered to the Base Sanitary Landfill.

(2) Deliver boxes to the Preservation, Packaging and Packing (PP&P) Section, 2d Supply Battalion, 2d FSSG, Building 915 for inspection and reutilization.

(3) Deliver lumber, six feet in length or longer without nails, staples, etc., and those items determined by PP&P and EMD not to be suitable for reutilization to the Base Sanitary Landfill where the wood material will be segregated from other solid waste. A waste/unsalvageable wood product permit will be issued by PP&P and EMD, and will accompany each load of waste/unsalvageable wood to the Base Sanitary Landfill.

b. Pick-up of unsalable scrap lumber, boxes or pallets by organizations or individuals will be permitted subject to the following procedures:

(1) Unsalable waste wood products may be picked up from 0800-1600 Monday through Friday except on federally recognized holidays.

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(2) The loading and hauling of this material is the responsibility of the organization or individual.

(3) Posted rules and regulations will be observed to ensure non-interruption of normal landfill operations.

c. Permits to obtain unsalable and abandoned waste wood products are required. Permits may be obtained from the Sanitary Landfill attendant.

7. Base Sanitary Landfill

a. The Base Sanitary Landfill will accept only refuse generated within the confines of Marine Corps Base, Camp Lejeune or Marine Corps Air Station, New River. The dumping of refuse originating from any other location is prohibited.

b. Hours of operation for the Base Sanitary Landfill are 0800-1600, Monday through Friday. In cases of emergency on weekends, access for disposals generated on Camp Lejeune, can be requested by calling extension 3001 in Building 1202.

c. Dumping Procedures

(1) Personnel delivering refuse to the Base Sanitary Landfill will contact the landfill operator prior to unloading refuse.

(2) Contractors performing work aboard Marine Corps facilities must have a Construction Pass and a copy of the face of the contract denoting the contract number and place where the refuse is being removed.

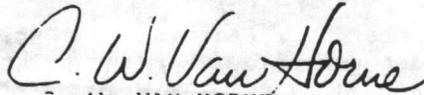
(3) Mixed loads of construction debris will not be accepted. Organizations or contractors with questions regarding what constitutes mixed loads should contact Base Maintenance at extension 5158 prior to attempting delivery at the Base Sanitary Landfill.

(4) Asbestos will be bagged and disposed of in accordance with current federal and state regulations. Acceptance of asbestos material will require a minimum of five days advance notice. Asbestos deliveries will also be limited to the hours of 0900 to 1400 during normal workdays.

(5) Grass, leaves, pine straw and other lawn trimmings will be dumped in specially designated areas of the Base Sanitary Landfill. These items must be loose or packed in biodegradable bags. Grass, leaves, etc. delivered in plastic bags will be split and emptied and the empty bags deposited as directed by the Base Sanitary Landfill operator.

(6) Scavenging within the Base Sanitary Landfill is prohibited.

8. Concurrence. This Order has been coordinated and concurred in by the Commanding Generals, II Marine Expeditionary Force, FMF; 2d Marine Division, FMF; 2d Marine Expeditionary Brigade, FMF; 2d Force Service Support Group, FMF; and the Commanding Officers, 2d Surveillance, Reconnaissance and Intelligence Group; and Marine Corps Air Station, New River.


C. W. VAN HORNE
Acting Chief of Staff

DISTRIBUTION: A

DEFINITIONS

Collection Station - Any location aboard Camp Lejeune where refuse is collected in appropriate containers for routine disposal.

Dempster Dumpster - A waste storage container which is removed, emptied and returned by dumpster trucks.

Dumpmaster Container - Container varying in size from three to eight cubic yards capacity and is emptied at its location in dumpmaster trucks. (Container is not removed from the area located except for necessary repair and/or replacement.)

Hazardous Wastes - Materials which have been prohibited by the Environmental Protection Agency, the State of North Carolina, DOD, Navy or Marine Corps from being placed into the type of Sanitary Landfill operated at Camp Lejeune, because of potential danger or harm to public health or environment.

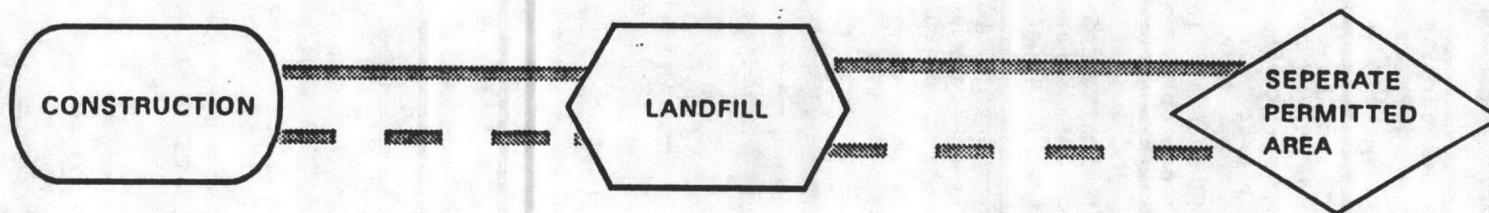
Recyclable Materials - Wastes such as aluminum, scrap metal, waste oil, cardboard and newspapers (defined in reference (b)); and other materials for which a system for recovery has been established throughout the Base.

Sanitary Landfill - Refers to the Base Sanitary Landfill which is located two miles south of Holcomb Boulevard on Sneads Ferry Road. The Landfill can only accept refuse generated aboard Camp Lejeune, North Carolina.

Trash Receptacles - Containers such as GI cans and 55 gallon trash drums with or without special lids. All trash receptacles are to be emptied into Dempster Dumpsters or dumpmaster containers by the using units.

SOLID WASTE STREAM

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FUTURE 

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