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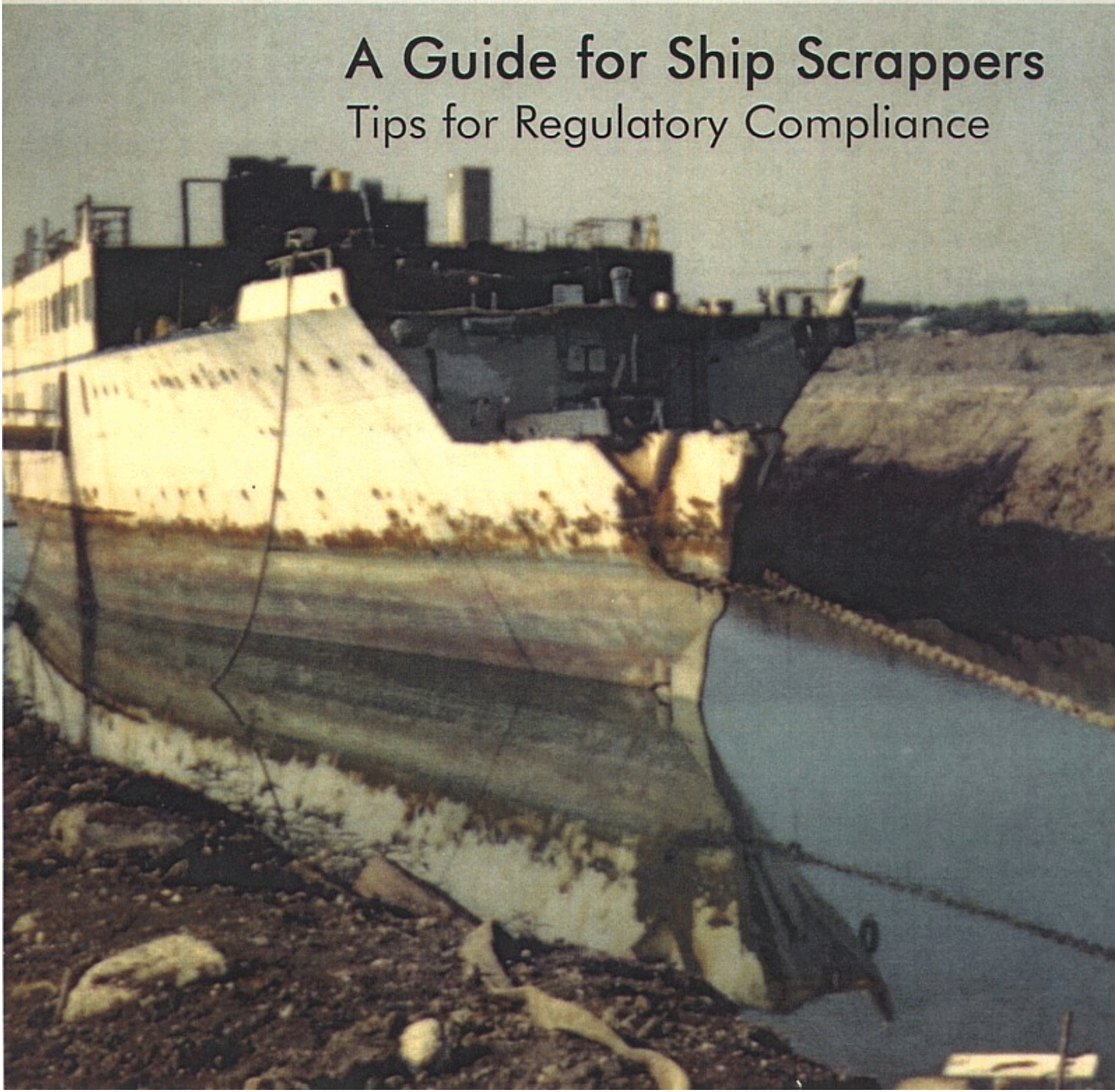
A Guide for Ship Scrappers

Tips for Regulatory Compliance



A GUIDE FOR SHIP SCRAPPERS: TIPS FOR REGULATORY COMPLIANCE

SUMMER 2000

Prepared for:

U.S. Environmental Protection Agency
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NOTICE

This document provides guidance to assist regulated entities to understand their obligations under environmental laws; however, for a complete understanding of all legal requirements, you must refer to applicable federal and state statutes and regulations. This guide is a compliance assistance tool only, and it neither changes nor replaces any applicable legal requirements, nor does it create any rights or benefits for anyone. This guide also describes in a summary fashion the roles and activities of federal agencies; however, the guidance does not limit their otherwise lawful prerogatives, and the agencies may act at variance with it, based on specific circumstances. This guidance may be revised without prior notice. Mention of trade names or commercial products in this document, or in associated references, does not constitute an endorsement or recommendation for use.

RECOMMENDATIONS FOR USING THE GUIDE

We recommend that users organize this guide in 3-ring binders. Each separate stand-alone section can then be removed from the binder, copied, and easily posted or handed out to workers undertaking specific ship scrapping operations. Each section can also be used in training workers about the best practices for specific ship scrapping operations. Additionally, Appendix C, which is a series of summaries of inspector highlights, can be used to review important regulatory requirements for each process. Users may want to laminate copies of the summaries for each worker or to post the summaries near the job site as reminders of regulations and best practices. It would be helpful to have someone translate the information if your workers are more familiar with a language other than English.

SURVEY REQUEST !!!!!!!!!!!!

You are invited to share your opinions and thoughts about this document. Please complete the survey questionnaire–A Guide for Ship Scrappers Survey. It is located on the U.S. EPA Web Site at: http://www.epa.gov/oeca/fedfac/fflex.html.

PREFACE

This guide is intended to provide site supervisors at ship scrapping facilities with an overview of the most pertinent environmental and worker health and safety requirements to assist them in ensuring compliance at their facilities. The guide is structured by specific processes (e.g., asbestos removal, metal cutting, fuel and oil removal) that occur in ship scrapping operations. Taking a process-specific approach allows the guide to be a more manageable and useful reference tool for key ship scrapping facility personnel. Ship scrappers can review key environmental, safety, and health requirements for each process. References of where to find the requirements in the *Code of Federal Regulations* have been provided throughout the guide, and readers are encouraged to review these regulations in detail. Where possible, helpful shadow and check boxes have been provided to emphasize guidance or tips.

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Copies of the document also can be obtained on-line at the FFEO Web site:
http://www.epa.gov/oeca/fedfac/fflex.html.

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The leadership for the development of this guide came from the U.S. Environmental Protection Agency's Federal Facilities Enforcement Office (FFEO) within the Office of Enforcement and Compliance Assurance (OECA) and the Manufacturing, Energy and Transportation Division (METD) of the Office of Compliance (OC). To assist in the development of the guide, EPA formed the Interagency Ship Scrapping Compliance Manual/Guide Workgroup. In addition to EPA personnel, the workgroup included representatives from the following agencies:

- Occupational Safety and Health Administration (OSHA)
- United States Coast Guard (USCG)
- United States Department of the Navy
- Defense Logistics Agency (DLA)
- Defense Reutilization and Marketing Service (DRMS)
- United States Maritime Administration (MARAD)
- National Enforcement Investigations Center (NEIC)
- National Oceanic and Atmospheric Administration (NOAA).

Cover Photo:
Photographed by John T. Ellison, Environmental Investigations Specialist, USEPA National Enforcement Investigations Center (now retired).

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1. INTRODUCTION

What is ship scrapping? According to OSHA, ship dismantling or breaking is "any breaking of a vessel's structure for the purpose of scrapping the vessel, including the removal of gear, equipment, or any component of a vessel" (29 CFR 1915.4).

1.1. THE GUIDE

What It Is; What It Does

This guide is intended to provide the site supervisor of a ship scrapping facility with a good understanding of the most pertinent *federal* environmental and worker safety and health requirements affecting ship scrapping/ship breaking operations. (*Specific* state requirements are not included.) The document provides guidance with reference to specific regulations, tips in shadow boxes ‘ , and regulatory inspector highlights denoted by check boxes ☑.

Organization of the Guide

This guide is organized into 9 sections and 3 appendices. The document begins with a brief introduction and is then followed by a series of sections, each presenting key environmental and worker safety and health requirements for a major ship scrapping process. Each section was designed and developed to be used as independent guidance. These sections are as follows:

- *Section 2. Asbestos Removal and Disposal*
- *Section 3. Sampling, Removal and Disposal of Polychlorinated Biphenyls*
- *Section 4. Bilge and Ballast Water Removal*
- *Section 5. Oil and Fuel Removal and Disposal*
- Section 6. *Paint Removal and Disposal*
- *Section 7. Metal Cutting and Metal Recycling*
- *Section 8. Removal and Disposal of Miscellaneous Ship Machinery*

Section 9. Resources identifies sources, such as general and process-specific contacts, hotlines, publications, and Internet sites, where additional information and/or assistance can be obtained on environmental and worker safety and health requirements.

Appendix A provides the user with an overview of the ship scrapping industry, the ship scrapping process, and the United States government ship scrapping program. It also includes a short summary of how the industry is regulated.

Additional ship scrapping processes may be developed and added to the guide in the future. These processes might include:

- *Removal and Disposal of Portable, Unfired Pressure Vessels, Drums, and Containers*
- *Removal and Disposal of Non-PCB Electrical Machinery*
- *Removal and Disposal of Batteries*
- *Removal and Disposal of Other Hazardous Materials*

Appendix B provides a list of acronyms.

Appendix C contains summaries of Inspector Highlights noted in check boxes throughout sections of this guide.

Using a Process-Based Approach

Although most of the ship scrapping processes occur simultaneously during ship scrapping, it is useful to look at the requirements on a process-by-process basis. The idea is that you, as a site supervisor (or other key person at your ship scrapping facility), can examine any part of your facility, identify what process or processes are taking place, and quickly reference this guide for information on key environmental requirements, worker safety and health requirements, and management tips.

Focus on Federal Requirements

This guide presents overviews of major *federal* requirements only, and you are encouraged to review these requirements in detail by reading the relevant portions of the *Code of Federal Regulations* (CFR), which are cited throughout the guide. You should also be aware of all applicable state and local regulations (see box). If you have additional questions or need more information about a particular requirement, call the contacts or access the sources of information identified in *Section 9. Resources*.

State/Local Requirements: The regulations discussed in this guide are federal EPA and OSHA requirements. Your state may have its own, stricter requirements. Be sure you know your state and/or local government environmental and worker safety and health requirements.

Remember: This guide is not the final word on compliance responsibilities for your ship scrapping operation.

2. ASBESTOS REMOVAL AND DISPOSAL

During ship scrapping activities, the removal and disposal of asbestos is a primary environmental concern, as well as a health and safety concern for your workers. The following sections present background information on asbestos, discuss the effects of asbestos exposure, and describe some of the regulatory requirements with which your facility must comply.

2.1 INFORMATION ABOUT ASBESTOS

This section provides background information on asbestos, including what it is, where it can be found on ships, how exposure can occur, and the dangers of exposure.

What is asbestos?

"Asbestos" refers to a group of minerals that occur naturally as masses of long silky fibers. There are three main types of asbestos fibers:

- Chrysotile fibers (white asbestos) are fine, silky flexible white fibers. They are pliable and cylindrical, and arranged in bundles. This was the most commonly used asbestos in the United States.

- Amosite fibers (brown asbestos) are straight, brittle fibers that are light grey to pale brown. This was the most commonly used asbestos in thermal system insulation.

- Crocidolite fibers (blue asbestos) are straight blue fibers that are like tiny needles.

There are three other types of asbestos fibers: anthopylite, tremolite, and actinolite.

Unlike most minerals, which turn into dust particles when crushed,

asbestos breaks up into fine fibers that are too small to be seen by the human eye.

Individual asbestos fibers are often mixed with a material that binds them together, forming what is commonly called asbestos-containing material (ACM). There are two kinds of ACM: friable and non-friable.

- **Friable ACM** is any material containing more than 1% asbestos that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

- **Non-friable ACM** is any material containing more than 1% asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM is divided into two categories.

  - **Category I** non-friable ACM includes asbestos-containing resilient floor coverings, packings, and gaskets.

  - **Category II** non-friable ACM includes all other non-friable ACM that is not included in Category I.

What is presumed asbestos containing material (PACM)? Thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 may be considered PACM.

Why has asbestos been so widely used?

Asbestos was widely used in construction and industry due to its unique properties, and because there were few other available substances that combined the same qualities. Asbestos is resistant to abrasion and corrosion, inert to acid and alkaline solutions, and stable at high temperatures. It is strong yet flexible, non-combustible, conducts electricity poorly, and is an effective thermal insulator.

Where is asbestos found on a ship?

Asbestos is found on ships in many types of materials, including, but not limited to:

- Bulkhead and pipe thermal insulation
- Bulkhead fire shields/fireproofing
- Uptake space insulation
- Exhaust duct insulation
- Electrical cable materials
- Brake linings
- Floor tiles and deck underlay
- Steam, water, and vent flange gaskets
- Adhesives and adhesive-like glues (e.g., mastics) and fillers
- Sound damping
- Molded plastic products (e.g., switch handles, clutch facings)
- Sealing putty
- Packing in shafts and valves
- Packing in electrical bulkhead penetrations
- Asbestos arc chutes in circuit breakers
- Pipe hanger inserts
- Weld shop protectors and burn covers, blankets, and any fire fighting clothing or equipment
- Any other type of thermal insulating material

Caution!! ACM may be found <u>underneath</u> materials that do not contain asbestos.

Status of the Asbestos Ban

There is a rather common misunderstanding about the status of the EPA 1989 ban on asbestos-containing products or uses. Two years after EPA's ban, the U.S. Fifth Circuit Court of Appeals vacated much of EPA's rule in 1991 leaving only six asbestos-containing product categories (including corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, and new uses of asbestos) still subject to the asbestos ban, In addition, several uses of ACM products remained banned, including the sprayed-on application of ACM (>1% asbestos) and the installation of certain types of asbestos-containing insulation. **Besides the products and uses listed above, EPA has no existing bans on other asbestos containing products or uses**. EPA does not track the manufacture, processing or distribution in commerce of asbestos-containing products. For further information, contact the TSCA Assistance Information Service at 202-554-1404, call your EPA Regional Asbestos Coordinator (see *Section 9. Resources*), or access http://www.epa.gov/asbestos and go to the "Helpful Information" button.

What are the four classes of asbestos work?

The Occupational Safety and Health Administration (OSHA) standard for asbestos specifies four classes of asbestos activities [29 CFR 1915.1001(b)]. These are:

- "Class I" asbestos work means activities involving the removal of thermal system insulation (TSI) and sprayed-on or troweled-on or otherwise applied surfacing ACM or PACM.

- "Class II" asbestos work means activities involving the removal of ACM which is neither TSI or surfacing ACM. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile, and construction mastics.

- "Class III" asbestos work means repair and maintenance operations where ACM (including TSI and surfacing ACM and PACM) is likely to be disturbed.

- "Class IV" asbestos work means maintenance and custodial activities during which employees contact, but so as not disturb ACM or PACM, and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities.

How can exposure to asbestos occur?

As a site supervisor, you should be aware that you and your workers can be exposed to asbestos in several ways. When ACM is deteriorated, crushed, or otherwise disturbed,

asbestos fibers break up into very fine fibers and are released to the environment by either dispersing in the air, floating on water or accumulating on the ground. Exposure to asbestos can occur by:

- **Occupational exposure**: Workers may be exposed to asbestos if working at facilities, including ships, which contain asbestos. Because asbestos fibers are small and light, they can be suspended in the air for long periods and possibly inhaled by those working in these areas. Airborne asbestos fibers are small, odorless, and tasteless. They range in size from 0.1 to 10 microns in length (a human hair is about 50 microns in diameter). The amount of asbestos a worker is exposed to will vary according to: (1) the concentration of fibers in the air; (2) duration of exposure; (3) the worker's breathing rate (workers doing manual labor breath faster); (4) weather conditions; and (5) the protective devices the worker wears. It is estimated that between 1940 and 1980, 27 million Americans had significant occupational exposure to asbestos. People may also ingest asbestos if they eat in areas where there are asbestos fibers in the air.

  During ship scrapping, the most significant asbestos concerns for workers arise when removing asbestos-bearing thermal insulation; handling of circuit breakers, cable, cable penetrations; and removing floor tiles (from asbestos in the mastic and in the tile). Additional concerns can arise from handling and removing gaskets with piping and electrical systems, as well as molded plastic parts.

- **Paraoccupational exposure**: Workers' families may inhale asbestos fibers released by their clothes that have been in contact with ACM.

- **Neighborhood exposure:** People who live or work near asbestos- related operations may inhale asbestos fibers that have been released into the air by these operations.

What are the effects of exposure to asbestos?

While scientists have not been able to determine a "safe" or threshold level for exposure to airborne asbestos, EPA, OSHA, and the National Institute for Occupational Safety and Health (NIOSH) believe there is no known safe level of asbestos exposure.

Preventing exposure. Using controls to prevent asbestos exposure is vital to protecting the health of workers.

In short, some people exposed to asbestos develop asbestos-related health problems; some do not. Some known diseases caused from asbestos exposure include: (1) asbestosis (scarring of

the lungs resulting in loss of lung function that often progresses to disability and to death), and (2) cancer, such as mesothelioma (cancer affecting the membranes lining the lungs and abdomen), lung cancer, or cancers of the esophagus, stomach, colon, and rectum.

If inhaled, asbestos fibers can easily penetrate body tissues, and may be deposited and retained in the airways and lung tissue. Because asbestos fibers remain in the body, each exposure increases the likelihood of developing an asbestos-related disease. Asbestos-related diseases may not appear until years after exposure. Ingesting asbestos may be harmful, but the consequences of this type of exposure have not been clearly documented. Note: The risks of asbestos exposure are multiplied 10-fold or more if a worker smokes.

2.2 WHO REGULATES ASBESTOS REMOVAL AND DISPOSAL?

Asbestos regulations are important to the ship scrapping industry because many ships being scrapped contain significant amounts of ACM. During ship scrapping activities, ACM must be properly removed and disposed of. Therefore, being aware of and complying with all applicable regulations for asbestos removal and disposal is important for your ship scrapping operation. The process of removing and disposing of ACM is subject to various federal, state, and local environmental and safety and health requirements.

- **EPA**. EPA is responsible for developing and enforcing regulations necessary to protect human health and the environment. Asbestos is regulated by EPA under two laws: (1) the Clean Air Act (CAA), under the Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP), and (2) the Toxic Substances Control Act (TSCA). Some of the requirements for asbestos removal and disposal under these laws include inspections; notifications; supervisor training; and the proper removal, transport and disposal of asbestos.

  Specifically, the Asbestos NESHAP [40 CFR 61 Subpart M] is intended to minimize the release of asbestos fibers during demolition and renovation activities (including ship scrapping) through work practices. EPA has delegated authority to inspect and enforce the asbestos NESHAP regulations to most states. Where the program has been delegated, the state agency may have requirements that are more stringent than the federal requirements. The asbestos NESHAP requirements will be discussed in more detail in the following sections.

- **OSHA.** OSHA is responsible for the health and safety of workers who may be exposed to asbestos in the work place. OSHA regulations covering asbestos exposure set a maximum exposure limit and include provisions for engineering controls and

respirators, protective clothing, exposure monitoring, hygiene facilities and practices, warning signs, labeling, recordkeeping, and medical exams (29 CFR 1915.1001). Some of these requirements are discussed in more detail below.

2.3 ASBESTOS REMOVAL PRACTICES AND PROCEDURES

As mentioned above, as the site supervisor, you should be familiar with EPA and OSHA regulations designed to minimize exposure to and release of asbestos. Some of these requirements are discussed below.

2.3.1 Worker Protection Practices

Are exposure assessments and monitoring conducted as required?

Your facility is required to perform air surveillance activities in work areas where asbestos is being removed, including meeting the general monitoring criteria, conducting initial exposure assessments, and performing daily and periodic monitoring. The facility must inform workers of the monitoring results that represent each worker's asbestos exposure, and allow workers an opportunity to observe any monitoring of worker exposure to asbestos [29 CFR 1915.1001(f)].

> **Tip:** In addition to OSHA regulations, air surveillance requirements for sampling asbestos are often regulated by state regulatory agencies.

In addition, the facility must keep an accurate record of all measurements taken to monitor worker exposure to asbestos [29 CFR 1915.1001(n)(2)].

Are worker exposure limits met?

Your facility must ensure that workers are not exposed to airborne asbestos concentrations in excess of either of the following limits, collectively referred to as permissible exposure limits (PELs):

- 0.1 fiber per cubic centimeter (f/cc) of air averaged over an eight-hour work shift. This PEL is called the time-weighted average (TWA) limit [29 CFR 1915.1001(c)(1)].

- 1.0 f/cc of air averaged over a sampling period of 30 minutes. This PEL is called the excursion limit [29 CFR 1915.1001(c)(2)].

Medical surveillance requirements

Your facility is required to conduct medical surveillance for all workers who, for a combined total of 30 or more days per year, are performing asbestos removal work or are exposed at or above the permissible exposure limit. This includes medical examination and consultation prior to beginning work, at least annually, and upon termination of employment [29 CFR 1915.1001(m)].

The facility must establish and maintain an accurate record for each worker subject to medical surveillance. These records must be maintained for the duration of the worker's employment, plus an additional 30 years [29 CFR 1915.1001(n)(3)].

Are workers and supervisors trained in asbestos removal?

Worker training. Your facility must provide, at no cost, a training program for employees likely to be exposed to asbestos removal work during ship scrapping [29 CFR 1915.1001(k)(9)]. Training must be provided prior to or at the time of beginning work and at least once a year afterwards, and it must be conducted in a manner which the worker is able to understand.

> **Tip:** Some facilities may need to hire contractors for training employees who speak English as a second language and may not be fluent in English.

For asbestos removal operations that require the use of critical barriers and/or negative pressure enclosures, the facility must provide training to workers that is equivalent in curriculum, training method, and length to the EPA Model Accreditation Plan asbestos abatement workers training found in 40 CFR 763, Subpart E, Appendix C.

An inspector may check to see that workers at your facility received training in a language that they understand.

Supervisor training. Your facility must have a supervisor on site overseeing all work in which regulated asbestos-containing material (RACM) is stripped, removed or otherwise handled. This is a requirement under the asbestos NESHAP regulations [40 CFR 61.145(c)(8)], as well as the OSHA shipyard industry standards [29 CFR 1915.1001(o)].

According to the asbestos NESHAP requirements, the supervisor must be trained in the provisions of the regulation and the means of complying with them. Training must include, at a minimum: applicability of regulations; notification requirements; material identification procedures; emission control procedures for removals; waste disposal practices; reporting and recordkeeping; and asbestos hazards and worker protection.

Evidence of training must be posted and made available for inspection at the ship scrapping site [40 CFR 61.145(c)(8)]. Refresher training in the asbestos NESHAP requirements is required for supervisors every 2 years.

Training records. Your facility must maintain records for each worker and supervisor and document their completed training. These records must be maintained for one year past the last day of employment [29 CFR 1915.1001(n)(4)].

An inspector may check the training records for the workers and supervisors listed on the daily work logs.

Do workers wear personal protective equipment as required?

Your facility is required to ensure workers involved in asbestos removal and disposal are using approved respirators [29 CFR 1915.1001(h)]. Respirators appropriate for the work being conducted must be provided free of charge by the facility.

In addition, your facility is required to provide and ensure the use of protective clothing, such as coveralls or similar full-body clothing, head coverings, gloves, and foot covering, during asbestos removal work. In addition, wherever the possibility of eye irritation exists, face shields, vented goggles, or other appropriate protective equipment must be provided and worn [29 CFR 1915.1001(I)].

Do workers use hygiene facilities and follow hygiene practices during asbestos removal work?

Your facility must provide hygiene facilities for use by workers [29 CFR 1915.1001(j)]. These include:

- **Decontamination areas and procedures**: A decontamination area must be provided that is adjacent and connected to the regulated area for the decontamination of asbestos workers. The decontamination area includes, in series, an equipment room, shower area, and clean room. Workers must enter and exit the regulated area through the decontamination area while following specific procedures.

- **Lunch areas**: The facility must provide lunch areas in which the airborne concentrations of asbestos are below the permissible exposure limits.

An inspector may check the shower drains from the worker showers to make sure they have filters. Filters help remove lead and asbestos from the wastewater.

2.3.2. Asbestos Removal Activities

Is a supervisor present for all removal activities?

During all work in which RACM is stripped, removed or otherwise handled, a supervisor must be on site overseeing these activities. This is a requirement under the asbestos NESHAP regulations [40 CFR 61.145(c)(8)], as well as the OSHA shipyard industry standards [29 CFR 1915.1001(o)].

As described in the OSHA shipyard industry regulation [29 CFR 1915.1001(o)], the supervisor (also commonly called the qualified person) must perform or supervise specific activities during asbestos removal work:

- Set up the regulated area, enclosure, or other containment; and ensure the integrity of the enclosure or containment.
- Set up procedures to control entry to and exit from the area and/or enclosure.
- Supervise all worker exposure monitoring and ensure that it is conducted appropriately.
- Ensure that employees working within the enclosure and/or using glove bags wear appropriate respirators and protective clothing.
- Ensure, through on site supervision, that workers set up, use, and remove engineering controls; use work practices; and use personal protective equipment.
- Verify that workers use the hygiene facilities and observe the decontamination procedures.
- Ensure through on site inspection that engineering controls are functioning properly and employees are using proper work practices.
- Ensure that notification requirements are met.

Has a survey of asbestos-containing materials on the ship been conducted?

A survey is basically a thorough inspection of the ship for the presence of asbestos, including friable ACM and Category I and Category II nonfriable ACM. [40 CFR 61.145(a)]. By conducting a survey of the ship for the presence of asbestos, your facility will determine whether it must meet the EPA asbestos NESHAP requirements 40 CFR 61, Subpart M during scrapping.

What is RACM? Once ACM is identified, your facility must determine the total amount of ACM that is "regulated" under the asbestos NESHAP. This material is referred to as regulated asbestos-containing material (RACM). RACM includes :

- Friable ACM;

- Category I nonfriable ACM that has become friable or that has been sanded, ground, cut, or abraded; or

- Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or scrapping activities.

Common Practice. Ship scrappers typically do not collect samples to be analyzed for asbestos. Instead, they assume that all suspect material, particularly any covering that is not clearly fiberglass, is ACM.

How much RACM make the facility subject to the NESHAP regulations? Your facility is required to follow the asbestos NESHAP regulations if the combined amount of RACM on the ship is:

- At least 80 linear meters (260 linear feet) of RACM on pipes or at least 15 square meters (160 square feet) of RACM on other facility components; **or**

- At least one cubic meter (35 cubic feet) of RACM of facility components where the amount of RACM was previously removed from pipes and other facility components could not be measured before stripping [40 CFR 61.145(a)(1)].

Note: If the combined amount of RACM is less than these amounts, then your facility only has to meet some of the notification requirements [40 CFR 61.145(a)(2)].

How can asbestos be identified?

While it is often possible to "suspect" that a material is asbestos or contains asbestos by looking at it (visual determination), actual determinations can only be made by instrumental analysis. Until your facility tests a product, it is best to assume that the material contains asbestos, unless the label or the manufacturer verifies that it does not.

Your facility's qualified person (see Section 2.3.2, Regulated areas must be established and marked, for definition) will collect samples of suspect ACM for analysis. EPA requires (at a minimum) that suspect samples be analyzed for asbestos content using polarized light microscopy (PLM). This technique determines both the percent and type of asbestos. EPA also recommends the use of the July 1993 Test Method (EPA/600/R-93/116), *Method for the Determination of Asbestos in Bulk Building Materials*, particularly when analyzing special case materials.

Tip: EPA recommends that facilities use laboratories accredited by the National Institute of Standards and Technology (NIST) in its National Voluntary Laboratory Accreditation Program (NVLAP) to complete asbestos analysis. Contact NIST NVLAP for a current listing of accredited labs at 301-975-4016. Your facility can also obtain information about laboratories that test for asbestos by contacting your EPA Regional office.

Has a notification been submitted?

Your facility must submit a written notice of intent to scrap a ship (which is considered demolition) to the EPA Regional office and/or the delegated state/local pollution control agency [40 CFR 61.145(b)].

- This notice must be postmarked or delivered at least 10 working days before the date of any asbestos removal work Because EPA and the delegated agencies currently receive over 90,000 notifications a year, the10-day period is necessary to allow inspectors to prioritize and schedule inspections.

Tip: For ship scrapping, asbestos removal activities should begin on the start date provided in the notification. This date is not always the same as the scheduled starting date of the demolition.

- The notification should include, among other items, the scheduled starting and completion date of the ship scrapping (demolition); the scheduled starting and completion date of the asbestos removal work; the location of the site; the names of operators or asbestos removal contractors; methods of removal; and the approximate amount of RACM to be removed [40 CFR 61.145(b)(4)].

Tip: Your facility must <u>update the notice</u> when the amount of RACM changes by at least ± 20 percent.

During an inspection, an inspector may verify that the notification was submitted and that activities have been conducted according to the notification.

Will RACM be removed before scrapping activities begin?

Your facility is required to remove all RACM from a ship being scrapped before any activities are carried out that would break up, dislodge or similarly disturb the materials or preclude access to the materials for subsequent removal [40 CFR 61.145(c)(1)]. All RACM to be removed must be:

Too cold for wetting? If the temperature is below 0EC (32 EF) during removal activities, it is too cold for wetting and your facility must meet slightly different requirements during RACM removal. See 40 CFR 61.145(c)(7) for details.

- Adequately wet when removed and must remain wet until collected and contained for disposal (see below). RACM contained in leak-tight wrapping need not be wetted.
- Carefully lowered to the ground without dropping, throwing, sliding, or otherwise damaging or disturbing the material.
- Moved to the ground via leak-tight chutes or containers if removed more than 50 feet above the ground (and not removed as a unit or section).

An inspector may observe on site equipment and ask for verbal explanations to determine whether the wetting and handling requirements are being met.

Are wet methods being used during RACM removal and disposal?

When removing RACM, your facility is required to control visible emissions of asbestos to the outside air because no safe concentration of airborne asbestos has ever been established.

Remember that the asbestos NESHAP relating to demolitions, including ship scrapping, is a **work practice standard**. This means that it does not place specific numerical emission limitations for asbestos fibers on asbestos removals and demolitions. Instead, it requires your facility to implement specific work practices to control asbestos emissions [40 CFR 61.145(c)].

The primary method used to control asbestos emissions is to “adequately wet” RACM with a liquid or wetting agent **prior to, during and after** removal activities. [40 CFR 61.145(c)]. To “adequately wet” RACM means to sufficiently mix or penetrate the material with liquid to prevent the release of asbestos particulates. If you or your workers see visible emissions coming from RACM, then that material has not been adequately wetted. However, the

absence of visible emissions is not sufficient evidence of being adequately wet (see 40 CFR 61.141, *Definitions*).

To meet the NESHAP wetting provisions, your workers must wet RACM and keep it wet until it is collected and contained for disposal. Adequate wetting is typically accomplished by repeated spraying of the RACM with a liquid or a wetting agent, until it cannot absorb any more. Wetting agents may be applied with garden sprayers or hoses.

Tip to reduce airborne fibers. A misting unit can be used to create a high level of humidity within a removal area. It is believed that fibers emitted into a saturated environment will absorb the wetting agent and fall out of the air faster, thus reducing airborne asbestos fiber levels.

An inspector may determine whether RACM has been adequately wetted based on observations made during an inspection. These observations may include, but are not limited to, the following:

- Is there a water supply in place?
- Is there visible dust (airborne or settled) or dry ACM debris in the immediate vicinity of the operation? An inspector may collect samples of such materials for analyses of their possible asbestos content.
- Does the RACM inside the bag (if transparent) appear wet? Remember: ACM must be adequately wet when it is placed in the bags or containers. It is a violation of the asbestos NESHAP standards to put water in the bottom of a bag, then strip the asbestos material dry and let it fall into the water.

To remove units or sections with RACM

During your scrapping activities, you can remove a component as a unit or in sections that contain RACM or are covered with, or coated with RACM. During the removal process, your workers must follow the procedures below to control asbestos emissions:

Tip: Torch cutting cables with asbestos insulation inside (possibly as a wrapping or as a filler in between wires) is prohibited under the asbestos NESHAP unless the asbestos is first removed from the area to be cut. Similarly, burning cables containing asbestos to recover copper wire is also prohibited.

- Adequately wet all RACM exposed during cutting or disjoining; and

- Carefully lower each unit or section to the floor and to the ground level without dropping, throwing, sliding, or otherwise damaging or disturbing the RACM [40 CFR 61.145 (c)(2)].

After removal, these units or sections must be wrapped in leak-tight wrapping or stripped of RACM [40 CFR 61.145(c)(4)]. If stripped, your workers must:

- Adequately wet the RACM during stripping; or
- Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos materials produced by the stripping. The system must exhibit no visible emissions to the outside air.

Typically, an inspector will examine removed units or sections to ensure that the RACM in these components is still intact. This may include looking at cut cables to see if any cables covered with asbestos were cut by torch or burned, both of which are violations of the asbestos NESHAP requirements. An inspector may also want to know how the RACM on these units or sections will be removed, if applicable.

Regulated areas must be established and marked

According to OSHA requirements, your facility must establish a regulated area where asbestos removal work occurs. The regulated area can include the area where asbestos work is conducted; any adjoining area where debris and waste from the asbestos work accumulates; and the work area within which airborne concentrations of asbestos exceed or can reasonably be expected to exceed the permissible exposure limits [29 CFR 1915.1001(b) and (e)].

Tip: Cable stripping areas are usually treated as regulated areas because stripping produces fluff which may contain asbestos.

Each regulated area must meet the following requirements [29 CFR 1915.1001(e)(6)]:

- **Be clearly marked**. Regulated areas must be marked in any manner that limits the number of workers in the area, and protects workers outside the area from exposure to airborne asbestos [29 CFR 1915.1001 (k)(7)].

> **Tip:** Because many workers may not be able to read or understand signs in English, post signs in English and other languages as appropriate.

  Signs must be clearly displayed at all approaches to regulated areas and have the following OSHA-approved wording.

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

- **Limit access**. Only authorized workers should have access to regulated areas.

- **Use respirators.** All workers entering and working in these areas must wear approved respirators. NOTE: All workers must be medically approved to wear respirators and be part of a respirator protection program.

- **Prohibit certain activities**. Workers are not allowed to eat, smoke, drink, or chew tobacco or gum in regulated areas.

- **Qualified Person**. Under the asbestos abatement requirements, your facility must have a qualified person supervise the work conducted in a regulated area (see below). Note: The asbestos NESHAP regulation also requires your facility to have a person present during RACM removal activities that is trained in the asbestos NESHAP requirements [40 CFR 61.165(c)(8)].

- **Use decontamination area.** Workers performing asbestos removal must enter and exit the regulated area through a three-stage decontamination area [29 CFR 1915.1001(j)].

Are other engineering controls and work practices used to control asbestos emissions during removal?

In addition to the emission controls (e.g., wet methods, prompt clean up and disposal of RACM wastes) described above, asbestos removal work must be performed using control methods, such as vacuum cleaners equipped with high efficiency particulate air (HEPA) filters to collect all debris and dust containing ACM [29 CFR 1915.1001(g)(1)].

In addition, to achieve compliance with OSHA permissible exposure limits, your facility must use control methods including, but not limited to:

- Local exhaust ventilation equipped with HEPA filter dust collection systems.
- Enclosure or isolation of those processes producing asbestos dust.
- Ventilation of the regulated area to move contaminated air away from the breathing zone of workers and toward a filtration or collection device equipped with a HEPA filter [29 CFR 1915.1001(g)(2)].

To ensure that airborne asbestos does not migrate from the regulated area, your facility can also use **critical barriers** or another barrier or isolation method. A critical barrier is one or more layers of plastic sealed over all openings into a work area or any other physical barrier sufficient to prevent airborne asbestos in the work area from migrating to an adjacent area [29 CFR 1915.1001(g)(4)]

Additional control methods, which can be used alone or together, can control asbestos emissions [29 CFR 1915.1001(g)(5)]. These include, but are not limited to:

- **Negative pressure enclosure systems**. In a negative pressure enclosure (NPE), air is changed at least 4 times per hour and is directed away from workers within the enclosure and towards a HEPA filtration or a collection device. The NPE is kept under negative pressure throughout the period of its use. There is also a requirement to maintain a minimum of -0.02 column inches of water pressure differential. This is normally accomplished with a manometer.
- **Glove bag systems**. A glove bag is a sealed compartment with attached inner gloves for the handling of ACM. Properly installed and used, glove bags provide a small work area enclosure and may be used to remove ACM from straight runs of piping and elbows and other connections.

- **Negative pressure glove bag systems**. These are similar to the glove bags described above, except a HEPA vacuum system or other device is attached to the bag. They may be used to remove ACM from piping.

- **Negative pressure glove box systems**. Glove boxes, which have rigid sides, are made from metal or another material which can withstand the weight of the ACM and water used during removal. A HEPA filtration system is used to maintain the negative pressure in the box. These systems can be used to remove ACM from pipe runs.

- **Water spray process system**. This process can be used for the removal of ACM and PACM from cold line piping. This process can be used only if employees carrying out this process have completed a 40-hour separate training course in its use, in addition to training required for employees performing Class I work. For more detailed information on pertaining to control methods please refer to 29 CFR, 1915.1001 (g)(5)(v).

2.4 DISPOSAL PROCEDURES FOR ASBESTOS-CONTAINING WASTE MATERIAL

Once you remove the ACM, you have to dispose of it. For demolition activities, asbestos-containing waste material (ACWM) is defined by EPA to mean any waste that contains or is contaminated with RACM (including equipment and clothing). Waste disposal procedures are specified in 40 CFR 61.150.

Is the ACWM properly contained?

After wetting, your facility must seal all ACWM in leak-tight containers while still wet [40 CFR 61.150(a)(1)]. The containers can be plastic bags (6-mils thick), cartons, drums, or cans. For bulk wastes that will not fit into containers without additional breaking, your facility must put these wastes into leak-tight wrapping. The wrapping should be sealed (e.g., with duct tape) while adequately wet. If the ACWM is placed directly in trailers or roll-off boxes, the trailers or boxes should first be lined with plastic sheeting. After the ACWM is loaded, the trailer or roll-off box should be covered with a tarp while the ACWM is adequately wet.

> **Tip:** Some facilities are implementing a new policy to let no regulated materials touch the ground. Asbestos containers are being placed on the ship, and then directly transported for disposal when they come off the ship.

In all cases, the ACWM should be wet when contained to prevent the release of asbestos fibers in case the container or wrapping is broken.

An inspector may check bags or other containers to determine if the ACWM was kept adequately wet when packaging. One way to quickly check if this requirement has been met is to lift the bag. A bag with dry ACWM is light and fluffy and can generally be lifted easily by one hand. A bag filled with well-wetted material is substantially heavier and more dense. An inspector may also open any bags to inspect them, most likely using a glove bag or other emissions control method. The inspector will then properly reseal the bag, or request that your workers do so. An inspector may also observe trucks picking up asbestos wastes to see if the bags are handled without bursting or dispersing asbestos to the atmosphere.

Is ACWM labeled?

Your facility is required to place warning labels on all bags, containers, or wrapping materials containing ACWM [40 CFR 61.150(a)(1)]. These labels must be printed in letters of sufficient size and contrast so that they are easily visible and readable. The labels must have the wording specified by OSHA [29 CFR 1915.1001 (k)(8)]:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Additionally, your facility must label those bags of ACWM destined to be transported offsite with the name of your facility (i.e., the waste generator) and the location of your facility [40 CFR 61.150(a)(1)].

Are there visible emissions during disposal activities?

Your facility must have **no visible emissions** to the outside air during the collection, packaging, or transporting of any ACWM, or your facility must use one of the emission control and waste treatment methods described in 40 CFR

Tip: If emissions are visible during asbestos waste disposal activities, your facility is in violation of the asbestos NESHAP regulation.

61.150(a). One such emission control method is adequately wetting the ACWM to ensure there are no visible emissions.

Is there visible material on the ground that appears to be ACM?

If there is material on the ground that appears to be ACM (such as white fluff), your facility may be in violation of the asbestos NESHAP regulation.

An inspector will be interested in any material that appears to be ACM that is on the ground at your facility. The inspector may sample and photograph suspected ACM, as well as the sources (such as a nearby cable) that it may have come from.

Are waste shipment records included with ACWM shipments?

All shipments of ACWM transported off the facility site must be accompanied by a waste shipment record (WSR). The WSR is a record of the movement and ultimate disposition of the asbestos waste. Your facility, as a waste generator, must keep copies of all WSRs for at least 2 years [40 CFR 61.150(d)].

If your facility does not receive a copy of the WSR signed by the disposal site operator within 35 days, your facility must take actions to determine the status of the waste shipment. Additionally, if not received within 45 days, your facility must submit a written exception report to EPA or the delegated state regulatory agency. This report should include a copy of the WSR in question, as well as a cover letter explaining what your facility has done to locate the shipment and the results of the search.

An inspector may examine the WSRs to ensure that the records are complete, including all required signatures for each shipment.

Is ACWM transported to an appropriate disposal site?

Your facility must send all ACWM to an active disposal site that receives ACWM or an EPA-approved site that converts RACM and ACWM into asbestos-free material. While EPA does not license landfills for asbestos disposal, it has established asbestos

Tip: The U.S. Department of Transportation does not presently require placarding on transport vehicles for hazardous materials (such as asbestos wastes) which are classed as "Other Regulated Material" [49 CFR 172.500].

disposal requirements for active disposal sites under the asbestos NESHAP regulation [40 CFR 61.150(b)].

State and/or local agencies usually require asbestos disposal sites to be approved or licensed. Your facility should check with your state or local agency for a list of approved or licensed asbestos disposal sites.

An inspector may check for consistency between the facility ACWM logs and the disposal site records. Additionally, the inspector may check to see that the asbestos waste is placed in the disposal site without dispersing asbestos to the atmosphere, and that the site covers the asbestos waste daily.

s asbestos a hazardous waste?

According to the federal hazardous waste regulations, asbestos is not regulated as a hazardous waste. However, states may or may not classify asbestos in the same manner. Some examples of state regulations are presented here:

Is asbestos hazardous? If asbestos is removed from a ship and exhibits any hazardous waste characteristics (e.g., toxicity), it is considered a hazardous waste and is subject to RCRA Subtitle C regulations found in 40 CFR 261-262.

- Texas: Texas adopted the federal definition of hazardous waste, and therefore, asbestos is not regulated as a hazardous waste. However, discarded materials containing asbestos are considered special wastes in Texas. Facilities must follow the state's specific handling and disposal requirements for these special wastes disposed of in the United States.

- Virginia: Virginia also does not classify asbestos as a hazardous waste under its hazardous waste regulations. However, asbestos is classified as a special waste under Virginia's solid waste regulations. Similar to Texas, facilities must follow Virginia's special handling and disposal requirements for asbestos-containing wastes disposed of in the United States.

- California: Unlike the other two states, California considers asbestos to be a hazardous waste if its exceeds a specific concentration.

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3. SAMPLING, REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBS)

The sampling, removal, storage, and disposal of polychlorinated biphenyls (PCBs) is a primary environmental concern, as well as a worker health and safety concern, for your facility during ship scrapping. As described below, PCBs are found throughout older vessels and it is likely your ship scrapping facility will be faced with managing large quantities of PCBs. The following sections present background information on PCBs, discuss the effects of exposure to PCBs, and describe some of the regulatory requirements with which your facility must comply.

3.1 INFORMATION ABOUT PCBS

What are PCBs?

PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. They are basically mixtures of synthetic organic chemicals with the same basic chemical structure and similar physical properties. PCBs, which were domestically manufactured from 1929 until their manufacture was banned in 1979, can range in toxicity and vary in consistency from thin light-colored liquids to yellow or black waxy solids. While sold under the trade name "Arochlor," PCBs are known by many trade names. Common trade names for PCB dielectric fluids include, but are not limited to:

Aroclor	Clorphen	Hyvol	Pydraul
Aroclor B	Clophen	Inclor	Phyralene
Apirolio	Diaclor	Inerteen	Pyranol
Asbestol	Dk	Kaneclor	Pyroclor
Askarel*	Dykanol	Kennechlor	Saf-T-Kuhl
Adkarel	EEC-18	No-Flamol	Santotherm FR
Chlorextol	Elemex	Nepolin	Santovac 1 and 2
Chlorodiphenyl	Eucarel	Nonflammable Liquid	Therminol
Chlorinol	Fenclor	Phenoclor	

* Askarel is the generic name used for nonflammable insulating liquid in transformers and capacitors.

Why were PCBs widely used?

Due to their non-flammability, chemical stability, high boiling point and electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics and rubber products; in pigments, dyes and carbonless copy paper; and many other applications. More than 1.5 billion pounds of PCBs were manufactured in the United States before production was stopped in 1979.

Where can PCBs be found on a ship?

Although no longer commercially produced in the United States, PCBs are found in solid (waxy) and liquid (oily) forms in equipment and materials on ships being scrapped. These equipment and materials which may contain PCBs in concentrations of at least 50 parts per million (ppm) include:

- Cable insulation
- Rubber and felt gaskets
- Thermal insulation material including fiberglass, felt, foam, and cork
- Transformers, capacitors, and electronic equipment with capacitors and transformers inside
- Voltage regulators, switches, reclosers, bushings, and electromagnets
- Adhesives and tapes
- Oil including electrical equipment and motors, anchor windlasses, hydraulic systems, and leaks and spills
- Surface contamination of machinery and other solid surfaces
- Oil-based paint
- Caulking
- Rubber isolation mounts
- Foundation mounts
- Pipe hangers
- Light ballasts
- Any plasticizers

How can exposure to PCBs occur?

PCBs can be ingested, inhaled, or absorbed through the skin. They circulate throughout the body and are stored in the body's fatty tissue. There are OSHA regulations governing exposure to PCBs in the workplace.

What are the dangers of exposure to PCBs?

PCBs are toxic and persistent. They have been shown to cause a variety of adverse health effects, such as cancer in animals, as well as a number of serious noncancer health effects in

animals (e.g., effects on the immune system, reproductive system, nervous system, and endocrine system). Studies in humans provide supportive evidence for potential carcinogenic and non-carcinogenic effects of PCBs. The different health effects of PCBs may be interrelated, as alterations in one system may have significant implications for the other systems of the body. In some cases, chloracne may occur in humans exposed to PCBs. Severe cases of chloracne are painful and disfiguring, and may be persistent.

It is very important to note that the composition of a PCB mixture changes following its release into the environment. The types of PCBs that bioaccumulate in fish and animals and bind to sediments tend to be the most carcinogenic components of PCB mixtures. As a result, people who ingest PCB-contaminated fish or animal products and touch PCB-contaminated sediment may be exposed to PCB mixtures that are even more toxic than the PCB mixtures contacted by workers and released into the environment.

EPA is also very concerned about the toxicity of the chemicals produced when PCBs are heated in fire-related incidents. The chemicals produced include polychlorinated dibenzofurans and polychlorinated dibenzo-p-dioxins, both of which are believed to be much more toxic than PCBs themselves.

3.2 WHO REGULATES PCBS?

Note: Some states may regulate PCBs as hazardous wastes.

- **EPA.** The Toxic Substances Control Act (TSCA) enacted in 1976 regulates commerce and protects human health and the environment by requiring testing of and establishing restrictions on certain potentially hazardous chemicals, including PCBs. PCBs are considered by EPA to be an unreasonable risk to health and the environment. Essentially, TSCA legislated true "cradle to grave" (i.e., from manufacture to disposal) management of PCBs in the United States.

  Under Section 6(e) of TSCA, EPA is required to control the manufacture, processing, distribution in commerce, use, and disposal of PCBs. The TSCA regulations detailing the management requirements for PCBs are found in 40 CFR 761. Part 761 provides the definition, storage and disposal, cleanup policy, exemptions, general housekeeping, and reporting requirements for PCBs. EPA published amendments to 40 CFR 761 in the June 29, 1998 Federal Register [63 FR 35383-35474] which are broad and affect the sampling, analysis, and disposal of PCBs. The new amendments were effective August 28, 1998, and can be accessed at http://www.epa.gov/opptintr/pcb.

The regulations authorize the export for disposal of PCBs only at concentrations less than 50 ppm and imports are prohibited. A rulemaking exemption under TSCA Section 6 of TSCA would be required for imports or exports of PCB concentrations > 50 ppm.

Currently, EPA has regulatory authority for implementing the TSCA PCB regulations. However, several states have their own, more stringent programs. To determine if your state regulates PCBs more stringently, your facility should contact the state environmental office.

- **OSHA.** OSHA is responsible for the health and safety of workers who may be exposed to PCBs in the work place, or in connection with their jobs. OSHA's regulations covering PCB exposure set a maximum exposure limit and include provisions for respirators, protective clothing, exposure monitoring, hygiene facilities and practices, warning signs, labeling, recordkeeping, and medical exams. These requirements, which are found in OSHA's Shipyard Industry standards (29 CFR 1915) and General Industry standards (29 CFR 1910), are described in more detail below.

3.3 SAMPLING, REMOVING AND MANAGING PCBS

3.3.1 Worker Protection Practices

How to meet worker protection limits

Your facility must ensure that workers are protected from exposure to airborne PCB concentrations. OSHA regulations governing exposure to PCBs in the workplace 29 CFR 1915 (Subpart Z) include two time-weighted averages for chlorodiphenyl. These are:

- 1.0 mg/m^3 of workplace air over an 8-hour work shift for chlorodiphenyl containing 42 percent chlorine.

- 0.5 mg/m^3 of workplace air over an 8-hour work shift for chlorodiphenyl containing 54 percent chlorine.

A worker's exposure to PCBs in any 8-hour work shift of a 40-hour week cannot exceed these concentrations. Furthermore, employers are required to ensure a safe workplace under OSHA regulations. If specific standards are not applicable, this general requirement for a safe

workplace applies. Note: National Institute for Occupational Safety and Health (NIOSH) recommends a more stringent air standard for worker exposure of 1.0 mg/m^3.

Do workers wear personal protective equipment as required?

Your facility is required to ensure workers removing and disposing of liquid or solid PCB articles wear or use appropriate personal protective clothing or equipment. The regulation does not specify the type of clothing to use because this will vary from one removal and disposal scenario to the next. For example, for liquid PCBs, workers must wear PPE that protects against dermal contact with or inhalation of PCBs or materials containing PCBs. It is your facility's responsibility to determine what type of clothing/equipment is appropriate to protect workers handling the contaminated materials. These may include, but are not limited to, coveralls or similar full-body clothing, head coverings, gloves, and foot covering; face shields; or vented goggles. This equipment/clothing must be disposed of as PCB remediation waste [40 CFR 761.61(a)(5)(v)].

If required, workers must use approved respirators that are appropriate for the work being conducted. These must be provided free of charge by the facility. Your facility is responsible for establishing an effective respiratory program and workers are responsible for wearing their respirators and complying with the program. An effective respirator program must cover the following factors: written standard operating procedures; selection; training; fit test; inspection, cleaning, maintenance, and storage; medical examination; work area surveillance; and program evaluation.

Medical surveillance requirements

Your facility is required to conduct medical surveillance for all workers who, for a combined total of 30 or more days per year, are performing PCB removal work or are exposed at or above the exposure limit. This includes medical examination and consultation prior to beginning work, at least annually, and upon termination of employment [29 CFR 1915].

Are workers trained in PCB removal and disposal?

Your facility must provide, at no cost, a training program for all workers performing PCB removal work during ship scrapping. Training must be provided prior to or at the time of beginning work and at least once a year afterwards, and

Tip: Some facilities may need to hire contractors for training employees who speak English as a second language and may not be fluent in English.

it must be conducted in a manner which the worker is able to understand.

An inspector may check to see that workers at your facility received training in a language that they understand.

3.3.2 Sampling for PCBs on Ships

EPA suspects that certain items, including some on ships, may contain PCBs at regulated concentrations of 50 ppm or greater. When determining the concentration of PCBs in specific items, your facility can either: (1) make the same assumptions as EPA (PCB concentration $50 ppm) and dispose of these items according to PCB disposal requirements, or (2) conduct sampling of these items to determine the actual PCB concentration and dispose of them accordingly.

EPA published amendments to 40 CFR 761 in the June 29, 1998 Federal Register [63FR35384-35474] which affect the sampling, analysis, and disposal of PCBs. These new amendments were effective August 28, 1998. *Note: Technical and procedural amendments to this rule were published in the Federal Register [64FR33755] and became effective on June 24, 1999.*

How is sampling for PCBs conducted?

Using EPA's Interim Final Policy for PCB sampling

Your ship scrapping facility may follow EPA's policy for determining whether PCBs are present and must be removed from a ship. This policy, entitled *Sampling Ships for PCBs Regulated for Disposal (Interim Final Policy, November 30, 1995)*, presents a sampling protocol, which is a statistically based random selection process, to analyze for the presence of PCBs in ship materials.

The sampling policy presents two options for ship scrappers to remove PCBs from ships. Ship scrappers may either:

- Remove all known liquid PCBs and non-liquid PCBs. No sampling or measurements are required for this removal; **or**

- Sample the ship according to the policy (by three different stratum) and chemically analyze the samples to determine whether regulated concentrations of PCBs are present. Scrappers can opt either to: (a) sample all items in all classes of uses suspected of containing non-liquid PCBs; or (b) in place of this sampling approach, remove some classes of uses of non-liquid PCBs and sample all other classes.

This policy is basically considered a best available practice and is self-implementing. There are notification and recordkeeping requirements; however, no PCB disposal approval is required to carry out PCB removal procedures as part of a scrapping procedure.

An inspector may review the PCB sampling plans and laboratory analysis results.

Note: While this policy for sampling PCBs on ships has been used (and may still be used) by ship scrappers, the effectiveness of the sampling has been questioned and is under evaluation. When evaluated by the U.S. Maritime Administration (MARAD) in 1997, the policy was found ineffective in revealing the most significant sources of PCBs or providing information that a scrapper needs to perform complete removal of PCBs. Additional problems were discovered with the method used for analyzing PCBs, including the appropriateness of the specified solvent and the effectiveness of the extraction procedure in recovering all PCBs. Your ship scrapping facility should check with your EPA regional office for guidance in sampling for PCBs.

Is the "assumption policy" no longer used when determining the PCB concentrations in electrical equipment that is being disposed of?

Historically, many ship scrappers have operated by what is called the "assumption policy," when determining whether liquid-filled electrical equipment contains regulated amounts of PCBs. Now, however, under the new PCB amendments, facilities can no longer use the assumption policy for PCB electrical equipment that is being disposed of (40 CFR 761.2).

To be compliant, your facility can choose to either: (1) assume the equipment contains regulated concentrations of PCBs (>50ppm), or (2) can sample to determine the actual PCB concentration of the electrical equipment at the time of disposal or storage-for-disposal.

An inspector may check to verify that all PCB items are being identified and disposed of properly. For example, the painted canvas cover which is attached to fiberglass insulation may be a source of PCBs.

Are manifests used when sending samples for PCB analysis?

If your facility does not have its own laboratory, it will most likely use an offsite laboratory for conducting PCB analysis. When transporting samples for PCB analysis, your facility is exempt from meeting the manifesting requirements if they are: (1) being stored and sent by your facility to the laboratory for testing, (2) stored by the laboratory prior to testing, and (3) returned to your facility by the laboratory after testing [40 CFR 761.65(I)(2)-(4)].

An inspection team may conduct laboratory audits to verify that the laboratory is analyzing the PCB samples properly and that analytical results are accurate and reliable.

Maintaining records of sampling and analysis results

You must maintain the sampling and analysis results for all samples taken to verify the PCB concentration of items that have been removed from a ship. The results should be listed two ways: by individual sample and by sampling scheme stage (that is, how the sample was selected in the sampling plan). Records for each individual sample include, but are not limited to:

- Unique identification number
- Type of material or item sampled
- Location where the sample was collected
- Date the sample was collected
- Name of the collector
- Amount of the sample collected
- Analytical method used
- PCB concentration in the sample
- Limits of quantitation for chemical analysis

3.3.3 Removal and Storage Requirements

What are PCB-containing materials and wastes called in the PCB regulations?

You should be familiar with the various terms used in the PCB management regulations for PCB-containing materials and wastes. As defined by EPA 40 CFR 761.3, these terms include:

- **PCB article** is any manufactured article (other than a PCB container) that contains PCBs and whose surface(s) has been in direct contact with PCBs.

- **PCB equipment** is any manufactured item (other than a PCB container or PCB article container) which contains a PCB article or other PCB equipment. This includes electronic equipment and fluorescent light ballasts and fixtures.

> Ballast in fluorescent light fixtures may contain PCBs in small amounts - approximately 1.5 ounces. Because EPA banned the manufacture of PCBs in 1979, all light ballasts manufactured after 1979 should not contain PCBs and, until 1998, were required to be labeled as such ("No PCBs" notation). With this label, it is acceptable to treat ballast as unregulated for PCBs. However, without the label, it must be assumed to contain PCBs. Fluorescent light ballasts are regulated for disposal if they contain PCBs in concentrations of $50 ppm. Disposal options include the following:
>
> - Fluorescent light ballasts containing PCB small capacitors that are intact and non-leaking can be disposed of as municipal solid waste in a state-approved solid waste landfill [40 CFR 761.50(b)(2)(i) and 40 CFR 761.60(b)(2)(ii)].
>
> - Fluorescent light ballasts containing PCBs in the potting material are regulated for disposal as PCB bulk product waste in accordance with 40 CFR 761.62 [40 CFR 761.50(b)(2)(ii)].

- **PCB item** is any PCB article, PCB article container, PCB container, PCB equipment, or anything that deliberately or unintentionally contains or has as a part any PCBs.

- **PCB article container** means any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with PCBs.

- **PCB container** means any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles and whose surface(s) has been in direct contact with PCBs.

- **PCB waste(s)** means those PCBs and PCB items that are subject to the disposal requirements found in 40 CFR 761, Subpart D.

- **PCB bulk product waste** refers to waste derived from manufactured products containing PCBs in a non-liquid state with a concentration of $50 ppm PCBs at the time the waste is designated for disposal.

- **PCB remediation waste** is waste (e.g., soil, rags, or other debris) containing PCBs at specified concentrations as a result of a spill, release, or other unauthorized disposal .

Are storage-for-disposal requirements for certain PCBs and PCB items met?

The storage of PCBs first became regulated in 1979, and the requirements have remained virtually unchanged. Typically, storage-for-disposal requirements apply to PCBs and PCB items designated for disposal that: (1) are known or assumed to have concentrations $50 ppm, or (2) have concentrations less than 50 ppm as a result of dilution (materials were originally $50 ppm).

To comply with storage requirements for PCBs, your facility has already or will do the following:

- Understand which PCBs and PCB items require storage and the various storage options which are available.
- Establish a proper storage facility for PCBs.
- Use proper containers for PCB storage.
- Manage PCB storage in accordance with marking, recordkeeping, and inspection requirements.
- Within the 1-year disposal time limit, remove from storage and dispose of PCBs and PCB items.

Has a TSCA identification number been obtained for storing PCBs?

Your facility is required to have a TSCA identification (ID) number if it has a PCB storage-for-disposal area or stores PCB waste for more than 30 days. To obtain a TSCA ID number, your facility must file EPA Form 7710-53 "Notification of PCB Activity," which can be obtained from the EPA Regional office or accessed at

Will a RCRA ID number work? Unless otherwise directed by EPA, your facility can use its valid RCRA ID number for storing PCBs. Your facility must still notify EPA of its PCB activity and then EPA can recognize the RCRA ID number for PCB waste handling activities.

http://www.epa.gov/opptintr/pcb/771053.pdf. Following notification, EPA will assign your facility a TSCA ID number.

If your facility is considered a temporary storage facility (i.e., your facility does not have a storage-for-disposal area and stores for less than 30 days), an identification number is not required. Contact the facility's state regulatory agency to find out if the state has additional or more stringent requirements.

Note: In addition to generators with on site PCB storage, TSCA ID numbers are also required for: transporters; commercial storers; and approved disposers; research and development treatability facilities; and scrap metal recovery ovens/smelters/high efficiency boilers.

Establishing a PCB storage-for-disposal facility

If your facility stores PCBs or PCB items for disposal, it must have a "PCB storage facility" which meets the following requirements 40 CFR 761.65(b):

- Adequate roof and walls to prevent rainwater from reaching PCBs and PCB items.
- Adequate floor which has continuous curbing with a minimum 6-inch high curb. The floor and curbing must provide a containment volume equal to at least two times the internal volume of the largest PCB article or container stored inside or 25 percent of the total internal volume of all PCB articles and containers stored inside, whichever is greater.

Tip: Use Stock Tanks or Metal Boxes. EPA allows flexibility in how to meet the "berming" criteria, such as using stock tanks or metal boxes. The berms of the tank or box must be constructed of smooth impervious materials and meet the height and volume requirements. The tank or box must not have any drains, seams, or other openings that would allow liquids to flow from the containment area.

- Floors and curbing constructed of Portland cement, concrete, or a continuous, smooth, non-porous surface which prevents or minimizes penetration of PCBs.
- No drain valves, floor drains, expansion joints, sewer lines, or other openings that would permit liquids to flow from the curbed area.

- Not located at a site that is below the 100-year flood water elevation.

An inspector may examine PCB storage-for-disposal areas and check the floor and curb for cracks, measure to verify that the curb is at least 6 inches high, and check the capacity of the containment storage area against the total volume of PCBs in storage. He/she may also determine the 100-year floodplain location with respect to any storage area. Many ship scrappers are located within the 100-year floodplain and cannot have storage areas.

Can an existing building or a portion of an existing building be used to properly store PCBs?

Your facility is not required to construct a separate building for the proper storage of PCBs and PCB items. Your facility can use an existing structure to act as a PCB storage facility provided that it meets all the criteria noted above and listed in 40 CFR 761.65(b). In addition, your facility can designate an area within a building for PCB storage. This area must be clearly marked and segregated from other activities within the building.

Storing PCBs temporarily prior to disposal

Your facility has two options for temporarily storing PCB items in areas other than your PCB storage facility. These options are referred to as "30-day temporary storage" and "pallet storage."

- **Thirty-day temporary storage** allows your facility to store certain PCB items in an area that does not comply with the requirements for a PCB storage facility <u>for up to 30 days</u> from the date of their removal from service for disposal [40 CFR 761.65(c)(1)]. A note must be attached to the PCB item or container indicating the date the item was removed from service. PCB items which can be stored under this option include:

  - Non-leaking PCB articles and PCB equipment.
  - Leaking PCB articles and PCB equipment if the PCB items are placed in a non-leaking PCB container that contains sufficient sorbent materials to absorb any liquid PCBs remaining in the PCB items.

Tip: Keep in mind that the 30-day temporary storage is included in the total 1-year storage and disposal time limit.

- PCB containers holding non-liquid PCBs, such as contaminated soil, rags, and debris.

- PCB containers containing liquid PCBs at concentrations $50 ppm, provided a Spill Prevention, Control, and Countermeasures (SPCC) plan has been prepared for the temporary storage area. In addition, the container must bear a notation that indicates that the liquids in the drum do not exceed 500 ppm PCBs.

In all cases where PCBs of 50 ppm or greater are stored for disposal for more than 30 days, a PCB storage facility is necessary. Liquid PCBs at concentrations of $500 ppm may not be stored temporarily.

- **Pallet storage** allows your facility to temporarily store certain PCB items on pallets next to your PCB storage facility. However, pallet storage is only allowed when your PCB storage facility has unfilled storage space that is immediately available and is equal to 10 percent of the volume of the PCB items being stored on pallets [40 CFR 761.65(c)(2)]. PCB items which can be stored on pallets include non-leaking and structurally undamaged PCB large, high-voltage capacitors and PCB-contaminated electrical equipment (known or assumed 50 to 500 ppm) that have been drained of free-flowing dielectric fluid.

> **Tip:** Your facility cannot use pallet storage if it does not have a PCB storage facility.

Marking PCB items and PCB storage areas

The large PCB mark must be used to mark all PCB items and areas where PCBs are being stored. It is typically 6 × 6 inches, but may be reduced to 2 × 2 inches if space is limited. Each mark (see example) must have black letters and striping on a white or yellow background and be sufficiently durable.

All PCB storage areas, including your PCB storage facility, 30-day temporary storage, and pallet storage, must be clearly marked [40 CFR 761.40(a)]. Marks must be placed on the exterior of the storage areas so that they can be easily read by any person inspecting or servicing the storage areas.

If the mark is still too big for the PCB item, a smaller mark (shown here) can be used. This mark is 1 inch by 2 inches, but can be reduced down to 0.4 inches by 0.8 inches, if necessary.

An inspector may check each item in storage for PCB marks.

Are inspections of PCB storage areas conducted?

Your facility must inspect all PCB articles and PCB containers in the PCB storage facility for leaks at least once every 30 days. If any leaking PCB articles or containers are found, they must be transferred immediately to properly marked non-leaking containers. Your facility must clean up any spilled or leaked materials immediately, and dispose of the PCB-contaminated materials and residues according to PCB disposal requirements [40 CFR 761.65(c)(5)].

Your facility must also inspect any PCB items stored adjacent to the PCB storage facility on pallets for leaks every week. Any leaking PCB items must be placed inside the storage area [40 CFR 761.65(c)(2)].

Are appropriate PCB storage containers used for storage and shipment?

Your facility must use containers for the storage of PCBs (known or assumed 50 ppm or greater) that comply with the U.S. Department of Transportation (DOT) Hazardous Materials Regulations at 49 CFR 171-180. **Please note that the shipping container requirements listed in 40 CFR 761.65 (c)(6) are obsolete**. Your facility can obtain more information by contacting EPA or its state regulatory agency.

Maintaining appropriate PCB storage practices and records

You must manage PCB storage so that PCB articles and PCB containers can be located by the date they were removed from service for disposal. Therefore, all PCB articles and containers must be dated when they were removed from service for disposal, including 30-day temporary storage and pallet storage [40 CFR 761.65(c)(8)].

You must also develop and maintain records that document it is following all of the PCB storage and disposal requirements [40 CFR 761.180(a)-(c)]. These records will form the basis for the required "Annual Records" to be prepared by the facility. Facilities which use or store at least one PCB transformer, 50 PCB large capacitors, or 99.4 lbs. of PCBs in containers must keep the following records:

- **Annual records** of all activities involving PCBs, including those PCBs in storage-for-disposal or those which have been disposed of during the year. These records must include all manifests, certificates of disposal, records of inspections and cleanups.

- An **Annual document log** which includes specific and detailed information (dates, weights, etc.) on the PCBs stored and disposed of during the year. The written annual document log must include the name, address and EPA identification number of your facility, and the calendar year covered. The log also must include the following information for PCB articles, containers of PCBs, or PCB articles in containers at or generated at your facility:

  - Unique identification number
  - Container contents
  - PCB concentration (ppm)
  - Total volume of container
  - Date received at the facility

- Date PCB waste in each container was removed from service for disposal
- Date placed in transport for off-site storage or disposal
- Date disposed of (if known)

If using bulk storage of PCBs in containers or bulk tanks larger than 55-gallon drums, your facility must maintain records for each batch of PCBs added to the containers. These records must include the quantity of the batch and the date the batch was added. The records will also include the date, quantity, and method of disposition of any batch of PCBs removed from the container [40 CFR 761.65(c)(8)].

The records and logs must be maintained for at least three years after the facility no longer stores PCB transformers, capacitors, or containers in the above quantities. All records must be available for inspection by EPA upon request. Although there is no requirement to do so, facilities should keep these records beyond the three-year period to show compliance and limit liability in future years.

PCBs stored onsite must be disposed of within one year

All PCBs must be removed from storage and disposed of within one year [40 CFR 761.65(a)]. The 1-year time starts the date the PCBs articles are removed from service for disposal or the first batch of PCBs is placed in the container for storage-for-disposal.
Basically, this means that your facility (i.e., the generator) has **nine** months of the 1-year disposal timeframe to store PCBs and transport those PCBs to the disposal facility. The remaining three months are for the disposal facility to dispose of the waste.

If your facility delivers the PCB waste to a disposal facility later than 90 days before the end of the 1-year disposal deadline, your facility will be held liable if the disposal facility cannot dispose of the waste in time. On the other hand, if your facility delivers the waste with 90 days or more remaining in the 1-year deadline, then the disposal facility is responsible for disposing of the material before the deadline. The disposal facility will share in any liability if it does not dispose of the PCB waste within 90 days from the date it is received.

Tip: A list of commercially permitted PCB disposal companies can be found at http://www.epa.gov/opptintr/pcb/stordisp.html.

How are PCB liquids, items, and wastes disposed of?

Your facility must follow strict requirements for the disposal of PCB-containing or PCB-contaminated liquids, articles (e.g., transformers, capacitors, hydraulic machines, electrical equipment, fluorescent light ballasts), containers, spill material, bulk remediation wastes, and bulk product wastes. Depending on the item and its PCB concentration, the following kinds of disposal may be required in 40 CFR 761.60 through 40 CFR 761.62:

- Licensed incinerator
- High efficiency boiler
- Chemical waste landfill
- Hazardous waste landfill
- Municipal solid waste landfill
- Non-municipal non-hazardous waste landfill

When disposing of electrical cables, are PCB materials in the cables separated from non-PCB materials?

Your facility may use shredders and separators to recover recyclable metal that is intermixed with useless nonmetallic material (see box). Some shredder feedstock contains hazardous materials, such as PCBs or asbestos, which can be difficult to contain and effectively separate from the metals during the shredding and separation process.

Using Shredding for Recovery: Electrical cables, which range from approximately 15% to 75% copper by weight, are often shredded for recovery of the copper by recyclers specializing in this process. Shredders first reduce the parts to a gravel-like mixture of metal particles and nonmetal "fluff." After shredding, the metals can be separated from the fluff by several means, such as magnetic separators, air flotation separator columns, or shaker tables.

While shredding no longer requires an approval under the PCB regulations, EPA may require a permit of shredding operations to ensure that hazards are properly controlled during shredding and separation and that the metals and fluff are properly managed thereafter (40 CFR 750). Your facility can contact EPA or your state regulatory agency for more information.

Note: Many older vessels have electrical cables that contain asbestos. A National Emission Standards for Hazardous Air Pollutants (NESHAP) notification may be required if cables contain asbestos. For information about

3.4 PCB Spill Reporting Requirements

Are PCB spills reported?

EPA has issued regulations controlling the disposal of PCBs, including both accidental and intentional releases of PCBs to the environment. In the event of improper disposal of PCBs in concentrations of 50 ppm or greater (or when material with concentrations now less than 50 ppm became that way through dilution), EPA has the authority under Section 17 of TSCA to compel persons to take action to rectify any damage or clean up the resulting contamination.

Definition of a Spill: A spill means both intentional and unintentional spills, leaks, or other uncontrolled discharges where the release results in any quantity of PCBs with concentrations of 50 ppm or greater.

EPA has established a nationwide policy for PCB spill cleanups that could affect ship scrapping facilities that have improperly disposed of PCBs [40 CFR 761.120]. This policy became effective on May 4, 1987 and applies only to spills that occur after that date. Existing spills which occurred prior to May 4, 1987 are to be cleaned up in accordance with requirements established at the discretion of EPA. The policy requires the cleanup to different levels, depending on the spill location, the potential for exposure to residual PCBs initially spilled, and the nature and size of the population potentially at risk of exposure.

Spills of liquids containing ***any amount*** of PCBs are subject to TSCA regulations. Under the TSCA spill policy, your facility is required to report the following PCB spills to the appropriate EPA Regional Office of Pesticides and Toxic Substances in the shortest possible time after discovery, but in no case later than 24 hours after discovery:

- All PCB spills, 50 ppm or greater, which contaminate surface waters, sewers and sewer treatment plants, private or public drinking water sources, animal grazing lands, and vegetable gardens.

- All PCB spills, 50 ppm or greater, involving 1 lb. or more pure PCBs (by weight) (e.g., approximately 1 pound of Askarel).

Other Reporting Requirements: Your facility may be required to report PCB spills under the Clean Water Act (CWA) and the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA). Under the CERCLA National Contingency Plan, all spills involving 1 pound or more of a PCB material must be reported to the National Response Center (NRC) at 1-800-424-8802. Check with your EPA regional office for more information on reporting PCB spills.

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4. BILGE AND BALLAST WATER REMOVAL

An important activity during ship scrapping is the proper removal and disposal of wastewater, specifically bilge water and ballast water. The activities, if not conducted properly, may impact the environmental and present health and safety concerns for your workers.

4.1 INFORMATION ABOUT BILGE AND BALLAST WATER

The following section describes bilge water and ballast water, where they are found on a ship, and the potential human health and environmental impacts if they are not managed properly during removal and disposal.

What is bilge water and where is it found on a ship?

Typically, government-owned ships received for scrapping have minimal bilge water onboard. **Bilge water** consists of stagnant, dirty water and other liquids, such as condensed steam, and valve and piping leaks, that are allowed to drain to the lowest inner part of a ship's hull (i.e., the bilge). Bilge water may also be found in onboard holding tanks, often referred to as oily waste holding tanks or slop tanks.

Bilge water originates from many sources both when a ship is in operation and when a ship is being scrapped. It may contain pollutants, such as oil and grease, inorganic salts, and metals (e.g., arsenic, copper, chromium, lead, and mercury). When a ship is in operation, bilge water may originate from leaks and spills, steam condensate, and boiler blowdown. This drainage may include small quantities of oils, fuels, lubricants, hydraulic fluid, antifreeze, solvents, and cleaning chemicals. During ship scrapping, bilge water is created through the accumulation of rain water (because the decks are open) and the collection of water from fire lines that leak, are left open or are used to wet down compartments. Additional bilge water may be generated during asbestos removal and metal cutting activities.

What is ballast water and where is it found on a ship?

Ballast is typically water (e.g., port water, sea water) that is intentionally pumped into and carried in tanks to adjust a ship's draft, buoyancy, trim, and list, and to improve stability under various operating conditions. There can be several kinds of ballast water onboard a ship during its operation, including:

- *Clean ballast.* Clean ballast is seawater that has been pumped into dedicated ballast tanks. Because these tanks are dedicated to ballasting operations, the seawater is not mixed with fuel or oil. Clean ballast water may contain pollutants, such as metals (e.g., iron, copper, chromium) and chemical constituents. These can come from additives (e.g., flocculant chemicals that facilitate the separation of suspended silts) or from contact of the water with the piping systems and ballast tank coatings (e.g., epoxy coatings and rust inhibitors containing petroleum distillates). The concentration of these pollutants is expected to increase the longer the water is in the clean ballast system.

> **Types of Ballast:** Ballast can consist of materials other than water, such as mud or concrete. Mud ballast usually refers to drilling mud used in the petroleum drilling industry to lubricate drill bits and remove drilling debris. This type of ballast is typically treated with lubricants and corrosion inhibitors. The term mud ballast may also refer to concrete, rock, water, and other forms of locked-in ballast.

- *Compensated fuel ballast*. During a ship's operation, compensated fuel ballast is seawater that is taken in by the ship to replace fuel as the fuel is used, thereby maintaining the ship's stability. The tanks are always full of fuel, seawater, or a combination of both. Depending on the seawater to fuel ratio at the time of scrapping, pollutants in compensated fuel ballast may include fuel, fuel additives (e.g., biocides added to control bacterial growth in the fuel oil), oil and grease, petroleum hydrocarbons and metals, which may result from leaching and corrosion of the fuel containment systems.

- *Dirty ballast*. Dirty ballast is created when seawater is pumped into empty fuel tanks for the purpose of increasing ship stability. The seawater mixes with residual fuel producing "dirty" ballast. Pollutants in dirty ballast may include residual fuel, fuel additives (e.g., biocides), oil and grease, petroleum hydrocarbons, and metals (e.g., copper, nickel, silver, and zinc).

> **Chromated ballast water:** Sodium chromate may be added to ballast water to prevent algal growth at the time of vessel layup.

What are the potential impacts of bilge and ballast water discharges?

During a ship's operation, bilge and ballast water are routinely discharged by ships operating in U.S. coastal waters on a daily basis as regulated by the U.S. Coast Guard (USCG). The

criteria for a ship's discharge is 15 ppm total petroleum hydrocarbons (TPH). Through process knowledge, it is known that the presence of PCBs, oils, and Resource Conservation Recovery Act (RCRA) metals in regulated concentrations is not a standard occurrence. However, in the event that these pollutants are present at elevated concentrations in discharged bilge water and ballast water, there may be potential impacts to serious human health and environmental impacts. These are as described below:

- Bilge and ballast water may both contain **metals** which cannot be removed through treatment or environmental degradation. Metals, if ingested, can cause various human health problems such as lead poisoning and cancer. Additionally, consumption of contaminated seafood has resulted in exposure exceeding recommended safe levels.

- Bilge water may contain **toxic organics**, such as solvents and polychlorinated biphenyls (PCBs), which can be cancer-causing and lead to other serious ailments, such as kidney and liver damage, anemia, and heart failure. Discharges of toxic organics can also result in the release of poisonous gas, which occurs most often when acidic wastes react with other wastes in the discharge.

- Bilge water may contain **oils and fuels** which can poison fish and other marine organisms. Since these pollutants can float on the water's surface and be blown into the shoreline, they can physically cover plants and small animals thereby interfering with plant life cycles and the animal's respiration. Birds, fish, and other animals are known to abandon nesting areas soiled by pollution.

- Ballast water has the potential to contain **plants and animals**, including microorganisms and pathogens, that are native to the location where the water was brought aboard. When the ballast water is transported and discharged into another port or coastal area, the surviving organisms have the potential to impact the local ecosystem. The invasion of nonindigenous aquatic species (see box) is an environmental concern with ballast water discharges into U.S. harbors as it can cause significant changes to ecosystems, upset ecological balances, and cause serious

An Example of a Nonindigenous Aquatic Species - the Zebra Mussel. The most infamous ballast water stowaway is the zebra mussel. Originally from the Baltic Sea, and transferred commercially after the United States government lifted the Russian grain embargo in 1981, it now flourishes in the Great Lakes. Since 1991, the mussels have been altering the entire food web by removing vast amounts of basic food material from the ecosystem.

economic harm to U.S. marine, agricultural and recreational sectors.

4.2 WHO REGULATES BILGE AND BALLAST WATER REMOVAL?

Regulations governing the removal and disposal of bilge and ballast water and related activities (e.g., tank cleaning) are important for the protection of environment as they reduce the amount of pollutants released into the environment through wastewater and ensure proper management of wastes produced from wastewater treatment. Regulations also protect workers performing bilge and ballast removal activities (e.g., handling hazardous waste, performing tank cleaning in confined and enclosed spaces and dangerous atmospheres) during ship scrapping.

- **EPA.** EPA has regulatory oversight authority of bilge and ballast water discharges, under the following federal laws:

  - **Clean Water Act (CWA)**. The CWA regulations establish limits on the pollutants that can be discharged by direct dischargers, including publicly-owned treatment works (POTW), and indirect dischargers.

    Direct dischargers. Direct dischargers are regulated under the National Pollutant Discharge Elimination System (NPDES) program (40 CFR 122). The NPDES program requires that all point source discharges to waters of the United States are covered under an NPDES permit. As of December 1999, EPA has authorized 43 states and one territory to administer the NPDES program.

    Indirect Dischargers. If your facility is an indirect discharger, it discharges wastewater into a sewer system that leads to a municipal treatment plant, also known as a POTW. The POTW typically is owned by the local municipality or a regional board or sewer authority. To address indirect discharges from industries to POTWs, EPA established the National Pretreatment Program as a component of the NPDES permitting program. The National Pretreatment Program is designed to reduce the level of pollutants discharged by industry and others into municipal sewer systems (which lead to POTWs), and thereby, reduce the amount of pollutants released into the environment through wastewater. The program requires industrial and commercial dischargers to treat or control pollutants in their wastewater prior to discharge to POTWs (40 CFR 403).

Unlike other environmental programs that rely on federal or state governments to implement and enforce specific requirements, the pretreatment program places the majority of this responsibility on the POTWs. In authorized states, certain POTWs are required to develop local pretreatment programs which are then approved by the state. Of the 44 states/territories authorized to implement state NPDES permit programs, 27 are authorized to approve local pretreatment programs. In all other states and territories, the pretreatment programs are approved by EPA.

Used oil management and discharges of oil. Used oil is regulated under the Used Oil Management Standards (40 CFR 279). Under the CWA, the discharge of oil in such quantities as may be harmful into navigable waters of the United States and adjoining shorelines is prohibited [CWA Section 311(b)]. EPA's Discharge of Oil regulation provides information regarding these discharges (40 CFR Part 110) and the Oil Pollution Prevention regulation (40 CFR Part 112) requires certain facilities to prepare and implement Spill Prevention, Control, and Countermeasures (SPCC) plans, and/or Facility Response Plans (FRPs). Waste or used oil that is hazardous must be managed according to the RCRA hazardous waste regulations (40 CFR 261-270).

- **Resource Conservation and Recovery Act (RCRA)**. Under RCRA Subtitle C regulations (40 CFR Parts 260-299), facilities that generate hazardous waste must meet waste accumulation, manifesting, and recordkeeping requirements. Although RCRA is a federal statute, many states implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 47 of the 50 states and two U.S. territories. Delegation has not been given to Alaska, Hawaii, or Iowa.

- **OSHA.** OSHA regulations include general requirements that workers must follow when performing bilge and ballast water removal operations, such as the use of personal protective equipment (PPE) (29 CFR 1915 Subpart I). In addition, depending on the work involved, workers may have to follow specific OSHA requirements, such as those for conducting confined and enclosed space activities (29 CFR 1915 Subpart B). These requirements will be presented in the following sections.

4.3 REMOVING BILGE AND BALLAST WATER

4.3.1 Removal Activities

Has the bilge and ballast water been tested?

Your facility will most likely be required to determine pollutant concentrations in the bilge and ballast water prior to its discharge, either as a condition of its NPDES permit or as required by the POTW. Sampling may be conducted prior to removal of the water or after it has been transferred to a holding tank(s). The pollutants to be tested for are specified in the permit or specified by the POTW. Wastewater, particularly ballast water, should be tested to determine the concentration of chromium. This is due to the practice of adding sodium chromate to ballast water (and sometimes bilge water) to prevent algal growth during a ship's operation. Chromium may be present at a high concentration which will make the water a hazardous waste.

Is transfer operations equipment inspected prior to removal activities?

Your facility may use different kinds of transfer operations equipment, such as piping, valves, gauges, regulators, compressors, pumps, and other mechanical devices to transfer oil from the ship to onshore storage location. This equipment should be inspected regularly and repaired as necessary because of the high risk of spills during these operations.

An inspector may evaluate transfer operations equipment to verify that all equipment is in proper working order and there is no evidence of spills or leaks.

Are booms immediately available to contain accidental discharges?

During scrapping, your facility is required to have immediately available certain types and lengths of boom to help contain any accidental discharges of oil or oil-containing wastewater and reduce the potential for impacts to surrounding biological resources. This is an EPA requirement if your facility is subject to the SPCC rule (see Section 4.6). Under the SPCC rule, spill prevention procedures or controls, such as booms, oil sorbents and barriers, can be used to reduce impacts to the environment in the event of a spill.

4.3.2 Cleaning Tanks/Compartments Onboard

Following the removal of bilge and ballast water from the ship, the ship tanks and/or compartments may need to be cleaned to remove any residual oil or waste prior to additional ship scrapping activities (e.g., metal cutting). If working inside spaces or areas, workers may be required to follow the OSHA requirements for confined and enclosed space work and dangerous atmospheres (29 CFR 1915 Subpart B).

Are spaces cleaned after removal of bilge and ballast water?

Depending on the kind of residues in a tank or compartment after bilge or ballast water removal, your facility may need to clean that space before any hot work can be performed. When cleaning spaces that contain or have last contained bulk quantities of liquids that are toxic, corrosive, or irritating, the facility must ensure that manual cleaning and other cold work is not performed until certain conditions are met [(29 CFR 1915.13) and (29 CFR 1915.14 (Hotwork)]. These conditions include, but are not limited to, the following:

- Liquid residues of hazardous materials must be removed as thoroughly as practicable before workers start cleaning operations in the space.

- Testing must be conducted by the facility's competent person to determine the concentration of flammable, combustible, toxic, corrosive, or irritant vapors within the space prior to the beginning of cleaning or cold work.

- Continuous ventilation must be provided at volumes and flow rates to ensure that these concentrations of vapors are within certain limits/levels, and testing must be conducted as often as necessary by the competent person during cleaning to assure that air concentrations stay within these limits/levels.

Who is a "competent person"?
A competent person is a person who is capable of recognizing and evaluating worker exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to take to ensure worker safety. Your facility may designate any person who meets the requirements found in 29 CFR 1915.7 to be a competent person responsible for performing testing in certain situations (29 CFR 1915.7). The facility may use a Marine Chemist, or in some cases, a certified industrial hygienist to perform the same activities as a competent person.

Following cleaning, tanks or other areas that have or have contained flammable liquids must be certified by a marine chemist or a U.S. Coast Guard authorized person before any hot work can be performed.

An inspector may review site records to verify that the proper testing was conducted prior to and during the time that workers conducted cleaning in these spaces.

Are confined or enclosed spaces determined to be safe for entry?

Prior to workers entering a specific confined or enclosed space, your facility's competent person must (1) **visually inspect** the space for the presence of solids, liquids or other contaminants, and (2) **test** the space, as appropriate, for:

A **confined space** is defined as a compartment of small size and limited access such as a double bottom tank, cofferdam, or other space which by its small size and confined nature can readily create or aggravate a hazardous exposure.

An **enclosed space** is defined as any space, other than a confined space, which is enclosed by bulkheads and overhead. Enclosed spaces include cargo holds, tanks, quarters, and machinery and boiler spaces.

- Oxygen content [29 CFR 1915.12(a)]

- Concentrations of flammable vapors or gases [29 CFR 1915.12(b)]
- Concentrations (air) of toxics, corrosives, or irritants [29 CFR 1915.12(c)]

If the tests demonstrate that the oxygen content and air concentrations are within the required limits, then workers may enter the space to work. If the tests show that it is not safe to enter a space, then certain measures must be taken (e.g., ventilation, re-testing, labeling the space to prevent entry or prevent entry without the required protection) for that space.

An inspector may review site records to verify that proper air sampling was conducted prior to workers entering confined or enclosed spaces.

Are workers entering confined or enclosed spaces appropriately trained?

Your facility is required to train workers who enter confined or enclosed spaces or other areas with dangerous atmospheres to perform their work safely. OSHA requires training in hazard recognition and the use of personal protective equipment (PPE). Your facility must provide workers entering these spaces with training before they are allowed to enter, and whenever there is a change in operation or in a worker's duties [29 CFR 1915.12(d)].

An inspector may review training records to verify that workers have the appropriate training to be working in confined and enclosed spaces.

4.4 Discharging Bilge and Ballast Water

Your ship scrapping facility routinely manages the disposal of wastewater, including bilge water and ballast water, and where it discharges (e.g., directly to surface waters or indirectly to a POTW) will determine which discharge requirements apply. During ship scrapping, bilge water and ballast water are routinely transferred from the ship's tanks or bilges to onshore storage tanks, evaporation pits (ballast water only), or directly overboard.

This onboard water must be tested to determine pollutant concentrations either prior to transfer onshore or prior to discharge. Wastewater "treatment" may be required to remove certain pollutants (e.g., oils, fuels) prior to discharge. Oily sludges, which are often produced from wastewater treatment (or that are removed from tanks bottoms and bilges), may require management as used oil or hazardous waste.

4.4.1 Direct Discharges

s wastewater discharged directly to waters of the United States?

If your ship scrapping facility discharges wastewater directly into waters of the United States, it is a direct discharger and subject to the requirements of the NPDES permitting

program (40 CFR 122). The NPDES program controls direct discharges or "point source" discharges into navigable waters. ***If your facility is not a direct discharger, refer to Section 4.4.2. Indirect Discharges.***

What is a point source? A point source is broadly defined as any discernable, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operations, or vessel or other floating craft, from which pollutants are or may be discharged (40 CFR 122.2).

Does your facility have an NPDES permit?

As a direct discharger, you must apply for and obtain a permit under the NPDES program. Permits must be obtained from EPA or the authorized state or territory.

As of December 1999, EPA has authorized 43 states and one territory to administer the NPDES program. Where permit authority has not been delegated to the state or territory, your facility must apply for a permit directly from EPA rather than the state authority. EPA has not delegated authority to the following states and territories: Alaska, Arizona, District of Columbia, Idaho, Maine, Massachusetts, New Hampshire, New Mexico, Pacific Territories, Puerto Rico, and the federal Tribal Lands.

Tip: Aside from needing a permit for your bilge water and wastewater discharges, your facility may also need an NPDES storm water permit for the storm water runoff from your facility.

An NPDES permit typically includes effluent limits, sampling or monitoring requirements, and reporting requirements. In addition, it may contain other site-specific requirements, such as (1) construction schedules, (2) best management practices (BMPs), (3) additional monitoring for non-regulated pollutants, and (4) spill prevention plans.

Tip: For facilities in coastal areas, states may include stricter permit limits in order to meet the requirements of the Coastal Zone Management Act (CZMA). For more information on these requirements, contact your permitting agency.

An inspector may ask to see a copy of your facility's NPDES permit covering wastewater discharges.

Complying with the effluent limits specified in the NPDES permit

An NPDES permit sets limits, often referred to as **effluent limits**, on the amount of pollutants that can be discharged to surface waters. These limits are based on either available wastewater treatment technology or on the specific water quality standards of the surface water.

As part of the permit application, your facility may be required to analyze its wastewater for a variety of pollutants, including biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), total suspended solids (TSS), ammonia (as N), temperature, and pH.

Is wastewater monitoring conducted in accordance with the NPDES permit?

Your ship scrapping facility typically will not have a continuous production of industrial wastewater. However, as a condition of your NPDES permit, your facility may be required to periodically monitor your wastewater, which may include the bilge and ballast water, to determine pollutant concentrations prior to discharge. The bilge and ballast water may be tested while still onboard in the ship's compartments of tanks or after being transferred to onshore storage tanks. The frequency and tests required will be specified in the permit. The results of the wastewater monitoring must be submitted as a report to the permitting agency.

Removing oil from wastewater. To reduce pollutant concentrations, particularly oil, a facility may treat wastewater using an oil-water separator or some comparable wastewater treatment technique (see Section 4.5).

Sometimes the pollutant concentrations of the bilge and ballast water onboard a ship will be provided to the ship scrapping facility when the ship is received for scrapping. However, if this documentation is not provided, the facility will be required to test the water prior to discharge.

Wastewater, particularly ballast water, should be tested to determine the concentration of chromium. This is due to the practice of adding sodium chromate to ballast water (and sometimes bilge water) to prevent algal growth during a ship's operation. Chromium may be present at a high concentration which will make the water a hazardous waste.

Are all monitoring records maintained as required by the NPDES permit?

It is extremely important for your facility to keep accurate records of wastewater monitoring activities. The records generated under the NPDES program must include:

Tip: Compare the monitoring results to verify that your facility meets the effluent limits in its NPDES permit.

- The date, exact place, and time of sampling or measurements
- The individual(s) who performed the sampling or measurements
- The date(s) analyses were performed
- The individual(s) who performed the analyses
- The analytical techniques or methods used
- The results of such analyses (e.g., bench sheets, instrument readouts, computer disks, etc.) (40 CFR 122.41)

NPDES permits require that all monitoring records be maintained at the facility for at least three years. *Note: Many states require these records to be maintained for at least five years.*

During an inspection, the inspector may ask to see the facility's wastewater monitoring records.

Are additional NPDES reporting requirements met?

While some reporting requirements are facility-specific, there are several NPDES reporting requirements which apply to all facilities. In the case of the events described below, a facility must report to EPA or the authorized state regulatory agency within the required timeframe. These reporting requirements are as follows:

Event	Reporting Time Frame
Any noncompliance with your permit that may endanger health or the environment	Within 24 hours of becoming aware of violation; written submission within five days
Other noncompliance	At the time the facility's monitoring reports are submitted
Any planned physical alterations or additions to your facility	As soon as possible prior to alterations or additions
Any planned changes in your discharge that may result in noncompliance	In advance of changes

4.4.2 Indirect Discharges

Is wastewater discharged to a POTW?

As an indirect discharger, your facility must meet the requirements of the National Pretreatment Program (40 CFR 403). Under this program, industrial sources discharging wastewater to POTWs must control the amount of pollutants discharged and meet certain pollutant limits established by EPA, the state, and/or the local authority. The control of these pollutants may necessitate treatment of the wastewater prior to discharge to the POTW — therefore the term "pretreatment."

> **What is pretreatment?** The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW [40 CFR 403.3(q)].

There are three types of pretreatment requirements:

- **General pretreatment standards**. At a minimum, these federal general pretreatment standards apply to your ship scrapping facility's discharge to a POTW.

- **Categorical pretreatment standards**. Currently, ship scrapping facilities are **NOT** subject to categorical standards. These standards establish numerical limits for specific categories of industrial sources on the discharge of particular toxic pollutants that could interfere with or pass through POTWs.

- **Local limits.** These are locally-established requirements for specific facilities which may also apply to your facility.

Are general pretreatment standards for wastewater discharges met?

In response to the potential problems caused by industrial wastewater, federally-required general pretreatment standards were developed to prevent the discharge of pollutants to the POTW that will:

- Interfere with the operation of the POTW
- Pass though the POTW untreated
- Create problems with disposal of sludge from the POTW
- Cause problems to sewer system or treatment plant workers from exposure to chemicals

Your facility, as an indirect discharger, must meet these general pretreatment standards. Basically, these standards include general and specific discharge prohibitions [40 CFR 403.5(a) and (b)] as described below.

- **General prohibitions** do not allow the discharge of any pollutant(s) to a POTW that causes pass through or interference.

  - *Pass through* is a discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge(s) from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit.

  - *Interference* is a discharge, which, alone or in conjunction with a discharge(s) from other sources, both (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal; and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit or prevents the use or disposal of sewage sludge.

- **Specific prohibitions** do not allow the discharge of certain types of wastes from all non-domestic sources, including the following:

  - Discharges containing pollutants which create a fire or explosion hazard in the POTW.

  - Discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to handle such discharges.

  - Discharges containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference.

  - Discharges of any pollutants released at a flow rate and/or concentration which will cause interference with the POTW.

  - Discharges of heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case in such quantities that the temperature at the POTW treatment plant exceeds above 104EF (40EC) unless an alternative temperature limit is approved.

Contact your POTW. The primary enforcement authority for pretreatment regulations is often the local POTW. **To assure compliance, your facility must contact its local POTW**, even if it has already contacted the state regulatory agency or EPA region. Where the POTW local limits are **more** stringent than federal requirements, these local limits will **replace** the federal requirements.

- Discharges of petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

Local POTWs with approved pretreatment programs have responsibility for enforcing pretreatment requirements.

Does the facility have a pretreatment permit from the POTW for its wastewater discharges?

In addition to the local limits, your POTW may require your facility to have a pretreatment permit for its wastewater discharges. This permit usually includes effluent limits, as well as monitoring, reporting, and recordkeeping requirements. While a POTW is required by federal law to permit significant industrial users (SIUs), it may also choose to issue permits to <u>any</u> of its industrial dischargers.

Remember — even if a permit is not required, your facility will still need to get *approval* from the POTW for its industrial wastewater discharges to the POTW.

Prior to the inspection, the inspector may contact the POTW to determine if a pretreatment permit is required for your facility. During the inspection, the inspector may review the permit to determine if your facility is in compliance with permit conditions.

Are local POTW limits for wastewater discharges met?

Under the pretreatment program, a POTW can implement and enforce specific "local limits" for any or all of the industrial facilities from which it receives wastewater as part of its pretreatment program activities. Basically, these limits are designed to protect the POTW and its workers and to meet the POTW's own NPDES permit limits.

The POTW used by your ship scrapping facility may or may not have local limits. Prior to discharging to the POTW, your facility should contact the POTW to see if any pretreatment conditions or local limits apply to your wastewater discharges. **Remember — even if your facility is not subject to the POTW's local limits, the general pretreatment standards do apply.**

Prior to the inspection, the inspector may contact the POTW to determine if any pretreatment conditions or local limits apply to your facility. During the inspection, the inspector may review facility records to determine if your facility is in compliance with applicable pretreatment requirements, including local limits.

Are monitoring and recordkeeping requirements met for indirect wastewater discharges?

The monitoring and recordkeeping requirements applicable to your facility will be specified in its POTW pretreatment permit. Your facility may be required to sample the bilge and ballast water prior to discharging to the POTW, either as a condition of the permit or as required by the POTW.

Sampling or monitoring records must be maintained for all samples collected for at least three years. These records, which should be available for review at any time, must include:

- Date, exact place, method, and time of sampling
- Individual(s) who performed the sampling
- Date(s) analyses were performed
- Individual(s) who performed the analyses
- Analytical techniques or methods used
- Results of such analyses [40 CFR 403.12(o)]

Meeting reporting requirements for indirect wastewater discharges

The reporting requirements applicable to your facility will be specified in its wastewater discharge permit. In addition to these reporting requirements, there are some reporting requirements that apply to **all** indirect dischargers, even if they do not have a permit. These are presented below.

- Immediately notify the POTW or state of a discharge of wastewater that could cause problems to the POTW, including slug loading [40 CFR 403.12(f)].

- Notify the POTW or state of substantial change in wastewater discharge **prior to the change** [40 CFR 403.12(j)].

- Notify the POTW, state hazardous waste authorities and EPA Regional Waste Management Division Director of a discharge of hazardous waste. This is a one-time notification required of those who discharge more than 15 kg of a hazardous substance in a month; or if the substance is acutely hazardous and any amount is discharged [40 CFR 403.12(p)].

  Tip: A list of acutely hazardous wastes can be found in 40 CFR 261.30(d) and 40 CFR 261.33(e).

  The written notification must include:

  - Name of the listed hazardous waste as listed in 40 CFR 261.
  - EPA hazardous waste number.
  - Type of discharge.
  - Certification that a program is in place to reduce the amount and toxicity of the hazardous waste that is generated, to the degree that is economically feasible.

  If discharging more than 100 kg of hazardous waste in one month, the notification also must include:

  - Identification of the hazardous waste constituents that are contained in the waste.

  - An estimate of the mass and concentration of the constituents in the waste stream discharged during the month.

  - An estimate of how much will be discharged in the next 12 months. *If any new substance is listed under RCRA and a facility discharges the substance, the facility must notify the authorities cited above within 90 days of the new listing*

Does your facility pay a surcharge for discharges to the POTW?

Even if permits are not required, wastewater treatment by POTWs costs money and most POTWs charge according to the volume of wastewater treated. Many POTWs charge flat rates per unit flow and pollutants, regardless of concentration. Other POTWs may charge

extra if the waste load exceeds certain specified levels. This extra charge is called a surcharge. Surcharges are used for pollutants that typically can be treated at the wastewater treatment plant such as biochemical oxygen demand (BOD) and total suspended solids (TSS).

A surcharge is defined as a charge that is based on the pounds of waste material in industrial wastewater **in excess** of a facility's "normal" levels. The surcharge is levied in addition to the normal sewer service charge which is the regular charge for treating normal strength wastes and is generally based on volume alone. Because a surcharge typically is based on the pounds of waste above "normal," there is an economic incentive for facilities to reduce the strength of these wastes.

4.5 WASTEWATER TREATMENT AND WASTE MANAGEMENT

Bilge and ballast water often contain concentrations of many pollutants, particularly oil and fuel, which must be reduced prior to wastewater discharge to a POTW or directly to surface waters. This reduction of pollutant concentrations is often required for your facility to meet permit and/or local limits. Wastewater treatment processes may produce waste oil and oily sludge. These materials may be stored in containers or holding tanks and depending on their properties, either: (1) managed as used oil or (2) managed and disposed of as hazardous waste. The effluent discharges from an oil-water separator typically contain the same constituents present in bilge water, but with lower concentrations of oil and grease and oil-soluble components.

4.5.1 Treating Wastewater

Is an oil-water separator system used for wastewater treatment?

"Treating" bilge and ballast water when still onboard a ship or stored in onshore tanks is typically accomplished using some type of oil-water separator system. While there are several types of oil-water separators available, it is important to install and use one that can remove any free, dispersed, and emulsified oils present in the wastewater. Oily water from other sources at the facility, such as tank bottoms, can also be treated using an oil-water separator. The end products of this process generally include waste oils, oily sludge, and effluent discharges. The effluent discharges typically contain the same constituents as were present in the original wastewater, but with lower concentrations of oil and grease and oil-soluble components.
Note: *Although an oil-water separator should be used, some ship scrapping facilities still decant liquids as a means of separation.*

An Alternative to an Oil-Water Separator System. In addition to oil-water separation systems, there are other types of wastewater treatment systems available for use. For instance, a microbial treatment system can be used to degrade oil and fuel contaminants in bilge and ballast water. One type of biological treatment system uses two tanks. Wastewater is pumped to the first tank where microbes are added to break down the petroleum contamination. The wastewater is pumped to a second tank where it is aerated to remove free oil. Chlorine tablets are added to kill the microbes, and the treated water can then be discharged to a sanitary sewer. This type of system can be placed near the dock area so that the bilge and ballast water can be pumped directly from the ships. If sized and operated properly, a microbial treatment system can eliminate the oil and fuel contaminants in wastewater, as well as other oily non-hazardous wastewater generated at the facility.

Is evaporation used for treatment?

If not chromated, some facilities pump ballast water into an onsite evaporation pit for treatment.

4.5.2 Storing Wastes in Tanks

While various types of containers may be used to store oil and fuel removed from a ship, facilities commonly use underground storage tanks (USTs) (40 CFR 280) or aboveground storage tanks (ASTs) [40 CFR 112.7(e)(2)].

Underground Storage Tanks. An UST is a tank and any underground piping connected to the tank that has at least ten percent of its combined volume underground. To protect human health and the environment from dangerous releases, USTs must have leak detection and spill, overfill, and corrosion protection. Other UST requirements address notification, installation, corrective action, financial responsibility, and recordkeeping.

A Basic Checklist for USTs. EPA has a checklist that can help your facility evaluate its USTs. Your facility can use the checklist to see how closely it meets the federal regulations for USTs (40 CFR 280). The checklist can also help your facility prepare for official inspections of USTs. The checklist can be accessed at http://www.epa.gov /swerust1/ cmplastc/cheklist.htm.

Tanks installed after 1988 need to comply with all UST requirements upon installation. Tanks installed before 1988 had until December 1998 to comply with spill, overfill, and corrosion protection requirements, but these USTs should be in compliance with all requirements now.

Warning: Now that the **December 22, 1998** deadline for all UST systems has passed, owners and operators of facilities that continue to operate UST systems not meeting the federal requirements for leak detection, and spill, overfill, and corrosion protection are **out of compliance**. Besides posing a threat to human health and the environment, such operation can subject the owner/operator to considerable fines.

Some USTs are not covered by federal regulations (e.g., tanks storing heating oil used on premises where it is stored; tanks on or above the floor of underground areas, such as basements or tunnels; emergency spill and overflow fill tanks); however, such USTs may be regulated by your state or local regulatory agency.

For more information on USTs, visit EPA's Office of Underground Storage Tanks website at http://www.epa.gov/OUST/. Check with the state and local regulatory agencies to find out if there are additional or more stringent state and/or local UST requirements.

Aboveground Storage Tanks. ASTs, depending on their storage capacities, may be subject to federal requirements under 40 CFR 112, as well as state and local requirements. State and local requirements typically incorporate standards established by organizations such as the National Fire Protection Association (NFPA) and the American Petroleum Institute. For more information about the NFPA requirements, call the NFPA at 617-770-3000 or access their website at http://www.nfpa.org.

Note: USTs that store flammable and combustible liquids must also meet NFPA provisions for tank storage and piping systems.

Construction, design, and operation requirements for ASTs are typically governed by state and local fire marshals or environmental officers. In addition to consulting with your fire marshal, your facility should also check with your state regulatory agency for information on additional AST requirements.

Has the state UST program office been notified of any USTs on site?

If your facility has onsite regulated UST systems, it is required to submit a notification form to the state UST program office. This form includes certification of compliance with federal requirements for installation, cathodic protection, release detection, and financial responsibility for UST systems installed after December 22, 1988. For more information on how to obtain and complete the form, call EPA's RCRA/UST, Superfund, and Emergency Planning and Community Right-to-Know Act (EPCRA) Hotline at 1-800-424-9346.

An inspector may check with the state UST program office to verify that the number of USTs match the number reported on the notification form(s) to the state.

Is leak detection conducted for tanks and piping?

Facilities with federally regulated UST systems must conduct leak detection. The monthly monitoring methods that may be used to conduct leak detection of tanks include the following:

Note: Facilities with USTs may use inventory control and tank tightness testing instead of one of the monthly monitoring methods for a maximum of 10 years after the tank is installed or upgraded with corrosion protection (40 CFR 280.41).

- Automatic tank gauging
- Monitoring for vapors in soil
- Interstitial monitoring
- Groundwater monitoring
- Statistical inventory reconciliation
- Other methods approved by the regulatory authority.

In addition, any pressurized piping must have: (1) monthly monitoring (as described above) or annual line testing, and (2) an automatic flow restrictor, an automatic shutoff device, or a continuous alarm system installed. Check with your state UST program office to determine which leak detection methods are acceptable in your state.

Do USTs meet requirements for spill, overfill, and corrosion protection?

Your facility must operate USTs to ensure that spills, overflows, and corrosion do not cause releases into the environment. As of December 22, 1998, your facility was required to meet the federal requirements for spill, overfill, and corrosion protection for all of its UST systems see 40 CFR 280.

Are ASTs inspected on a periodic basis to verify tank integrity?

ASTs must be inspected periodically for tank integrity [40 CFR 112.7(e)(2)(vi)]. Several techniques are available to test tank integrity such as:

- X-ray or radiographic analysis to measure wall thickness and detect cracks and crevices in metal
- Ultrasonic analysis to measure shell metal thickness
- Hydrostatic testing to identify leaks caused by pressure
- Visual inspection to detect cracks, leaks, or holes
- Magnetic flux eddy current test used in conjunction with ultrasonic analysis to detect pitting.

Your facility should check the outside of the tank for signs of deterioration, leaks that might cause a spill, and accumulated oil inside the diked areas. AST tank bottoms may be subject to extensive corrosion, which may go undetected during visual inspections. A tank also may fail due to surface corrosion. Pitting creates a high potential for AST failure. Holes may form in rusty tanks causing the tank to leak. Your facility can prevent corrosion by taking measures appropriate for the type of tank installation and foundation (e.g., dielectric coatings, carefully engineered cathodic protection, and double-bottom tanks).

Your facility should also examine the foundation and supports of each tank. If a tank sits on a foundation, check for large gaps between the foundation and the tank bottom and for crumbling or excessive cracking in a concrete foundation. Assess whether a storage tank foundation provides adequate support for the tank. If the tank sits directly on the ground, check for large gaps between the ground surface and the tank bottom.

All leaks should be documented and repaired immediately.

Using secondary containment to prevent oil discharges

For ASTs, your facility is required to install appropriate containment and diversionary structures or equipment, such as dikes, berms, and retaining walls (40 CFR 112.7), to prevent discharges of oil from reaching navigable water, unless it can be clearly demonstrated that installation of such structures or equipment is not practicable. Impracticability pertains primarily to those cases where severe space limitations or other physical constraints may preclude installation of structures or equipment to prevent oil from reaching navigable water. Demonstrating impracticability on the basis of economic considerations is not acceptable.

An inspector may verify that there are appropriate containment and diversionary structures or equipment at the facility for all ASTs.

4.5.3 Managing Oil/Oily Wastes as Used Oil

Used oil is managed according to the Used Oil Management Standards (40 CFR 279). As a facility that handles used oil, your facility must follow certain good housekeeping practices. These management standards are common sense, good business practices designed to ensure the safe handling of used oil to maximize recycling and minimize disposal. Note: Some states may have stricter disposal requirements. Contact your state regulatory agency to determine the used oil disposal requirements.

As noted earlier, EPA defines used oil as "any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities." A substance must meet each of the following three criteria to meet the definition of used oil:

- **Origin.** This criterion is focused on the oil's origin. Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from EPA's definition of used oil.

- **Use.** This criterion is based on whether and how the oil is used. Oils used as lubricants, hydraulic fluids, heat transfer fluids, buoyants, and for other similar purposes are considered used oil. Unused oils, such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill, do not meet EPA's definition of used oil because they have never been "used." EPA's definition also excludes products used as cleaning agents or used solely for their solvent properties, as well as certain petroleum-derived products like antifreeze and kerosene.

- **Contaminants.** To meet EPA's definition, used oil must be contaminated with either physical or chemical impurities as a result of being used. This includes residues and contaminants generated from handling, storing, and processing used oil. Physical contaminants may include metal shavings, sawdust, or dirt. Chemical contaminants could include solvents, halogenated volatile organics (i.e., halogens), or saltwater.

Used oil and substances containing or covered with used oil are regulated according to the Used Oil Management Standards if they meet certain conditions. Otherwise, they are subject to being managed according to other regulations [40 CFR 279.10(b)].

The following are regulated as used oil:

- Used oil produced on a ship from normal shipboard operations is subject to regulation as a used oil when it is transported ashore.

- A mixture of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability if the resultant mixture does not exhibit the characteristic of ignitability.

- Except as described in the bullet above, a mixture of used oil and a hazardous waste that solely exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) if the resultant mixture does not exhibit any of the hazardous waste characteristics.

- Materials which contain or are otherwise contaminated with used oil that are recycled (e.g., burned for energy recovery). This includes the used oil drained or removed from these materials.

The following are not regulated as used oil:

- Oils and oily wastes that do **not** meet the definition of used oil.

- A mixture of used oil and a hazardous waste that exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) if the resultant mixture exhibits any hazardous waste characteristics. This mixture must be regulated as a **hazardous waste**.

- A mixture of used oil and a **listed** hazardous waste. This includes used oil mixtures containing more than 1,000 ppm total halogens. (EPA presumes that the used oil has been mixed with a listed halogenated hazardous waste.) This mixture must be regulated as a **hazardous waste**.

- Materials which contain or are otherwise contaminated with used oil if the used oil has been properly drained or removed (i.e., there are no visible signs of free-flowing oil remaining on or in the materials) from them. These materials are then not defined as used oil and therefore, are not regulated as used oil.

Preventing the mixing of used oil with hazardous waste

Hazardous waste fluids, such as used solvent, gasoline, or other hazardous substances, should **not be mixed** with used oil, or the entire volume may be classified as hazardous waste. Basically, the following mixing rules apply:

> **Tip: Avoid mixing used oil and hazardous waste.** If used oil is mixed with hazardous waste, the entire volume will probably have to be managed as hazardous waste. The safest practice is to *never* mix any other wastes with used oil.

- A mixture of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability must be managed as a hazardous waste if the resultant mixture exhibits the characteristic of ignitability.

- A mixture of used oil and a hazardous waste that exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) must be regulated as a **hazardous waste** if the resultant mixture exhibits any hazardous waste characteristics.

- A mixture of used oil and a **listed** hazardous waste must be regulated as a **hazardous waste**. This includes used oil mixtures containing more than 1,000 ppm total halogens. (EPA presumes that the used oil has been mixed with a listed halogenated hazardous waste.)

The safest practice is never to mix any other waste with used oil. However, if you have questions about which specific products may be mixed with used oil, call the **RCRA/UST, Superfund, and EPCRA Hotline** at **1-800-424-9346.**

Are containers/tanks leak free and labeled "used oil"?

Your facility can store used oil in containers (e.g., 55-gallon steel drum) or tanks (e.g., underground or aboveground storage tanks). These containers and tanks must be leak free and labeled with the words **"Used Oil."** Some facilities have *pipes* that connect to a used oil storage tank. In this case, the piping should also be labeled with the words **"Used Oil."** No special labels are necessary, provided that the words "used oil" are visible at all times. Spray painting, crayon, or handwritten (preferably not in pencil) labels are okay.

> **Note:** If oil contains >50 ppm of PCBs, then the PCB labeling procedures apply to any container storing such oil (see Section 3).

An inspector may inspect all oil storage containers or tanks to verify that they are labeled properly and there is no evidence of leaks or discharges of oil.

Are used oil and fuel recycled or sent to a reclaimer?

Recycling is the most environmentally protective and often the most economical approach to handling used oil. Your facility most likely sends used oil and fuel to a recycling center or reclaimer. The used oil management standards (40 CFR 279) include a recycling presumption, that is, an assumption that all used oil that is generated will be recycled. This is based on the fact that almost all used oil *can* be recycled. Facilities should maintain all records on their used oil storage and recycling activities.

Your facility has two options for transporting used oil: (1) using a transporter or (2) self-transporting. Your facility must ensure that your used oil is transported to an approved recycling center by transporters who have obtained EPA identification numbers. If self-transporting *more than 55 gallons* of used oil offsite to an approved recycling center, your facility is required to (1) have an EPA identification number and (2) be licensed as a used oil transporter.

Tip: Check your transporter's qualifications to make sure they take your used oil to a reputable recycling center. Measure the level of oil in your tank before and after the transporter collects it to be certain the oil collected matches the amount the transporter has reported.

Another method of recycling used oil is burning for energy recovery. Your facility may burn the used oil in an onsite heater which is used to heat parts of the facility or heat hot water, or it either has a transporter or takes its own oil to an approved used oil burner. Used oil burned offsite may be used as fuel in industrial furnaces, utility boilers, or hazardous waste incinerators.

Used oil should never be disposed of in sewers, drains, dumpsters, on the ground, or used as dust suppressants.

Note: Though not the environmentally preferred method, nonhazardous sludge may be disposed of in a solid waste landfill, which is also known as a municipal landfill (40 CFR 258), if it is not sent to a recycling center. Your facility should contact its municipal solid waste landfill for more information on industrial sludge disposal requirements.

An inspector may track the shipments from your facility through the reclaimers to verify that the shipments of fuel and oil do not contain spent solvent or other hazardous waste liquids.

4.5.4 Managing Oil/Oily Wastes as Hazardous Waste

Are oil/oily wastes hazardous?

Oil and oily wastes from wastewater treatment or other sources may contain substances in concentrations which make them hazardous. If hazardous, they must be managed and disposed of according to the RCRA hazardous waste regulations (40 CFR 261-270).

If your facility has determined that these oil/oily wastes are not classified as used oil, then it must test them to determine pollutant concentrations and evaluate if they are hazardous. Tests may be conducted for various contaminants, including but not limited to: metals, such as lead, arsenic, chromium, and cadmium; polychlorinated biphenyls (PCBs); total halogenated volatile organics; and the flash point.

To be considered "hazardous waste," materials must first meet EPA's definition of "solid waste." Solid waste is discarded material, such as garbage, refuse, and sludge, and it can include solids, semisolids, liquids, or contained gaseous materials. Solid wastes that meet the following criteria are considered hazardous and subject to RCRA regulations 40 CFR 261:

- **Listed waste.** Waste is considered hazardous if it appears on one of four lists of hazardous wastes published in 40 CFR 261 Subpart D. Currently, more than 400 wastes are listed. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not properly managed. Even when properly managed, some listed wastes are so dangerous that they are called "acutely hazardous wastes." Examples of acutely hazardous wastes include wastes generated from some pesticides that can be fatal to humans even in low doses.

- **Characteristic waste**. If waste does not appear on one of the hazardous waste lists, it still might be considered hazardous if it demonstrates one or more of the following characteristics:

  - *Ignitable*: Ignitable wastes can create fire under certain conditions (e.g., temperature, pressure) or are spontaneously combustible (40 CFR 261.21). Examples include certain used paints, degreasers, oils and solvents.

- *Corrosive:* Corrosive wastes are acids or bases that are capable of corroding metal, such as storage tanks, containers, drums, and barrels (40 CFR 261.22). Examples include rust removers, acid or alkaline cleaning fluids, and battery acid.

- *Reactive:* Reactive wastes are unstable and explode or produce toxic fumes, gases, and vapors when mixed with water (40 CFR 261.23). Examples include lithium-sulfide batteries and explosives.

- *Toxic:* Toxic wastes are harmful or fatal when ingested or absorbed, or leach toxic chemicals into the soil or groundwater when disposed of on land (40 CFR 261.24). Examples include wastes that contain high concentrations of heavy metals, such as cadmium, lead, or mercury.

Determining toxicity: A facility can determine if its waste is toxic by having it tested using the Toxicity Characteristic Leaching Procedure (TCLP), or by process knowledge. TCLP can be done at a local certified laboratory. It is designed to replicate the leaching process and other effects that occur when wastes are buried in a typical municipal landfill. If the waste contains any of the regulated contaminants at concentrations equal to or greater than the regulatory levels, then the waste exhibits the toxicity characteristic. Process knowledge is detailed information on wastes obtained from existing published or documented waste analysis data or studies conducted on hazardous wastes generated by similar processes. For example, EPA's lists of hazardous wastes in 40 CFR 261 (as discussed above) can be used as process knowledge.

During an inspection, the inspector may ask the facility if it has tested the oil and oily wastes to determine their pollutant concentrations and if they are hazardous. He/she may ask to review the test results.

If your facility generates hazardous waste, what is your generator category?

Determining your generator category. Your facility's hazardous waste generator category is determined by the amount of hazardous waste that it generates each month (40 CFR 261). There are three federal categories of hazardous waste generators:

- **Conditionally exempt small quantity generator (CESQG)**. CESQGs generate #220 pounds (100 kg) of hazardous waste per month or #220 pounds of spill cleanup debris containing hazardous waste per month. CESQGs have no maximum on-site time

limits for storage, *but cannot accumulate more than 2,200 lbs. (1,000 kg) of hazardous waste onsite*. If a CESQG accumulates more than this amount, it becomes an SQG or LQG.

- **Small quantity generator (SQG)**. SQGs generate >220 pounds (100 kg) and <2,200 pounds (1,000 kg) of hazardous waste per month or >220 pounds and <2,200 pounds of spill cleanup debris containing hazardous waste per month. SQGs may accumulate no more than 6,000 kg of hazardous waste in storage, which may be stored on site for no more than 180 days (or no more than 270 days if the treatment/disposal facility is more than 200 miles away). If an SQG accumulates more than the specified amount, it becomes an LQG.

- **Large quantity generator (LQG)**. LQGs generate $2,200 pounds (1,000 kg) of hazardous waste per month or $2,200 pounds of spill cleanup debris containing hazardous waste per month. LQGs may accumulate any amount of hazardous waste for no more than 90 days.

Note: Facilities that generate 2.2 pounds or less of acutely hazardous wastes per month are classified as CESQGs, whereas facilities that generate more than 2.2 pounds of acutely hazardous wastes per month are classified as LQGs.

Adding waste quantities. To determine which category applies to your facility, your facility must count all quantities of listed and characteristic hazardous wastes. These include wastes that are: (1) generated and collected at your facility prior to treatment or disposal; and (2) packaged and transported offsite.

Many hazardous wastes are liquids and are measured in gallons, not pounds. To approximate the number of pounds of liquid your facility has, multiply the number of gallons by 8.3 (because a gallon of water weighs 8.3 pounds and many liquids have a density similar to water).

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- 27 gallons (about half of a 55-gallon drum) of waste with a density similar to water weighs about 220 pounds (100 kg).
- 270 gallons of waste with a density similar to water weighs about 2,200 lbs (1,000 kg).

When adding up all the hazardous wastes generated, keep in mind that your facility does NOT have to count the following:

- Wastes that are left on the bottom of containers that have been emptied by conventional means (i.e., pouring or pumping) and where no more than 2.5 cm (1 inch) of residue remains in the bottom of the container <u>or</u> no more than 3 percent by weight of the total capacity of the container remains in the container if the container is less than or equal to 110 gallons in size.

- Residues in the bottom of storage tanks, if the residue is not removed (i.e., residues left in the bottom of the storage container are not counted as long as they are not removed when the tank is refilled).

- Wastes that are reclaimed continuously on site without storing the waste prior to reclamation.

- Wastes that have already counted once during the calendar month, and treated onsite or reclaimed in some manner and used again.

- Wastes that are directly discharged to a municipal treatment plant or POTW without being stored or accumulated first.

- Waste oil that meets the criteria for used oil and is to be managed and handled as used oil [40 CFR 279].

- Scrap metal that is recycled [40 CFR 261.6(a)(3)].

If your facility is a CESQG, does it meet all applicable requirements?

As a CESQG, your facility's requirements are quite simple. There are three basic hazardous waste management requirements that apply to CESQGs:

- Identify all hazardous and acutely hazardous wastes [40 CFR 262.11]. For help in identifying hazardous wastes, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

  An inspector may review your facility's waste determinations and any analytical data.

- Do not generate more than 220 lbs. (or 100 kg) per month of hazardous waste or more than 2.2 lbs. (1 kg) per month of acutely hazardous waste (this includes any wastes

your facility has shipped off site for disposal during that month); and never store more than 2,200 lbs. (1,000 kg) of hazardous waste or 2.2 lbs. of acutely hazardous waste for any period of time [40 CFR 261 and 262].

An inspector may evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category.

- Ensure proper disposal of your hazardous waste. For CESQGs, proper treatment and disposal of hazardous wastes are fairly simple. It involves ensuring that the waste is shipped to one of the following facilities:

  – A state or federally regulated hazardous waste management treatment, storage, or disposal facility (if your facility's waste is hazardous).

  – A facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste.

  – A facility that uses, reuses or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling).

  Self-transporting hazardous waste. CESQGs are allowed to transport their own wastes to the treatment or storage facility, unlike SQGs and LQGs which are required to use a licensed, certified transporter. While there are no specific RCRA requirements for CESQGs who transport their own wastes, Department of Transportation (DOT) requires all transporters of hazardous waste to comply with all applicable DOT regulations. Specifically, DOT regulations require all transporters, including CESQGs, transporting hazardous waste that qualifies as DOT hazardous material to comply with EPA hazardous waste transporter requirements see 40 CFR 263.

- As a CESQG, your facility is not required by federal laws to train its employees on hazardous waste handling or emergency preparedness, however, it is strongly advised.

Keep in mind that employees responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120.

Your facility must comply with the above requirements to retain its CESQG status, and remain exempt from the more stringent hazardous waste regulations that apply to SQGs and LQGs.

Though not required, it is recommended that your facility follow the waste storage and handling requirements for SQGs to minimize the possibility of any leaks, spills, or other releases that potentially could cause economic hardship to your facility. States may have more stringent and/or different requirements, so contact your state hazardous waste agency for these requirements.

If your facility is an SQG or LQG, does it meet all applicable requirements?

If your facility determines, based on the amount of waste generated, that it is an SQG or LQG, it must comply with a variety of requirements covering the storage and handling, treatment, and disposal of the hazardous waste, from generation to final disposal. These requirements include:

- **Waste identification**. As a generator, your facility must determine whether wastes are hazardous using the hazardous waste identification process [40 CFR 261]. For assistance, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

  An inspector may review your facility's waste determinations and any analytical data.

- **EPA identification number**. An EPA hazardous waste generator identification number must be entered on all hazardous waste manifests [40 CFR 262.12]. For assistance in obtaining a hazardous waste generator identification number (EPA form 8700-12 "Notification of Hazardous Waste Activity"), your facility may contact EPA or the state regulatory agency.

- **Accumulation and storage limits**. Onsite accumulation (storage) limits are based on the total **weight** of hazardous waste that can be accumulated at any time at your facility before it must be shipped offsite [40 CFR 262.34].

  An inspector may evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category (e.g., SQG or LQG).

- **Container management**. Your facility can store hazardous waste in 55-gallon drums, tanks, or other suitable containers, and it must comply with rules intended to protect

human health and the environment and reduce the likelihood of damages or injuries caused by leaks or spills [40 CFR 265].

An inspector may look at all hazardous waste on site noting the size and type of containers, their condition, and whether they are closed and protected from the weather. He/she may check the labels on the containers for the words "hazardous waste," and verify that the dates information is complete on the label. The inspector may also check the containment for cracks or leaks.

- **Personnel training**. Proper waste handling can save your facility money in waste treatment and disposal and in lost time due to employee illness or accidents. Your facility must train its employees on the procedures for properly handling hazardous waste, as well as on emergency procedures [40 CFR 262.34(a)]. For LQGs, the training must be formalized and be completed by employees within six months of accepting a job involving the handling of hazardous waste, and your facility is required to provide annual review of the initial training.

> Keep in mind that employees responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120, in addition to EPA's hazardous waste management training.

An inspector may check personnel records, including job titles, to determine when hazardous waste duties were assigned and if proper training was provided by your facility.

- **Contingency planning, emergency procedures, and accident prevention**. If an LQG, your facility is required to have a **written contingency plan**. If an SQG, your facility must have **basic contingency procedures** in place. Although a **written** contingency plan is not federally required for SQGs or CESQGs, it is strongly recommended. It is also important to check with your state and local authorities for any additional contingency plan or emergency preparedness requirements [40 CFR 262].

An inspector may review your facility's contingency plan or basic contingency procedures, and ask about any incidents requiring implementation of the plan or procedures.

- **Hazardous waste shipment labeling and placarding**. When your facility prepares hazardous wastes for shipment, it must put the wastes in properly labeled containers that are appropriate for transportation according to the DOT regulations (40 CFR 262).

- **Reporting and recordkeeping requirements**. Your facility is required to meet various reporting and recordkeeping requirements as part of your hazardous waste management activities. Reports include the following:

  - **Manifest form**. The Uniform Hazardous Waste Manifest Form (EPA Form 8700-22) is a multi-copy shipping document that reports the contents of your shipment, the transport company used, and the treatment/disposal facility receiving the wastes (40 CFR 262.20). Your facility (i.e., the hazardous waste generator), the transporter, and the treatment/disposal facility must each sign this document and keep a copy. Your facility must keep the copy of the manifest signed by all three parties on file for three years.

  - **Exception report**. Exception reports document a missing return copy of the hazardous waste manifest. Your facility must maintain copies of exception reports for three years.

  - **Biennial report**. If an LQG, your facility must submit a biennial report (EPA 8700-13A) on March 1 of each even-numbered year to the appropriate EPA or state regulatory agency (40 CFR 262.41). Some states impose this requirement on SQGs. Your facility can obtain biennial report applications and instructions from EPA or its state regulatory agency.

  - **Land disposal restriction notification**. Land disposal restrictions (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment of the waste (40 CFR 268). Your facility is required to provide a **one-time notification** about your wastes to the treatment or disposal facility with the first shipment of waste offsite, and keep a copy in your files.

  In addition to these reports, your facility is required by EPA to keep certain records on file to show that good housekeeping practices and monitoring are being performed. EPA requires that records be kept on file at your facility for three years (40 CFR 262.40). These records include:

- Laboratory analyses and waste profile sheets for determining whether wastes generated by your facility are hazardous.

- Copies of all hazardous waste manifests, land disposal restriction notification, and exception reports.

- Copies of all Notification of Hazardous Activity forms submitted to and received from the state or EPA.

- For LQGs only, copies of: (1) all personnel training plans and documentation that indicate employees have completed the required training; (2) the facility's contingency plan; and (3) the facility's biennial report.

An inspector will most likely review all records, including but not limited to annual or biennial reports and manifests.

4.6 Oil Spill Prevention, Response, and Recovery

Some of the most important activities during ship scrapping are: (1) preventing oil discharges, (2) being prepared to respond to spills, and (3) knowing how to respond to spills and recover spilled materials. EPA issued the Oil Pollution Prevention regulation (40 CFR 112) to prevent oil spills from reaching navigable waters of the United States or adjoining shorelines and to prepare facility personnel in responding to oil spills. The regulation has two sets of requirements — the Spill Prevention Control and Countermeasures (SPCC) plan rule (an oil spill *prevention* program) and the Facility Response Plan (FRP) rule (an oil spill *response* program). Your facility may be subject to this regulation if it, among other things, produces, gathers, stores, transfers, or consumes oil.

4.6.1 Spill Prevention Planning

Does your facility have an SPCC plan?

The intent of an SPCC plan is to prevent the discharge of oil from non-transportation-related fixed facilities (40 CFR 112). Your facility may be required to prepare and implement an SPCC plan if:

- Due to its location, it could reasonably be expected to discharge oil into or upon the navigable waters of the United Stated or adjoining shorelines, AND

- It meets one of the following criteria regarding oil storage:

  - An aboveground storage capacity of more than 660 gallons in a single container.
  - A total aboveground storage capacity of more than 1,320 gallons.
  - A total underground storage capacity of more than 42,000 gallons.

Storage Capacity: Remember, the requirements apply specifically to your storage capacity, regardless of whether the tanks are completely filled.

If subject to the SPCC requirements based on the above description, your facility is required to prepare an SPCC plan and follow the other provisions of the SPCC rule 40 CFR 112.3 through 112.7.

Tip: A sample SSPCC plan can be viewed at http://www.epa.gov/oilspill/sspcc/sampln.pdf.

Does the SPCC plan include all the required information?

Your facility's SPCC plan must be unique to your facility, but also must have certain elements common to all plans (40 CFR 112.7). Specifically, the SPCC plan must:

- Be certified by a registered professional engineer (PE)
- Be kept on site
- Have full management approval
- Conform with all SPCC requirements in 40 CFR 112.7
- Discuss spill history
- Discuss spill prediction
- Be reviewed every three years
- Be amended when a change is made at the facility and recertified by a PE
- Include secondary containment or contingency plans
- Specify spill reporting

An inspector may review the facility's SPCC plan to ensure that it is certified by a registered professional engineer and that it is up-to-date.

4.6.2 Spill Response Planning

If subject to the SPCC requirements, your facility is required to conduct an initial screening to determine whether it is also required to develop a facility response plan (FRP). Under the FRP requirements, owners and operators of facilities that could cause "substantial harm" to the environment by discharging oil into navigable water bodies or adjoining shorelines must prepare FRPs for responding, to the maximum extent practicable, to the worst case discharge and to a substantial threat of such a discharge of oil [40 CFR 112.20 and 112.21, including Appendices A through F]. Facilities subject to the FRP requirements are referred to either as **substantial harm** facilities or **significant and substantial harm** facilities.

Substantial Harm Facilities

If your facility is determined to be a substantial harm facility, it must prepare an FRP which is submitted to EPA **for review**. Your facility may be identified as posing a risk of substantial harm by one of two ways:

- **Either** through a self-determination process (EPA has established criteria located in 40 CFR 112.20 to assist facilities in making the determination - see below),

- **Or** by a determination of the EPA Regional Administrator (RA).

Self-Determination. Your facility has the potential to cause substantial harm if:

- **Either** the facility transfers oil over water to or from vessels **and** has a total oil storage capacity, including both ASTs and USTs, greater than or equal to 42,000 gallons;

- **Or** the facility's total oil storage capacity, including both ASTs and USTs, is greater than or equal to one million gallons **and one of the following is true**:

  - The facility does not have secondary containment for each aboveground storage area sufficient to contain the capacity of the largest AST within each storage area plus freeboard to allow for precipitation;

- The facility is located at a distance such that a discharge could cause injury to fish and wildlife and sensitive environments;

- The facility is located at a distance such that a discharge would shut down a public drinking water intake; or

- The facility has had a reportable spill greater than or equal to 10,000 gallons within the last five years [40 CFR 112.20 (f)(1)].

EPA Determination. If a self-determination is not made, EPA's RA may determine whether your facility may cause substantial harm. EPA's RA may consider factors similar to the self-selection criteria, as well as other factors, including the type of transfer operations at a facility, the facility's oil storage capacity, lack of secondary containment, proximity to environmentally sensitive areas or drinking water intakes, and/or the facility's spill history. The EPA RA will notify your facility if EPA has determined that your facility poses a threat of substantial harm.

Significant and Substantial Harm Facilities

EPA is also required to identify a **subset** of substantial harm facilities that could cause **significant and substantial harm** to the environment upon a release of oil. In addition to the criteria used to determine substantial harm, EPA bases its determination of significant and substantial harm on other factors such as the age of tanks, proximity to navigable water, and spill frequency. Facilities are notified by EPA in writing of their status as posing significant and substantial harm. If your facility is notified by EPA, it must submit an FRP to EPA for **review and approval**. The RA will review the FRP and may inspect your facility for viability and compliance with the regulations before EPA approves the plan.

If Your Facility Does Not Meet the Criteria

If your facility ***does not*** meet the "substantial harm" criteria, it does not have to prepare and submit an FRP. However, your facility must document this determination by completing the "Certification of the Applicability of the Substantial Harm Criteria Checklist," provided as 40 CFR 112, Appendix C, Attachment C-II [40 CFR 112.20(e)]. This certification should be maintained with the facility's SPCC plan.

Does your facility have a facility response plan (FRP)?

If it has been determined, either through the self-selection process or by notification from the EPA RA, that your facility poses a threat of "substantial harm" to the environment, your facility must prepare and submit an FRP to the appropriate EPA regional office. FRPs must:

- Be consistent with the National Contingency Plan (NCP) and the Area Contingency Plans.

> The NCP, also called the National Oil and Hazardous Substances Pollution Contingency Plan, is the federal plan for responding to both oil spills and hazardous substance releases. See http://www.epa.gov/oilspill/ncp for more information.

- Identify a qualified individual having full authority to implement removal actions, and require immediate communication between that person and the appropriate federal authorities and responders.

- Identify and ensure availability of resources to remove, to the maximum extent practicable, a worst-case discharge.

- Describe training, testing, unannounced drills, and response actions of persons at the facility.

- Be updated periodically.

- Be submitted for approval with each significant change.

To assist your facility in preparing an FRP, EPA has prepared and included a "model facility response plan" see 40 CFR 112.2, Appendix F. The following is a list of key FRP elements:

- Emergency response action plan. This should be maintained as an easily accessible, stand-alone section of the overall plan.

- Facility name, type, location, owner, and operator information.

- Emergency notification, equipment, personnel, and evacuation information.

- Identification and evaluation of potential spill hazards and previous spills.

- Identification of small, medium, and worst case discharge scenarios and response actions.
- Description of discharge detection procedures and equipment.
- Detailed implementation plan for containment and disposal.
- Facility and response self-inspection; training; exercises; and drills; and meeting logs.
- Diagrams of facility and surrounding layout, topography, and evacuation paths.
- Security measures including fences, lighting alarms, guards, emergency cutoff valves, and locks.

An inspector may evaluate FRP measures for their ability to facilitate adequate response to a worst-case discharge of oil.

Was an existing response plan used or modified?

EPA recognizes that many facilities may have existing *response* plans prepared to meet other requirements. Your facility does not need to prepare a separate FRP provided that your facility's original response plan:

- Satisfies the appropriate requirements and is equally as stringent;
- Includes all elements described in the model plan;
- Is cross-referenced appropriately; and
- Contains an action plan for use during a discharge.

Avoid Recreating the Wheel: EPA also recognizes that many facilities have established SSPCC plans. Although response plans and prevention plans are different, and should be maintained separately, some sections of the plans may be the same. Under OPA regulations, your facility is allowed to reproduce or use those sections of the SSPCC plan in your FRP.

Was the FRP prepared and submitted by the deadline?[1]

[1] The initial statutory deadline for "substantial harm facilities" **either** to submit FRPS **or** to stop handling, storing or transporting oil was February 18, 1993. EPA's regulatory deadline for "substantial harm facilities" and "significant and substantial harm facilities" to submit FRPs or stop handling, storing or transporting oil

The time that your facility has to prepare and submit a FRP will vary depending on several factors, including the following:

- **Notification from EPA Regional Administrator:** If EPA notifies your facility that it is required to submit an FRP, then your facility must prepare and submit a plan within six (6) months.

- **Newly Constructed Facilities:** If your facility is newly constructed, it is required to submit the FRP prior to the start of operations. After sixty (60) days, your facility must make adjustments to the FRP to reflect changes that occur during the startup phase and resubmit the FRP.

- **Planned Facility Changes:** If your facility undergoes a planned change in design, construction, operation, or maintenance that places it in the designation of a substantial harm facility, then it must submit an FRP prior to the start of operations of the portion of the facility undergoing the changes.

- **Unplanned Facility Changes:** If your facility falls under the substantial harm facility designation because of an unplanned event or change in characteristics, then it must submit an FRP within six (6) months of the unplanned event.

s the FRP maintained and updated?

Your facility must periodically review your FRP to ensure consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Area Contingency Plans (ACPs), and update it as appropriate [40 CFR 112.20(g)]. Consequently, if your facility is required to prepare a FRP, it must review relevant portions of the NCP and the applicable ACPs annually and update its FRP as

Area Contingency Plans (ACPs) include detailed information about resources (e.g., equipment and trained response personnel) available from the government agencies in the area. They also describe the roles and responsibilities of each responding agency during a spill incident. Your facility can order copies of ACPs from the National Technical Information Service (NTIS) by calling 1-800-553-6847. To obtain the NTIS ordering number for your area's ACP, first call the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

was August 30, 1994, the effective date of the FRP rule.

appropriate. Your facility must submit revised portions of the FRP within 60 days of each facility change that may materially affect (1) the response to a worst case discharge or (2) the implementation of the response plan.

Are appropriate FRP records maintained?

FRP requirements not applicable: If your facility determines that the response planning requirements do not apply, then it must certify and maintain a record of this determination using 40 CFR 112, Appendix C, Attachment C-II.

FRP requirements applicable: If your facility is subject to the response planning requirements, it is required to maintain the FRP at the facility. Your facility is also required to maintain updates to the plan to reflect material changes to the facility and to log activities such as discharge prevention meetings, response training drills, and exercises. Your facility must keep the records of these activities for a period of five years.

Are training and response drill requirements met?

All facilities (i.e., "substantial harm" and "significant and substantial harm" facilities) subject to facility response planning requirements must address training and response drills (40 CFR 112.21). FRPs must include (1) information about self-inspection drills, exercises, and response training, including descriptions and logs of training and drill or exercise program; and (2) documentation of tank inspections, equipment inspections, response training meetings, response training sessions, and drills and exercises [40 CFR 112.20(h)(8)]. Consequently, FRPs may be revised based on evaluations of the drills and exercises.

Oil spill response training is an important element in EPA's oil spill prevention and preparedness efforts. Because operator error is often the cause of an oil spill, training and briefings are critical for prevention of a spill as well as response to a spill. Training encourages up-to-date planning for the control of, and response to, an oil spill and also helps to sharpen operating and response skills, introduces the latest ideas and techniques, and promotes interaction with the emergency response organization and familiarity with the facility's SPCC and FRP plans.

Your facility is also required to develop and implement a program of response

PREP: The PREP guidelines booklet (USCG-X0191) and the Training Reference for Oil Spill Response (USCG-X0188) are available by mail or fax:

TASC Department Warehouse
3341Q 75th Avenue
Landover, MD 20785
FAX: (301) 386-5394

When requesting copies, please indicate the document name(s) and publication number(s).

drills and exercises, including evaluation procedures to test the effectiveness of your response plan. A program that follows the National Preparedness for Response Exercise Program (PREP) will meet EPA's exercise requirements. An alternative program can also be acceptable if approved by the EPA RA.

4.6.3 Spill Notification and Recovery

Though not common, your ship scrapping facility may experience accidental discharges of bilge or ballast water, oil-water separator effluent, or oily sludge to U.S. waters or land while performing daily activities.

Are oil spills reported as required?

Though not common, your ship scrapping facility may experience accidental discharges of oil to U.S. waters or land while performing daily activities. Your facility is required to report discharges of oil to navigable waters or adjoining shorelines in quantities that may be harmful to public health or welfare or the environment (40 CFR 110). EPA has determined that discharges of oil in quantities that may be harmful include those that:

> **Defining discharge**. "Discharge" means any spilling, leaking, pumping, pouring, emitting, emptying or dumping [CWA Section 311(a)(2)].

- Violate applicable water quality standards;
- Cause a film or "sheen" upon, or discoloration of, the surface of the water or adjoining shorelines; or
- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

If there is such a discharge from a ship or the onshore facility that may reach waters or adjoining shorelines or land areas that may threaten waterways, your facility owner or operator must:

(1) **Call the National Response Center at 1-800-424-8802 or 703-412-9810** (Washington, D.C. area);

(2) **Contact the nearest U.S. Coast Guard (USCG) or EPA regional office spill line**; and

(3) **Report the spill to the state regulatory agency** where the spill occurred. Note: States and local government may have specific spill reporting requirements for facilities. For example, a facility may be required to report all spills meeting certain quantity thresholds, even if the spill does not leave a contained area within the facility. Check with your state and local regulatory agencies for their specific spill reporting requirements.

In addition, the owner or operator of your facility must submit, in writing, certain information (including the SPCC Plan) to the EPA Regional Administrator within 60 days, if the release meets either of the following conditions: (1) **either** a single discharge of more than 1,000 gallons of oil; **or** (2) two reportable spills/discharges of oil in harmful quantities, during any 12-month period, into or upon navigable waters, shorelines, etc.

If your facility has an NPDES permit and the discharge causes your facility to be out of compliance with the permit requirements, then your facility must report the occurrence to your permitting agency within 24 hours of becoming aware of a violation, and provide a written submission within 5 days.

Is all required information provided to the National Response Center?

When your facility contacts the National Response Center (NRC), the center staff person will ask for the following information:

- ? Your name, location, organization, and telephone number.
- ? Name and address of the party responsible for the incident.
- ? Location, date and time of the incident.
- ? Source and cause of the release or spill.
- ? Type and quantity of material(s) released or spilled.
- ? Danger or threat posed by the release or spill.
- ? Number and types of injuries.
- ? Weather conditions at the incident location.
- ? Any other information that may help emergency personnel respond to the incident.

The NRC records and maintains all spill reports in a computer database called the Emergency Response Notification System (ERNS), which is available to the public

(http://www.epa.gov/ERNS). The NRC relays the spill information to the EPA and USCG, depending on the location of the incident. Specifically, the NRC notifies representatives of EPA or the USCG, known as On-Scene Coordinators (OSCs). The OSC is the federal official charged with directing a spill response through the Unified Command/Integrated Command System adopted by EPA and USCG. This intergovernmental coordinating system encourages, wherever possible, shared decision making by the federal lead response agency (EPA or USCG), the state(s) and the party responsible for the discharge/release.

Is the facility prepared for an effective response to an oil spill?

The first and most immediate response to an oil spill is by your facility personnel. For this reason, facility response personnel must know the location, capabilities, and operating instructions of response equipment to attempt an effective oil recovery. For more information, visit EPA's Oil Program at **http://www.epa.gov/oilspill/**.

- **SPCC/FRP regulated facilities (or substantial harm facilities):** Within the SPCC-regulated community, facilities that may cause substantial harm to the environment or exclusive economic zone, based on the quantity and location of their oil storage, must prepare facility response plans (FRPs) to ensure that these facilities have the capability to response to worst case scenario discharges (40 CFR 112.20-21). FRPs greatly assist the facility and response agencies to expedite and coordinate cleanup efforts (see Section 4.6.2).

- **Other SPCC-regulated facilities:** It is recommended that all other facilities in the SPCC-regulated community be prepared to respond to a spill by identifying control and response measures in their SPCC plans. Every facility should have appropriate spill response equipment available and easily accessible. A spill kit, which should be keep close at hand, should contain absorbent pads and booms, disposal containers or bags, shovels, an emergency response guidebook, a fire extinguisher, and a portable pump. It is also recommended that facilities coordinate with local responders, other nearby facilities, and contractors before a spill occurs to ensure an efficient and effective response. Facility personnel, including seasonal employees, must participate in spill response, notification, and oil recovery training courses. Being prepared to respond reduces the impact of a discharge on human health or the environment and minimizes cleanup costs and fines resulting from improper notification.

- **First response:** In the event of an oil spill, the response plan is immediately activated. The OSC will activate local, area, regional, or national plans depending on the nature of the spill and the response capability of the facility.

- **On-scene coordinators**: The designated OSC from EPA or USCG is responsible for determining how to respond to the spill, i.e., determining the resources, both personnel and equipment needed. The OSC does this based on his/her assessment of several factors, including the following: the magnitude and complexity of the spill; the availability of appropriate response equipment and trained personnel; and the ability of the responsible party, or local and/or state responders to respond to the spill.

  Although the OSC is responsible for coordinating federal efforts with local, state and regional response efforts, in practice the role of the OSC varies. Depending on the OSC's assessment, he/she may do the following: direct the response; direct the response in cooperation with other parties; oversee that the response is conducted by other parties; provide limited or periodic oversight; or determine that a federal response is not needed.

  For example, small spills may be cleaned up by the facility (or responsible party) or by local response agencies, while larger spills may require regional response efforts. In either cases, the OSC is required to oversee and monitor the spill response to make sure that all appropriate actions to prevent threats to human health or the environmental are taken. If, however, a facility is handling a smaller spill adequately, the OSC may not go to the site.

- **Oil recovery:** For federal-led cleanups, the OSC, response teams, and a network of experienced agencies will decide on the most effective method of cleanup (see below). For potentially responsible party (PRP)-led cleanups, cleanup efforts are carefully and efficiently coordinated to protect response personnel, recreational areas, drinking water reservoirs, and wildlife from the potentially catastrophic effects of an oil spill.

What oil recovery methods are used at the facility?

There are a number of advanced response methods available for controlling oil spills and recovering oil while minimizing their impacts on human health and the environment (see http://www.epa.gov/oilspill/oiltech.htm). The key to effectively combating spills is careful selection and proper use of equipment and materials best suited to the type of oil and the conditions at the spill site. Most spill response equipment and materials are greatly affected by such factors as conditions at sea, water currents, and wind.

Some kinds of response methods include:

- **Mechanical containment or recovery** is the primary line of defense against oil spills in the United States. Containment and recovery equipment include a variety of booms, barriers, and skimmers, as well as natural and synthetic sorbent materials. Mechanical containment is used to capture and store the spilled oil until it can be disposed of properly.

- **Chemical and biological methods** can be used in conjunction with mechanical means for containing and cleaning up oil spills. Dispersants and gelling agents are most useful in helping to keep oil from reaching shorelines and other sensitive habitats. Biological agents have the potential to assist recovery in sensitive areas such as shorelines, marshes, and wetlands. Research into these technologies continues to improve oil spill cleanup.

- **Natural processes** such as evaporation, oxidation, and biodegradation can start the cleanup process, but are generally too slow to provide adequate environmental recovery.

- **Physical methods**, such as wiping with sorbent materials, pressure washing, and raking and bulldozing, can be used to assist the natural processes. **Scare tactics** are used to protect birds and animals by keeping them away from oil spill areas. Devices such as propane scare-cans, floating dummies, and helium-filled balloons are often used, particularly to keep away birds.

5. OIL AND FUEL REMOVAL

Some ships sold for scrapping contain diesel fuel, fuel oil, natural and synthetic oils used as lubricants, and hydraulic oils. This section provides information about the various regulations that apply to the management of oil and fuel during the ship scrapping process.

5.1 INFORMATION ABOUT OIL AND FUEL

This section provides background information on oil and fuel, including what they are, where they can be found on a ship, and the dangers of exposure to human health and the environment.

What are oil and fuel?

The term oil is interpreted by EPA to include crude oil; petroleum and petroleum-refined products (e.g., diesel fuel, gasoline, kerosene); and non-petroleum oils such as synthetic oils (e.g., silicone fluids), tung oils, and wood-derivative oils (e.g., resin/rosin oils), animal fats and oil, and edible and inedible seed oils from plants. The definition of oil under the Clean Water Act is "**oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes** other than dredged spoil" [CWA Section 311(a)(1)].

The most common refined petroleum products and their characteristics are as follows:

- **Gasoline** is a lightweight substance that flows easily, spreads quickly, and evaporates readily under temperate conditions. It is highly volatile and flammable, posing a risk of fire and explosion. Gasoline is more toxic than crude oil because of the high concentration of aromatics.

- **Kerosene** is a lightweight substance that flows easily, spreads rapidly, and evaporates quickly. Although it disperses easily, kerosene persists in the environment.

- **No. 2 Fuel Oil** is a lightweight substance that flows easily, spreads rapidly, and disperses easily. It is neither volatile nor likely to form emulsions.

- **No. 4 Fuel Oil** is a medium weight substance that flows easily and is readily dispersed if treated promptly. It has a low volatility and moderate flash point.

- **No. 5 Fuel Oil (Bunker B)** is a medium to heavyweight substance with a low volatility and moderate flash point. Preheating may be required in cold climate. Dispersion is very difficult and potentially impossible.

- **No. 6 Fuel Oil (Bunker C)** is a difficult to pump, heavyweight substance that requires preheating for use. No. 6 Fuel Oil may be heavier than water. It is not likely to dissolve, and is likely to form tar balls, lumps, or emulsions. No. 6 Fuel Oil is difficult or impossible to disperse. It has a low volatility and moderate flash point and persists in the environment.

- **Lubricating Oil** is a medium weight substance that flows easily and disperses easily if treated promptly. It has a low volatility and moderate flash point and persists in the environment.

Where are oils and fuels found on a ship?

Diesel fuel and fuel oil may be contained in various tanks throughout a ship, lubricating oil in engine sumps, drums of unused lubricating oil in ship storerooms or engineering spaces, and sludge in fuel and cargo tanks. Oil, fuel, and sludge may also be found in the ship's machinery and piping system.

Oil found on a ship may be defined by EPA as "used oil." Basically, EPA defines used oil as follows: Used oil is any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities. Examples of used oil found on a ship may include spent lubricating fluids which have been removed from engine crankcases, transmissions, and gearboxes; industrial oils such as compressor, turbine, and bearing oil; metal working oil; and refrigeration oil. Note: Additional used oil may be generated from vehicles and machinery used at the ship scrapping facility.

The potential dangers to workers during oil and fuel removal activities

The primary danger to workers due to the presence of oil and fuel on ships is that of fire. Beyond fire, the potential dangers to workers of handling oil and fuel decrease. While some crude oils and high-end products are highly toxic and present hazards to workers, the types of oils and products (e.g., fuel oil, hydraulic oil, lubricating oil) found on ships currently provided for scrapping do not have toxic hazards above certain threshold limits, and therefore do not impose serious health threats to workers.

Be aware that exposure to oils or fuels that have certain toxic hazards, exposure can cause damage to the liver, lungs, kidneys, heart, and the nervous system. Exposure pathways include dermal contact, consumption through bioaccumulation in marine life, consumption through contaminated soil, inhalation of fumes or particles (particularly in confined spaces), and consumption of contaminated water.

What are the environmental impacts of oil spills?

The severity of an oil spill's impact depends on a variety of factors, including the physical properties of the oil, whether oils are petroleum-based or non petroleum-based, and the natural actions of the receiving waters on the oil. Each type of oil has distinct physical properties that affect the way it spreads and breaks down, the hazard it may pose to marine (and human life), and the likelihood that it will pose a threat to natural and manmade resources. The rate at which an oil spill spreads will determine its effect on the environment. Most oils tend to spread horizontally into a smooth and slippery surface, called a “slick,” on top of the water.

Petroleum-based oils and non-petroleum oils can have both immediate and long-term adverse effects on the environment and can be dangerous or even deadly to wildlife. Light refined petroleum products, such as gasoline and kerosene, spread on water surfaces and penetrate porous soils quickly. Fire and toxic hazards are high, but the products evaporate quickly and leave little residue. Alternatively, heavier refined oil products may pose a lesser fire and toxic hazard and do not spread on water as readily. Heavier oils are more persistent, however, and may present a greater cleanup challenge. Many non-petroleum oils have similar physical properties as petroleum-based oils; for example, their solubility in water is limited, they both create slicks on the surface of water, and they both form emulsions and sludges. In addition, non-petroleum oils tend to be persistent, remaining in the environment for long periods of time.

Oil spills can harm the environment in several ways, including the physical damages that directly impact wildlife and their habitats, and the toxicity of the oil itself, which can poison exposed organisms. Spilled oil immediately begins to move and weather, breaking down and changing its physical and chemical properties. As these processes occur, the oil threatens natural resources, birds, and mammals, as well as a wide range of subsurface marine organisms linked in a complex food chain. Some organisms may be seriously injured (acute effects) or killed (lethal effects) very soon after contact with the oil in a spill, however; non-lethal toxic effects are more subtle and often longer lasting.

- Marine life on reefs and shorelines are at risk of being smothered by oil that washes ashore or of being slowly poisoned by long-term exposure to oil trapped in shallow water or on beaches. Many different types of marine habitats exist with varied sensitivities to the harmful effects of oil contamination and different abilities to recuperate from oil spills. In some areas, habitats and populations can recover quickly. Unfortunately, in other environments, recovery from persistent or stranded oil may take years.

- Spilled oil can harm birds and mammals in many ways. When fur or feathers come into contact with oil, they get matted down. This matting causes fur and feathers to lose their insulating properties, placing animals at risk of freezing to death. As the complex structure of the feathers that allows birds to float becomes damaged, the risk of drowning increases for birds. Some species are susceptible to the toxic effects of inhaled oil. Oil vapors can cause damage to an animal's central nervous system, liver, and lungs. Animals are also at risk from ingesting oil, which can reduce the animal's ability to eat or digest its food by damaging cells in the intestinal tract. Some studies show that there can be long-term reproductive problems in animals that have been exposed to oil.

5.2 WHO REGULATES OIL AND FUEL REMOVAL?

The management of oil and fuel is regulated because of the potential impacts of releases to the environment and the potential danger to those working with the substances.

- **EPA.** Under the CWA, the discharge of oil in such quantities as may be harmful into navigable waters of the United States and adjoining shorelines is prohibited [CWA Section 311(b)]. EPA's Discharge of Oil regulation provides information regarding these discharges (40 CFR Part 110) and the Oil Pollution Prevention regulation (40 CFR Part 112) requires certain facilities to prepare and implement Spill Prevention, Control, and Countermeasures (SPCC) plans, and/or Facility Response plans (FRPs). Used oil is regulated under the Used Oil Management Standards (40 CFR 279). Waste or used oil that is hazardous must be managed according to the Resource Conservation Recovery Act (RCRA) hazardous waste regulations (40 CFR 261- 270).

- **Coast Guard**. If more than 250 gallons of fuel oil or lubricating oil are to be removed from the vessel, the U.S. Coast Guard Captain of the Port must be notified and Coast Guard approval obtained. Also, the Coast Guard has required procedures for pumping oil from a ship to the shore.

- **OSHA**. OSHA is responsible for ensuring that workers are not at risk or in danger when managing fuel and oil. OSHA regulations include specific requirements or procedures for work that is conducted in spaces that contain or have contained combustible or flammable liquids or gases (29 CFR 1915). These and other worker safety requirements will be described in the following sections.

5.3 OIL AND FUEL REMOVAL AND STORAGE

5.3.1 Removing Oil and Fuel

This section highlights only a few of the requirements that apply to removing oil and fuel from ships. Please refer to the U.S. Coast Guard (USCG) regulations for additional information.

Have the locations and quantities of oil and fuel to be removed from the ship been identified?

Your facility will most likely identify the locations and quantities of oil and fuel onboard during its initial survey of the ship. **Note:** *Your facility may have received documentation of the locations and quantities of oil and fuel onboard when it obtained the ship for scrapping.*

Has U.S. Coast Guard approval for removal activities been obtained?

If more than 250 gallons of fuel oil or lubricating oil are to be removed from the ship, your facility is required to notify the USCG Captain and obtain approval from the Coast Guard prior to the removal activities. If located at a port, the port must certify that there are adequate oil transfer facilities available, and the receiving facility must have oil spill cleanup and notification procedures, periodic inspections, and training.

Are oils and fuels removed from the ship as thoroughly as practicable?

The removal of oil and fuel is covered under USCG and OSHA regulations. Your facility must remove oil and fuel as thoroughly as practicable from the ship by draining or pumping the fluids in a manner that minimizes the potential for a release into the environment.

Is transfer operations equipment inspected prior to removal activities?

Your facility may use different kinds of transfer operations equipment, such as piping, valves, gauges, regulators, compressors, pumps, and other mechanical devices to transfer oil from the ship to onshore storage location. This equipment should be inspected regularly and repaired as necessary because of the high risk of spills during these operations. Oil and fuel may be transferred from the ship to storage tanks (aboveground or underground) onshore or directly to a transporter's truck.

Tip: Transfer operations must meet specific U.S. Coast Guard requirements in addition to inspection and repair. Contact the USCG for more information.

An inspector may evaluate transfer operations equipment to verify that all equipment is in proper working order and there is no evidence of spills or leaks.

Are booms immediately available to contain accidental discharges?

During scrapping, your facility is required to have immediately available certain types and lengths of boom to help contain any accidental discharges of oil or oil-containing wastewater and reduce the potential for impacts to surrounding biological resources. This is an EPA requirement if your facility is subject to the SPCC rule. Under the SPCC rule, spill prevention procedures or controls, such as booms, oil sorbents and barriers, can be used to reduce impacts to the environment in the event of a spill.

5.3.2 Cleaning Oil and Fuel Tanks/Compartments on Ships and Shore-Based Storage Facilities

Are spaces cleaned after removal of oil and fuel?

Depending on the kind of oil or fuel in a tank or compartment, your facility may need to clean that space before any hot work can be performed. When cleaning spaces that contain or have last contained bulk quantities of combustible or flammable liquids or gases, the facility must ensure that manual cleaning and other cold work is not performed until certain conditions are met (29 CFR 1915.13). These conditions include, but are not limited to, the following:

- Liquid residues must be removed as thoroughly as practicable before workers start cleaning operations in the space [29 CFR 1915.13(b)(1)].

- Testing is conducted by the facility's competent person to determine the concentration of flammable, combustible, toxic, corrosive, or irritant vapors within the space prior to the beginning of cleaning.

- Continuous ventilation must be provided at volumes and flow rates to ensure that these concentrations of vapors are within certain limits/levels, and testing must be conducted as often as necessary by the competent person during cleaning to assure that air concentrations stay within these limits/levels [29 CFR 1915.13(b)(2)-(4)].

Who is a "competent person"? A competent person is a person who is capable of recognizing and evaluating worker exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to take to ensure worker safety. Your facility may designate any person who meets the requirements found in 29 CFR 1915.7 to be a competent person responsible for performing testing in certain situations (29 CFR 1915.7). The facility may use a Marine Chemist, or in some cases, a certified industrial hygienist to perform the same activities as a competent person.

- The facility must promptly post signs that prohibit sources of ignition within or near a space that has contained flammable or combustible liquids or gases in bulk quantities: (1) at the entrance to those spaces; (2) in adjacent spaces; and (3) in an open area adjacent to those spaces [29 CFR 1915.13(b)(10)].

Following cleaning, tanks or other areas that have or have contained flammable liquids must be certified by a marine chemist before any hot work can be performed (see Section 7.3.1).

An inspector may review site records to verify that the proper testing was conducted prior to and during the time that workers conducted cleaning in these spaces.

How are confined or enclosed spaces determined to be safe for entry?

Prior to workers entering a specific confined or enclosed space, your facility's competent person must (1) **visually inspect** the space for the presence of solids, liquids or other contaminants, and (2) **test** the space, as appropriate, for:

A **confined space** is defined as a compartment of small size and limited access such as a double bottom tank, cofferdam, or other space which by its small size and confined nature can readily create or aggravate a hazardous exposure.
An **enclosed space** is defined as any space, other than a confined space, which is enclosed by bulkheads and overhead. Enclosed spaces include cargo holds, tanks, quarters, and machinery and boiler spaces.

- Oxygen content [29 CFR 1915.12(a)]
- Concentrations of flammable vapors or gases [29 CFR 1915.12(b)]
- Concentrations (air) of toxics, corrosives, or irritants [29 CFR 1915.12(c)]

If the tests demonstrate that the oxygen content and air concentrations are within the required limits, then workers may enter the space to work. If the tests show that it is not safe to enter a space, then certain measures must be taken (e.g., ventilation, re-testing, labeling the space to prevent entry or prevent entry without the required protection) for that space.

An inspector may review site records to verify that proper testing was conducted prior to workers entering confined or enclosed spaces.

Are workers entering confined or enclosed spaces appropriately trained?

Your facility is required to train workers who enter confined or enclosed spaces or other areas with dangerous atmospheres to perform their work safely. OSHA requires training in hazard recognition and the use of personal protective equipment (PPE). Your facility must provide workers entering these spaces with training before they are allowed to enter, and whenever there is a change in operation or in a worker's duties [29 CFR 1915.12(d)].

An inspector may review training records to verify that workers have the appropriate training to be working in confined and enclosed spaces.

5.3.3 Storing Wastes in Tanks

While various types of containers may be used to store oil and fuel removed from a ship, facilities commonly use underground storage tanks (USTs) (40 CFR 280) or aboveground storage tanks (ASTs) [40 CFR 112.7(e)(2)].

Underground Storage Tanks

A UST is a tank and any underground piping connected to the tank that has at least ten percent of its combined volume underground. To protect human health and the environment from dangerous releases, USTs must have leak detection and spill, overfill, and corrosion protection. Other UST requirements address notification, installation, corrective action, financial responsibility, and recordkeeping.

A Basic Checklist for USTs. EPA has a checklist that can help your facility evaluate its USTs. Your facility can use the checklist to see how closely it meets the federal regulations for USTs (40 CFR Part 280). The checklist can also help your facility prepare for official inspections of USTs. The checklist can be accessed at http://www.epa.gov/swerust1/cmplastc/cheklist.htm.

Tanks installed after 1988 need to comply with all UST requirements upon installation. Tanks installed before 1988 had until December 1998 to comply with spill, overfill, and corrosion protection requirements, but these USTs should be in compliance with all requirements now.

Warning: Now that the **December 22, 1998** deadline for all UST systems has passed, owners and operators of facilities that continue to operate UST systems not meeting the federal requirements for leak detection, and spill, overfill, and corrosion protection are **out of compliance**. Besides posing a threat to human health and the environment, such operation can subject the owner/operator to considerable fines.

Some USTs are not covered by federal regulations (e.g., tanks storing heating oil used on premises where it is stored; tanks on or above the floor of underground areas, such as basements or tunnels; emergency spill and overflow fill tanks); however, such USTs may be regulated by your state or local regulatory agency.

For more information on USTs, visit EPA's Office of Underground Storage Tanks website at **http://www.epa.gov/OUST/.** Check with the state and local regulatory agencies to find out if there are additional or more stringent state and/or local UST requirements.

Aboveground Storage Tanks

Note: USTs that store flammable and combustible liquids must also meet NFPA provisions for tank storage and piping systems.

ASTs, depending on their storage capacities, may be subject to federal requirements (under 40 CFR 112), as well as state and local requirements. State and local requirements typically incorporate standards established by organizations such as the National Fire Protection Association (NFPA) and the American Petroleum Institute. For more information about the NFPA requirements, call the NFPA at **617-770-3000** or access their website at **http://www.nfpa.org**.

Construction, design, and operation requirements for ASTs are typically governed by state and local fire marshals or environmental officers. In addition to consulting with your fire marshal, your facility should also check with your state regulatory agency for information on additional AST requirements.

Has the state UST program office been notified of any USTs on site?

If your facility has onsite regulated UST systems, it is required to submit a notification form to the state UST program office. This form includes certification of compliance with federal requirements for installation, cathodic protection, release detection, and financial responsibility for UST systems installed after December 22, 1988. For more information on how to obtain and complete the form, call EPA's **RCRA/UST, Superfund, and EPCRA Hotline** at **1-800-424-9346**.

An inspector may check with the state UST program office to verify that the number of USTs match the number reported on the notification form(s) to the state.

Is leak detection conducted for tanks and piping?

Facilities with federally regulated UST systems must conduct leak detection. The **monthly monitoring methods** that may be used to conduct leak detection of tanks include the following:

> **Note:** Facilities with USTs may use inventory control and tank tightness testing instead of one of the monthly monitoring methods for a maximum of 10 years after the tank is installed or upgraded with corrosion protection (40 CFR 280.41).

- Automatic tank gauging
- Monitoring for vapors in soil
- Interstitial monitoring
- Groundwater monitoring
- Statistical inventory reconciliation
- Other methods approved by the regulatory authority

In addition, any pressurized piping must have: (1) monthly monitoring (as described above) or annual line testing, and (2) an automatic flow restrictor, an automatic shutoff device, or a continuous alarm system installed. Check with your state UST program office to determine which leak detection methods are acceptable in your state.

Do USTs meet requirements for spill, overfill, and corrosion protection?

Your facility must operate USTs to ensure that spills, overflows, and corrosion do not cause releases into the environment. As of December 22, 1998, your facility was required to meet the federal requirements for spill, overfill, and corrosion protection for all of its UST systems see 40 CFR 280.

Are ASTs inspected on a periodic basis to verify tank integrity?

ASTs must be inspected periodically for tank integrity [40 CFR 112.7(e)(2)(vi)]. Several techniques are available to test tank integrity such as:

- X-ray or radiographic analysis to measure wall thickness and detect cracks and crevices in metal
- Ultrasonic analysis to measure shell metal thickness
- Hydrostatic testing to identify leaks caused by pressure
- Visual inspection to detect cracks, leaks, or holes

- Magnetic flux eddy current test used in conjunction with ultrasonic analysis to detect pitting

Your facility should check the outside of the tank for signs of deterioration, leaks that might cause a spill, and accumulated oil inside the diked areas. AST tank bottoms may be subject to extensive corrosion, which may go undetected during visual inspections. A tank also may fail due to surface corrosion. Pitting creates a high potential for AST failure. Holes may form in rusty tanks causing the tank to leak. Your facility can prevent corrosion by taking measures appropriate for the type of tank installation and foundation (e.g., dielectric coatings, carefully engineered cathodic protection, and double-bottom tanks).

Your facility should also examine the foundation and supports of each tank. If a tank sits on a foundation, check for large gaps between the foundation and the tank bottom and for crumbling or excessive cracking in a concrete foundation. Assess whether a storage tank foundation provides adequate support for the tank. If the tank sits directly on the ground, check for large gaps between the ground surface and the tank bottom.

All leaks should be documented and repaired immediately.

Is secondary containment used to prevent oil discharges?

For ASTs, your facility is required to install appropriate containment and diversionary structures or equipment, such as dikes, berms, and retaining walls (40 CFR 112.7), to prevent discharges of oil from reaching navigable water, unless it can be clearly demonstrated that installation of such structures or equipment is not practicable. Impracticability pertains primarily to those cases where severe space limitations or other physical constraints may preclude installation of structures or equipment to prevent oil from reaching navigable water. Demonstrating impracticability on the basis of economic considerations is not acceptable.

An inspector may verify that there are appropriate containment and diversionary structures or equipment at the facility for all ASTs.

5.3.5 Managing Oil/Oily Wastes as Used Oil

Used oil is stored and managed according to the Used Oil Management Standards (40 CFR 279). As a facility that handles used oil, your facility must follow certain good housekeeping practices. These management standards are common sense, good business practices designed

to ensure the safe handling of used oil to maximize recycling and minimize disposal. Note: Some states may have stricter disposal requirements. Contact your state regulatory agency to determine the used oil disposal requirements.

As noted earlier, EPA defines used oil as "any oil that has been refined from crude oil or any synthetic oil that has been used and as a result of such use is contaminated by physical or chemical impurities." A substance must meet each of the following three criteria to meet the definition of used oil:

- **Origin.** This criterion is focused on the oil's origin. Used oil must have been refined from crude oil or made from synthetic materials. Animal and vegetable oils are excluded from EPA's definition of used oil.

- **Use.** This criterion is based on whether and how the oil is used. Oils used as lubricants, hydraulic fluids, heat transfer fluids, buoyants, and for other similar purposes are considered used oil. Unused oils, such as bottom clean-out waste from virgin fuel oil storage tanks or virgin fuel oil recovered from a spill, do not meet EPA's definition of used oil because they have never been "used." EPA's definition also excludes products used as cleaning agents or used solely for their solvent properties, as well as certain petroleum-derived products like antifreeze and kerosene.

- **Contaminants.** To meet EPA's definition, used oil must be contaminated with either physical or chemical impurities as a result of being used. This includes residues and contaminants generated from handling, storing, and processing used oil. Physical contaminants may include metal shavings, sawdust, or dirt. Chemical contaminants could include solvents, halogenated volatile organics (i.e., halogens), or saltwater.

Used oil and substances containing or covered with used oil are regulated according to the Used Oil Management Standards if they meet certain conditions. Otherwise, they are subject to being managed according to other regulations [40 CFR 279.10(b)].

The following **are regulated** as used oil:

- Used oil produced on a ship from normal shipboard operations is subject to regulation as a used oil when it is transported ashore.

- A mixture of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability if the resultant mixture does not exhibit the characteristic of ignitability.

- Except as described in the bullet above, a mixture of used oil and a hazardous waste that solely exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) if the resultant mixture does not exhibit any of the hazardous waste characteristics.

- Materials which contain or are otherwise contaminated with used oil that are recycled (e.g., burned for energy recovery). This includes the used oil drained or removed from these materials.

The following **are not regulated** as used oil:

- Oils and oily wastes that do **not** meet the definition of used oil.

- A mixture of used oil and a hazardous waste that exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) if the resultant mixture exhibits any hazardous waste characteristics. This mixture must be regulated as a **hazardous waste**.

- A mixture of used oil and a **listed** hazardous waste. This includes used oil mixtures containing more than 1,000 ppm total halogens. (EPA presumes that the used oil has been mixed with a listed halogenated hazardous waste.) This mixture must be regulated as a **hazardous waste**.

- Materials which contain or are otherwise contaminated with used oil if the used oil has been properly drained or removed (i.e., there are no visible signs of free-flowing oil remaining on or in the materials) from them. These materials are then not defined as used oil and therefore, are not regulated as used oil.

Is the mixing of used oil with hazardous waste prevented?

Hazardous waste fluids, such as used solvent, gasoline, or other hazardous substances, should **not be mixed** with used oil, or the entire volume may be classified as hazardous waste. Basically, the following mixing rules apply:

Tip: Avoid mixing used oil and hazardous waste. If used oil is mixed with hazardous waste, the entire volume will probably have to be managed as hazardous waste. The safest practice is to *never* mix any other wastes with used oil.

- A mixture of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability must be managed as a hazardous waste if the resultant mixture exhibits the characteristic of ignitability.

- A mixture of used oil and a hazardous waste that exhibits one or more of the hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, or toxicity) must be regulated as a **hazardous waste** if the resultant mixture exhibits any hazardous waste characteristics.

- A mixture of used oil and a **listed** hazardous waste must be regulated as a **hazardous waste**. This includes used oil mixtures containing more than 1,000 ppm total halogens. (EPA presumes that the used oil has been mixed with a listed halogenated hazardous waste.)

The safest practice is never to mix any other waste with used oil. However, if you have questions about which specific products may be mixed with used oil, call the **RCRA/UST, Superfund, and EPCRA Hotline** at **1-800-424-9346.**

Are all containers/tanks leak free and labeled "used oil"?

Your facility can store used oil in containers (e.g., 55-gallon steel drum) or tanks (e.g., underground or aboveground storage tanks). These containers and tanks must be leak free and labeled with the words **"Used Oil."** Some facilities have *pipes* that connect to a used oil storage tank. In this case, the piping should also be labeled with the words **"Used Oil."** No special labels are necessary, provided that the words "used oil" are visible at all times. Spray painting, crayon, or handwritten (preferably not in pencil) labels are okay.

Note: If oil contains >50 ppm of PCBs, then the PCB labeling procedures apply to any container storing such oil (see Section 3).

An inspector may inspect all oil storage containers or tanks to verify that they are labeled properly and there is no evidence of leaks or discharges of oil.

Are used oil and fuel recycled or sent to a reclaimer?

Your facility most likely sends used oil and fuel to a recycling center or reclaimer. The used oil management standards (40 CFR 279) include a recycling presumption, that is, an assumption that all used oil that is generated will be recycled. This is based on the fact that almost all used

oil *can* be recycled. Recycling is the most environmentally protective and often the most economical approach to handling used oil. Facilities should maintain all records on their used oil storage and recycling activities.

Your facility has two options for transporting used oil: (1) using a transporter or (2) self-transporting. Your facility must ensure that your used oil is transported to an approved recycling center by transporters who have obtained EPA identification numbers. If self-transporting *more than 55 gallons* of used oil offsite to an approved recycling center, your facility is required to (1) have an EPA identification number and (2) be licensed as a used oil transporter.

Tip: Check your transporter's qualifications to make sure they take your used oil to a reputable recycling center. Measure the level of oil in your tank before and after the transporter collects it to be certain the oil collected matches the amount the transporter has reported.

Another method of recycling used oil is burning for energy recovery. Your facility may burn the used oil in an on site heater which is used to heat parts of the facility or heat hot water, or it either has a transporter or takes its own oil to an approved used oil burner. Used oil burned offsite may be used as fuel in industrial furnaces, utility boilers, or hazardous waste incinerators.

Used oil should never be disposed of in sewers, drains, dumpsters, on the ground, or used as dust suppressants.

Note: Though not the environmentally preferred method, nonhazardous sludge may be disposed of in a solid waste landfill, which is also known as a municipal landfill (40 CFR 258), if it is not sent to a recycling center. Your facility should contact its municipal solid waste landfill for more information on industrial sludge disposal requirements.

An inspector may track the shipments from your facility through the reclaimers to verify that the shipments of fuel and oil do not contain spent solvent or other hazardous waste liquids.

5.3.6 Managing Oil/Oily Wastes as Hazardous Wastes

Are oil/oily wastes hazardous?

Oil and oily wastes may contain substances in concentrations which make them hazardous. If hazardous, they must be managed and disposed of according to the RCRA hazardous waste regulations (40 CFR 261-270).

If your facility has determined that these oil/oily wastes are not classified as used oil, then it must test them to determine pollutant concentrations and evaluate if they are hazardous. Tests may be conducted for various contaminants, including but not limited to: metals, such as lead, arsenic, chromium, and cadmium; polychlorinated biphenyls (PCBs); total halogenated volatile organics; and the flash point.

To be considered "hazardous waste," materials must first meet EPA's definition of "solid waste." Solid waste is discarded material, such as garbage, refuse, and sludge, and it can include solids, semisolids, liquids, or contained gaseous materials. Solid wastes that meet the following criteria are considered hazardous and subject to RCRA regulations (40 CFR Part 261):

- **Listed waste.** Waste is considered hazardous if it appears on one of four lists of hazardous wastes published in 40 CFR 261 Subpart D. Currently, more than 400 wastes are listed. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not properly managed. Even when properly managed, some listed wastes are so dangerous that they are called "acutely hazardous wastes." Examples of acutely hazardous wastes include wastes generated from some pesticides that can be fatal to humans even in low doses.

- **Characteristic waste**. If waste does not appear on one of the hazardous waste lists, it still might be considered hazardous if it demonstrates one or more of the following characteristics:

  - *Ignitable*: Ignitable wastes can create fire under certain conditions (e.g., temperature, pressure) or are spontaneously combustible (40 CFR 261.21). Examples include certain used paints, degreasers, oils and solvents.

  - *Corrosive:* Corrosive wastes are acids or bases that are capable of corroding metal, such as storage tanks, containers, drums, and barrels (40 CFR 261.22).

Examples include rust removers, acid or alkaline cleaning fluids, and battery acid.

- *Reactive:* Reactive wastes are unstable and explode or produce toxic fumes, gases, and vapors when mixed with water (40 CFR 261.23). Examples include lithium-sulfide batteries and explosives.

- *Toxic:* Toxic wastes are harmful or fatal when ingested or absorbed, or leach toxic chemicals into the soil or groundwater when disposed of on land (40 CFR 261.24). Examples include wastes that contain high concentrations of heavy metals, such as cadmium, lead, or mercury.

Determining toxicity: A facility can determine if its waste is toxic by having it tested using the Toxicity Characteristic Leaching Procedure (TCLP), or by process knowledge. TCLP can be done at a local certified laboratory. It is designed to replicate the leaching process and other effects that occur when wastes are buried in a typical municipal landfill. If the waste contains any of the regulated contaminants at concentrations equal to or greater than the regulatory levels, then the waste exhibits the toxicity characteristic. Process knowledge is detailed information on wastes obtained from existing published or documented waste analysis data or studies conducted on hazardous wastes generated by similar processes. For example, EPA's lists of hazardous wastes in 40 CFR 261 (as discussed above) can be used as process knowledge.

If your facility generates hazardous waste, what is your generator category?

Determining your generator category. Your facility's hazardous waste generator category is determined by the amount of hazardous waste that it generates each month (40 CFR 261). There are three federal categories of hazardous waste generators:

- **Conditionally exempt small quantity generator (CESQG)**. CESQGs generate #220 pounds (100 kg) of hazardous waste per month or #220 pounds of spill cleanup debris containing hazardous waste per month. CESQGs have no maximum on-site time limits for storage, *but cannot accumulate more than 2,200 lbs. (1,000 kg) of hazardous waste onsite*. If a CESQG accumulates more than this amount, it becomes an SQG or LQG.

- **Small quantity generator (SQG)**. SQGs generate >220 pounds (100 kg) and <2,200 pounds (1,000 kg) of hazardous waste per month or >220 pounds and <2,200 pounds of spill cleanup debris containing hazardous waste per month. SQGs

may accumulate no more than 6,000 kg of hazardous waste in storage, which may be stored on site for no more than 180 days (or no more than 270 days if the treatment/disposal facility is more than 200 miles away). If an SQG accumulates more than the specified amount, it becomes an LQG.

- **Large quantity generator (LQG)**. LQGs generate $2,200 pounds (1,000 kg) of hazardous waste per month or $2,200 pounds of spill cleanup debris containing hazardous waste per month. LQGs may accumulate any amount of hazardous waste for no more than 90 days.

> Facilities that generate 2.2 pounds or less of acutely hazardous wastes per month are classified as CESQGs, whereas facilities that generate more than 2.2 pounds of acutely hazardous wastes per month are classified as LQGs.

Adding waste quantities. To determine which category applies to your facility, your facility must count all quantities of listed and characteristic hazardous wastes. These include wastes that are: (1) generated and collected at your facility prior to treatment or disposal; and (2) packaged and transported offsite.

Many hazardous wastes are liquids and are measured in gallons, not pounds. To approximate the number of pounds of liquid your facility has, multiply the number of gallons by 8.3 (because a gallon of water weighs 8.3 pounds and many liquids have a density similar to water).

> **Rough Guide**
> - 27 gallons (about half of a 55-gallon drum) of waste with a density similar to water weighs about 220 pounds (100 kg).
> - 270 gallons of waste with a density similar to water weighs about 2,200 lbs (1,000 kg).

When adding up all the hazardous wastes generated, keep in mind that your facility does <u>NOT</u> have to count the following:

- Wastes that are left on the bottom of containers that have been emptied by conventional means (i.e., pouring or pumping) and where no more than 2.5 cm (1 inch) of residue remains in the bottom of the container <u>or</u> no more than 3 percent by weight of the total capacity of the container remains in the container if the container is less than or equal to 110 gallons in size.

- Residues in the bottom of storage tanks, if the residue is not removed (i.e., residues left in the bottom of the storage container are not counted as long as they are not removed when the tank is refilled).

- Wastes that are reclaimed continuously on site without storing the waste prior to reclamation.

- Wastes that have already counted once during the calendar month, and treated onsite or reclaimed in some manner and used again.

- Wastes that are directly discharged to a municipal treatment plant or POTW without being stored or accumulated first.

- Waste oil that meets the criteria for used oil and is to be managed and handled as used oil (40 CFR 279).

- Scrap metal that is recycled [40 CFR 261.6(a)(3)].

If your facility is a CESQG, does it meet all applicable requirements?

As a CESQG, your facility's requirements are quite simple. There are three basic hazardous waste management requirements that apply to CESQGs:

- Identify all hazardous and acutely hazardous wastes (40 CFR 262.11). For help in identifying hazardous wastes, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

  An inspector may review your facility's waste determinations and any analytical data.

- Do not generate more than 220 lbs. (or 100 kg) per month of hazardous waste or more than 2.2 lbs. (1 kg) per month of acutely hazardous waste (this includes any wastes your facility has shipped off site for disposal during that month); and never store more than 2,200 lbs. (1,000 kg) of hazardous waste or 2.2 lbs. of acutely hazardous waste for any period of time (40 CFR 261 and 262).

  An inspector may evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category.

- Ensure proper disposal of your hazardous waste. For CESQGs, proper treatment and disposal of hazardous wastes are fairly simple. It involves ensuring that the waste is shipped to one of the following facilities:

  – A state or federally regulated hazardous waste management treatment, storage, or disposal facility (if your facility's waste is hazardous).

  – A facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste.

  – A facility that uses, reuses or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling).

  Self-transporting hazardous waste. CESQGs are allowed to transport their own wastes to the treatment or storage facility, unlike SQGs and LQGs which are required to use a licensed, certified transporter. While there are no specific RCRA requirements for CESQGs who transport their own wastes, Department of Transportation (DOT) requires all transporters of hazardous waste to comply with all applicable DOT regulations. Specifically, DOT regulations require all transporters, including CESQGs, transporting hazardous waste that qualifies as DOT hazardous material to comply with EPA hazardous waste transporter requirements see 40 CFR 263.

- As a CESQG, your facility is not required by federal laws to train its employees on hazardous waste handling or emergency preparedness, however, it is strongly advised. **Keep in mind that your employees responding to releases of hazardous substances and hazardous waste are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120.**

Your facility must comply with the above requirements to retain its CESQG status, and remain exempt from the more stringent hazardous waste regulations that apply to SQGs and LQGs. Though not required, it is recommended that your facility follow the waste storage and handling requirements for SQGs to minimize the possibility of any leaks, spills, or other releases that potentially could cause economic hardship to your facility. States may have more stringent and/or different requirements, so contact your state hazardous waste agency for these requirements.

If your facility is an SQG or LQG, does it meet all applicable requirements?

If your facility determines, based on the amount of waste generated, that it is an SQG or LQG, it must comply with a variety of requirements covering the storage and handling, treatment, and disposal of the hazardous waste, from generation to final disposal. These requirements include:

- **Waste identification**. As a generator, your facility must determine whether wastes are hazardous using the hazardous waste identification process (40 CFR 261). For assistance, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

  An inspector may review your facility's waste determinations and any analytical data.

- **EPA identification number**. An EPA hazardous waste generator identification number must be entered on all hazardous waste manifests (40 CFR 262.12). For assistance in obtaining a hazardous waste generator identification number (EPA form 8700-12 "Notification of Hazardous Waste Activity"), your facility may contact EPA or the state regulatory agency.

- **Accumulation and storage limits**. Onsite accumulation (storage) limits are based on the total **weight** of hazardous waste that can be accumulated at any time at your facility before it must be shipped offsite (40 CFR 262.34).

  An inspector may evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category (e.g., SQG or LQG).

- **Container management**. Your facility can store hazardous waste in 55-gallon drums, tanks, or other suitable containers, and it must comply with rules intended to protect human health and the environment and reduce the likelihood of damages or injuries caused by leaks or spills (40 CFR 265).

  An inspector may look at all hazardous waste on site noting the size and type of containers, their condition, and whether they are closed and protected from the weather. He/she may check the labels on the containers for the words "hazardous waste," and verify that the dates information is complete on the label. The inspector may also check the containment for cracks or leaks.

- **Personnel training**. Proper waste handling can save your facility money in waste treatment and disposal and in lost time due to employee illness or accidents. Your facility must train its employees on the procedures for properly handling hazardous waste, as well as on emergency procedures [40 CFR 262.34(a)]. For LQGs, the training must be formalized and be completed by employees within six months of accepting a job involving the handling of hazardous waste, and your facility is required to provide annual review of the initial training.

> Keep in mind that employees who are responding to releases of hazardous substances waste are also required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120, in addition to EPA's hazardous waste management training.

> An inspector may check personnel records to determine when hazardous waste duties were assigned and if proper training was provided by your facility.

- **Contingency planning, emergency procedures, and accident prevention**. If an LQG, your facility is required to have a **written contingency plan**. If an SQG, your facility must have **basic contingency procedures** in place. Although a **written** contingency plan is not federally required for SQGs or CESQGs, it is strongly recommended. It is also important to check with your state and local authorities for any additional contingency plan or emergency preparedness requirements (40 CFR 262).

> An inspector may review your facility's contingency plan or basic contingency procedures, and ask about any incidents requiring implementation of the plan or procedures.

- **Hazardous waste shipment labeling and placarding**. When your facility prepares hazardous wastes for shipment, it must put the wastes in properly labeled containers that are appropriate for transportation according to the DOT regulations (40 CFR 262).

- **Reporting and recordkeeping requirements**. Your facility is required to meet various reporting and recordkeeping requirements as part of your hazardous waste management activities. Reports include the following:

  - **Manifest form.** The Uniform Hazardous Waste Manifest Form (EPA Form 8700-22) is a multi-copy shipping document that reports the contents of your

shipment, the transport company used, and the treatment/disposal facility receiving the wastes (40 CFR 262.20). Your facility (i.e., the hazardous waste generator), the transporter, and the treatment/disposal facility must each sign this document and keep a copy. Your facility must keep the copy of the manifest signed by all three parties on file for three years.

- **Exception report**. Exception reports document a missing return copy of the hazardous waste manifest. Your facility must maintain copies of exception reports for three years.

- **Biennial report**. If an LQG, your facility must submit a biennial report (EPA 8700-13A) on March 1 of each even-numbered year to the appropriate EPA or state regulatory agency (40 CFR 262.41). Some states impose this requirement on SQGs. Your facility can obtain biennial report applications and instructions from EPA or its state regulatory agency.

- **Land disposal restriction notification**. Land disposal restrictions (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment of the waste (40 CFR 268). Your facility is required to provide a **one-time notification** about your wastes to the treatment or disposal facility with the first shipment of waste offsite, and keep a copy in your files.

In addition to these reports, your facility is required by EPA to keep certain records on file to show that good housekeeping practices and monitoring are being performed. EPA requires that records be kept on file at your facility for three years (40 CFR 262.40). These records include:

- Laboratory analyses and waste profile sheets for determining whether wastes generated by your facility are hazardous.

- Copies of all hazardous waste manifests, land disposal restriction notification, and exception reports.

- Copies of all Notification of Hazardous Activity forms submitted to and received from the state or EPA.

- For LQGs only, copies of: (1) all personnel training plans and documentation that indicate employees have completed the required training; (2) the facility's contingency plan; and (3) the facility's biennial report.

An inspector will most likely review all records, including but not limited to annual or biennial reports and manifests.

5.4 OIL SPILL PREVENTION, RESPONSE, AND RECOVERY

Some of the most important activities during ship scrapping are: (1) preventing oil discharges, (2) being prepared to respond to spills, and (3) knowing how to respond to spills and recover spilled materials. EPA issued the Oil Pollution Prevention regulation (40 CFR 112) to prevent oil spills from reaching navigable waters of the United States or adjoining shorelines and to prepare facility personnel in responding to oil spills. The regulation has two sets of requirements — the Spill Prevention, Control, and Countermeasures (SPCC) plan rule (an oil spill *prevention* program) and the Facility Response Plan (FRP) rule (an oil spill *response* program). Your facility may be subject to this regulation if it, among other things, produces, gathers, stores, transfers, or consumes oil.

5.4.1 Spill Prevention Planning

Does your facility have an SPCC plan?

The intent of an SPCC plan is to prevent the discharge of oil from non-transportation-related fixed facilities (40 CFR 112). Your facility may be required to prepare and implement an SPCC plan if:

(1) Due to its location, it could reasonably be expected to discharge oil into or upon the navigable waters of the United Stated or adjoining shorelines, AND

(2) It meets one of the following criteria regarding oil storage:

- An aboveground storage capacity of more than 660 gallons in a single container.
- A total aboveground storage capacity of more than 1,320 gallons.
- A total underground storage capacity of more than 42,000 gallons.

Storage Capacity: Remember, the requirements apply specifically to your storage capacity, regardless of whether the tanks are completely filled.

If subject to the SPCC requirements based on the above description, your facility is required to prepare an SPCC plan and follow the other provisions of the SPCC rule 40 CFR 112.3 through 112.7.

Tip: A sample SSPCC plan can be viewed at http://www.epa.gov/oilspill/sspcc/sampln.pdf

Does the SPCC plan include all the required information?

Your facility's SPCC plan must be unique to your facility, but also must have certain elements common to all plans (40 CFR 112.7). Specifically, the SPCC plan must:

- Be certified by a registered professional engineer (PE)
- Be kept on site
- Have full management approval
- Conform with all SPCC requirements in 40 CFR 112.7
- Discuss spill history
- Discuss spill prediction
- Be reviewed every three years
- Be amended when a change is made at the facility and recertified by a PE
- Include secondary containment or contingency plans
- Specify spill reporting

An inspector may review the facility's SPCC plan to ensure that it is certified by a registered professional engineer and that it is up-to-date.

5.4.2 Spill Response Planning

If subject to the SPCC requirements, your facility is required to conduct an initial screening to determine whether it is also required to develop a facility response plan (FRP). Under the FRP requirements, owners and operators of facilities that could cause "substantial harm" to the environment by discharging oil into navigable water bodies or adjoining shorelines must prepare FRPs for responding, to the maximum extent practicable, to the worst case discharge and to a substantial threat of such a discharge of oil (40 CFR 112.20 and 112.21, including Appendices A through F). Facilities subject to the FRP requirements are referred to either as **substantial harm** facilities or **significant and substantial harm** facilities.

Substantial Harm Facilities

If your facility is determined to be a substantial harm facility, it must prepare an FRP which is submitted to EPA **for review**. Your facility may be identified as posing a risk of substantial harm by one of two ways:

- **Either** through a self-determination process (EPA has established criteria located in 40 CFR 112.20 to assist facilities in making the determination - see below),

- **Or** by a determination of the EPA Regional Administrator (RA).

Self-Determination. Your facility has the potential to cause substantial harm if:

- **Either** the facility transfers oil over water to or from vessels **and** has a total oil storage capacity, including both ASTs and USTs, greater than or equal to 42,000 gallons;

- **Or** the facility's total oil storage capacity, including both ASTs and USTs, is greater than or equal to one million gallons **and one of the following is true**:

  - The facility does not have secondary containment for each aboveground storage area sufficient to contain the capacity of the largest AST within each storage area plus freeboard to allow for precipitation;

  - The facility is located at a distance such that a discharge could cause injury to fish and wildlife and sensitive environments;

  - The facility is located at a distance such that a discharge would shut down a public drinking water intake; or
  - The facility has had a reportable spill greater than or equal to 10,000 gallons within the last five years [40 CFR 112.20 (f)(1)].

EPA Determination. If a self-determination is not made, EPA's RA may determine whether your facility may cause substantial harm. EPA's RA may consider factors similar to the self-selection criteria, as well as other factors, including the type of transfer operations at a facility, the facility's oil storage capacity, lack of secondary containment, proximity to environmentally sensitive areas or drinking water intakes, and/or the facility's spill history. The EPA RA will notify your facility if EPA has determined that your facility poses a threat of substantial harm.

Significant and Substantial Harm Facilities

EPA is also required to identify a **subset** of substantial harm facilities that could cause **significant and substantial harm** to the environment upon a release of oil. In addition to the criteria used to determine substantial harm, EPA bases its determination of significant and substantial harm on other factors such as the age of tanks, proximity to navigable water, and spill frequency. Facilities are notified by EPA in writing of their status as posing significant and substantial harm. If your facility is notified by EPA, it must submit an FRP to EPA **for review and approval**. The RA will review the FRP and may inspect your facility for viability and compliance with the regulations before EPA approves the plan.

If Your Facility Does Not Meet the Criteria

If your facility ***does not*** meet the "substantial harm" criteria, it does not have to prepare and submit an FRP. However, your facility must document this determination by completing the "Certification of the Applicability of the Substantial Harm Criteria Checklist," provided as 40 CFR 112, Appendix C, Attachment C-II [40 CFR 112.20(e)]. This certification should be maintained with the facility's SPCC plan.

Does your facility have a facility response plan (FRP)?

If it has been determined, either through the self-selection process or by notification from the EPA RA, that your facility poses a threat of "substantial harm" to the environment, your facility must prepare and submit an FRP to the appropriate EPA Regional Office.

FRPs must:

- Be consistent with the National Contingency Plan (NCP) and the Area Contingency Plans.

> The NCP, also called the National Oil and Hazardous Substances Pollution Contingency Plan, is the federal plan for responding to both oil spills and hazardous substance releases. See http://www.epa.gov/oilspill/ncp for more information.

- Identify a qualified individual having full authority to implement removal actions, and require immediate communication between that person and the appropriate federal authorities and responders.

- Identify and ensure availability of resources to remove, to the maximum extent practicable, a worst-case discharge.

C Describe training, testing, unannounced drills, and response actions of persons at the facility.

C Be updated periodically.

C Be submitted for approval with each significant change.

To assist your facility in preparing an FRP, EPA has prepared and included a "model facility response plan" see 40 CFR 112.2, Appendix F. The following is a list of key FRP elements:

- Emergency response action plan. This should be maintained as an easily accessible, stand-alone section of the overall plan.
- Facility name, type, location, owner, and operator information.
- Emergency notification, equipment, personnel, and evacuation information.
- Identification and evaluation of potential spill hazards and previous spills.
- Identification of small, medium, and worst case discharge scenarios and response actions.
- Description of discharge detection procedures and equipment.
- Detailed implementation plan for containment and disposal.
- Facility and response self-inspection; training; exercises; and drills; and meeting logs.
- Diagrams of facility and surrounding layout, topography, and evacuation paths.
- Security measures including fences, lighting alarms, guards, emergency cutoff valves, and locks.

An inspector may evaluate FRP measures for their ability to facilitate adequate response to a worst-case discharge of oil.

Was an existing response plan used or modified?

EPA recognizes that many facilities may have existing *response* plans prepared to meet other requirements. Your facility does not need to prepare a separate FRP provided that your facility's original response plan:

Avoid Recreating the Wheel: EPA also recognizes that many facilities have established SSPCC plans. Although response plans and prevention plans are different, and should be maintained separately, some sections of the plans may be the same. Under OPA regulations, your facility is allowed to reproduce or use those sections of the SSPCC plan in your FRP.

(1) Satisfies the appropriate requirements and is equally as stringent;
(2) Includes all elements described in the model plan;
(3) Is cross-referenced appropriately; and
(4) Contains an action plan for use during a discharge.

Was the FRP prepared and submitted by the deadline?[2]

The time that your facility has to prepare and submit a FRP will vary depending on several factors, including the following:

- **Notification from EPA Regional Administrator:** If EPA notifies your facility that it is required to submit an FRP, then your facility must prepare and submit a plan within six (6) months.

- **Newly Constructed Facilities:** If your facility is newly constructed, it is required to submit the FRP prior to the start of operations. After sixty (60) days, your facility must make adjustments to the FRP to reflect changes that occur during the startup phase and resubmit the FRP.

- **Planned Facility Changes:** If your facility undergoes a planned change in design, construction, operation, or maintenance that places it in the designation of a substantial harm facility, then it must submit an FRP prior to the start of operations of the portion of the facility undergoing the changes.

[2] The initial statutory deadline for "substantial harm facilities" **either** to submit FRPS **or** to stop handling, storing or transporting oil was February 18, 1993. EPA's regulatory deadline for "substantial harm facilities" and "significant and substantial harm facilities" to submit FRPs or stop handling, storing or transporting oil was August 30, 1994, the effective date of the FRP rule.

- **Unplanned Facility Changes:** If your facility falls under the substantial harm facility designation because of an unplanned event or change in characteristics, then it must submit an FRP within six (6) months of the unplanned event.

Has the FRP been maintained and updated?

Your facility must periodically review your FRP to ensure consistency with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Area Contingency Plans (ACPs), and update it as appropriate [40 CFR 112.20(g)]. Consequently, if your facility is required to prepare a FRP, it must review relevant portions of the NCP and the applicable ACPs annually and update its FRP as appropriate. Your facility must submit revised portions of the FRP within 60 days of each facility change that may materially affect (1) the response to a worst case discharge or (2) the implementation of the response plan.

Area Contingency Plans (ACPs) include detailed information about resources (e.g., equipment and trained response personnel) available from the government agencies in the area. They also describe the roles and responsibilities of each responding agency during a spill incident. Your facility can order copies of ACPs from the National Technical Information Service (NTIS) by calling 1-800-553-6847. To obtain the NTIS ordering number for your area's ACP, first call the RCRA/UST, Superfund and EPCRA Hotline at 1-800-424-9346 or 703-412-9810.

Are appropriate FRP records maintained?

FRP requirements not applicable: If your facility determines that the response planning requirements do not apply, then it must certify and maintain a record of this determination using 40 CFR 112, Appendix C, Attachment C-II.

FRP requirements applicable: If your facility is subject to the response planning requirements, it is required to maintain the FRP at the facility. Your facility is also required to maintain updates to the plan to reflect material changes to the facility and to log activities such as discharge prevention meetings, response training drills, and exercises. Your facility must keep the records of these activities for a period of five years.

Are training and response drill requirements met?

All facilities (i.e., "substantial harm" and "significant and substantial harm" facilities) subject to facility response planning requirements must address training and response drills (40 CFR 112.21). FRPs must include (1) information about self-inspection drills, exercises, and response training, including descriptions and logs of training and drill or exercise program; and

(2) documentation of tank inspections, equipment inspections, response training meetings, response training sessions, and drills and exercises [40 CFR 112.20(h)(8)]. Consequently, FRPs may be revised based on evaluations of the drills and exercises.

Oil spill response training is an important element in EPA's oil spill prevention and preparedness efforts. Because operator error is often the cause of an oil spill, training and briefings are critical for prevention of a spill as well as response to a spill. Training encourages up-to-date planning for the control of, and response to, an oil spill and also helps to sharpen operating and response skills, introduces the latest ideas and techniques, and promotes interaction with the emergency response organization and familiarity with the facility's SPCC and FRP plans.

Your facility is also required to develop and implement a program of response drills and exercises, including evaluation procedures to test the effectiveness of your response plan. A program that follows the National Preparedness for Response Exercise Program (PREP) will meet EPA's exercise requirements. An alternative program can also be acceptable if approved by the EPA RA.

> The PREP guidelines booklet (USCG-X0191) and the Training Reference for Oil Spill Response (USCG-X0188) are available by mail or fax:
>
> TASC Department Warehouse
> 3341Q 75th Avenue
> Landover, MD 20785
> FAX: (301) 386-5394
>
> When requesting copies, please indicate the document name(s) and publication number(s).

5.4.3 Spill Notification and Recovery

Are oil spills reported as required?

> **Defining discharge**. "Discharge" means any spilling, leaking, pumping, pouring, emitting, emptying or dumping [CWA Section 311(a)(2)].

Though not common, your ship scrapping facility may experience accidental discharges of oil to U.S. waters or land while performing daily activities. Your facility is required to report discharges of oil to navigable waters or adjoining shorelines in quantities that may be harmful to public health or welfare or the environment (40 CFR 110). EPA has determined that discharges of oil in quantities that may be harmful include those that:

- Violate applicable water quality standards;
- Cause a film or "sheen" upon, or discoloration of, the surface of the water or adjoining shorelines; or

- Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

If there is such a discharge from a ship or the onshore facility that may reach waters or adjoining shorelines or land areas that may threaten waterways, your facility owner or operator must:

(1) **Call the National Response Center at 1-800-424-8802 or 703-412-9810** (Washington, D.C. area);

(2) **Contact the nearest U.S. Coast Guard (USCG) or EPA regional office spill line**; and

(3) **Report the spill to the state regulatory agency** where the spill occurred. Note: States and local government may have specific spill reporting requirements for facilities. For example, a facility may be required to report all spills meeting certain quantity thresholds, even if the spill does not leave a contained area within the facility. Check with your state and local regulatory agencies for their specific spill reporting requirements.

In addition, the owner or operator of your facility must submit, in writing, certain information (including the SPCC Plan) to the EPA Regional Administrator within 60 days, if the release meets either of the following conditions: (1) **either** a single discharge of more than 1,000 gallons of oil; **or** (2) two reportable spills/discharges of oil in harmful quantities, during any 12-month period, into or upon navigable waters, shorelines, etc.

If your facility has an NPDES permit and the discharge causes your facility to be out of compliance with the permit requirements, then your facility must report the occurrence to your permitting agency within 24 hours of becoming aware of a violation, and provide a written submission within 5 days.

Is all required information provided to the National Response Center?

When your facility contacts the National Response Center (NRC), the center staff person will ask for the following information:

- ? Your name, location, organization, and telephone number.
- ? Name and address of the party responsible for the incident.

- Date and time of the incident.
- Location of the incident.
- Source and cause of the release or spill.
- Types of material(s) released or spilled.
- Quantity of materials released or spilled.
- Danger or threat posed by the release or spill.
- Number and types of injuries.
- Weather conditions at the incident location.
- Any other information that may help emergency personnel respond to the incident.

The NRC records and maintains all spill reports in a computer database called the Emergency Response Notification System (ERNS), which is available to the public (http://www.epa.gov/ERNS). The NRC relays the spill information to the EPA and USCG, depending on the location of the incident. Specifically, the NRC notifies representatives of EPA or the USCG, known as On-Scene Coordinators (OSCs). The OSC is the federal official charged with directing a spill response through the Unified Command/Integrated Command System adopted by EPA and USCG. This intergovernmental coordinating system encourages, wherever possible, shared decision making by the federal lead response agency (EPA or USCG), the state(s) and the party responsible for the discharge/release.

s the facility prepared for an effective response to an oil spill?

The first and most immediate response to an oil spill is by your facility personnel. For this reason, facility response personnel must know the location, capabilities, and operating instructions of response equipment to attempt an effective oil recovery. For more information, visit EPA's Oil Program at **http://www.epa.gov/oilspill/**.

- **SPCC/FRP regulated facilities (or substantial harm facilities):** Within the SPCC-regulated community, facilities that may cause substantial harm to the environment or exclusive economic zone, based on the quantity and location of their oil storage, must prepare facility response plans (FRPs) to ensure that these facilities have the capability to response to worst case scenario discharges (40 CFR 112.20-21). FRPs greatly assist the facility and response agencies to expedite and coordinate cleanup efforts.

- **Other SPCC-regulated facilities:** It is recommended that all other facilities in the SPCC-regulated community be prepared to respond to a spill by identifying control and response measures in their SPCC plans. Every facility should have appropriate spill response equipment available and easily accessible. A spill kit, which should be keep

close at hand, should contain absorbent pads and booms, disposal containers or bags, shovels, an emergency response guidebook, a fire extinguisher, and a portable pump. It is also recommended that facilities coordinate with local responders, other nearby facilities, and contractors before a spill occurs to ensure an efficient and effective response. Facility personnel, including seasonal employees, must participate in spill response, notification, and oil recovery training courses. Being prepared to respond reduces the impact of a discharge on human health or the environment and minimizes cleanup costs and fines resulting from improper notification.

- **First response:** In the event of an oil spill, the response plan is immediately activated. The OSC will activate local, area, regional, or national plans depending on the nature of the spill and the response capability of the facility.

- **On-scene coordinators**: The designated OSC from EPA or USCG is responsible for determining how to respond to the spill, i.e., determining the resources, both personnel and equipment needed. The OSC does this based on his/her assessment of several factors, including the following: the magnitude and complexity of the spill; the availability of appropriate response equipment and trained personnel; and the ability of the responsible party, or local and/or state responders to respond to the spill.

  Although the OSC is responsible for coordinating federal efforts with local, state and regional response efforts, in practice the role of the OSC varies. Depending on the OSC's assessment, he/she may do the following: direct the response; direct the response in cooperation with other parties; oversee that the response is conducted by other parties; provide limited or periodic oversight; or determine that a federal response is not needed.

  For example, small spills may be cleaned up by the facility (or responsible party) or by local response agencies, while larger spills may require regional response efforts. In either cases, the OSC is required to oversee and monitor the spill response to make sure that all appropriate actions to prevent threats to human health or the environmental are taken. If, however, a facility is handling a smaller spill adequately, the OSC may not go to the site.

- **Oil recovery:** For federal-led cleanups, the OSC, response teams, and a network of experienced agencies will decide on the most effective method of cleanup (see below). For potentially responsible part (PRP)-led cleanups, cleanup efforts are carefully and efficiently coordinated to protect response personnel, recreational areas, drinking water reservoirs, and wildlife from the potentially catastrophic effects of an oil spill.

What oil recovery methods are used at the facility?

There are a number of advanced response methods available for controlling oil spills and recovering oil while minimizing their impacts on human health and the environment (see http://www.epa.gov/oilspill/oiltech.htm). The key to effectively combating spills is careful selection and proper use of equipment and materials best suited to the type of oil and the conditions at the spill site. Most spill response equipment and materials are greatly affected by such factors as conditions at sea, water currents, and wind.

Some kinds of response methods include:

- **Mechanical containment or recovery** is the primary line of defense against oil spills in the United States. Containment and recovery equipment includes a variety of booms, barriers, and skimmers, as well as natural and synthetic sorbent materials. Mechanical containment is used to capture and store the spilled oil until it can be disposed of properly.

- **Chemical and biological methods** can be used in conjunction with mechanical means for containing and cleaning up oil spills. Dispersants and gelling agents are most useful in helping to keep oil from reaching shorelines and other sensitive habitats. Biological agents have the potential to assist recovery in sensitive areas such as shorelines, marshes, and wetlands. Research into these technologies continues to improve oil spill cleanup.

- **Natural processes** such as evaporation, oxidation, and biodegradation can start the cleanup process, but are generally too slow to provide adequate environmental recovery.

- **Physical methods**, such as wiping with sorbent materials, pressure washing, and raking and bulldozing, can be used to assist the natural processes. **Scare tactics** are used to protect birds and animals by keeping them away from oil spill areas. Devices such as propane scare-cans, floating dummies, and helium-filled balloons are often used, particularly to keep away birds.

6. PAINT REMOVAL AND DISPOSAL

This section will address the removal and disposal of paints and other preservative coatings prior to metal cutting. Please note that in the context of ship scrapping, the removal of paints prior to cutting may, in certain circumstances, not be necessary. However, in those situations where it is necessary, there are specific requirements that must be followed. In addition, the removal of paints generates waste that must be managed and disposed of according to the appropriate solid waste and/or hazardous waste regulations.

6.1 INFORMATION ABOUT PAINTS AND PAINT REMOVAL

What types of paint and coatings are found on ships?

Paint and preservative coatings can be found on both interior and exterior surfaces of a ship. Particularly on older ships, paint may be flammable or may contain toxic compounds, such as polychlorinated biphenyls (PCBs), heavy metals (e.g., lead, barium, cadmium, chromium, and zinc), and pesticides. Lead compounds, such as red lead tetraoxide (Pb_3O_4) and lead chromate, have been used extensively in marine paint. In general, metal-based paints, some containing as much as 30 percent heavy metals, were intended to protect ship surfaces from corrosion due to exposure to the elements. Other paints containing pesticides, such as tributyl tin and organotin, have been used on the hulls of ships to prevent the buildup of sea organisms (e.g., bacteria, protozoa, barnacles, and algae).

Methods used to remove paints and coatings

Paints and coatings are typically removed using one of these three methods:

- **Chemical stripping**. Chemical stripping basically involves using solvents, such as methyl ethyl ketone and 1,1,1-trichloroethane, to remove the paint or coating. Solvents, which may be toxic or flammable, can be sprayed, wiped, or brushed on the surface and then removed, along with the paint or coating, using rags or wipes. Wastes generated from chemical stripping include contaminated or spent solvent, solvent residue or sludge, solvent-contaminated wipes/rags, and waste paint.

- **Abrasive blasting**. Using this method, paints and coatings are removed by blasting a surface with abrasives, such as copper slag, coal slag, steel grit, mineral grit, and steel shot. Blasting generates large amounts of dust, abrasive waste, and paint chips.

- **Mechanical removal**. This involves the use of power tools or flame to remove paints and coatings. The use of power tools, such as grinders, wire brushes, sanders, chipping hammers, needle guns, rotary peening tools, and other impact tools, generates waste such as dust and paint chips. Flame can also be used to remove certain paints or hardened preservative coatings, however, it should not be used on greasy or soft preservative coatings, or paints containing PCBs (see box).

The human health and environmental impacts associated with removing paints and coatings

Chemicals and solvents used in stripping paints or coatings emit volatile organic compounds (VOCs) and hazardous air pollutants (HAPs) to the atmosphere. Other removal methods (e.g., mechanical removal, abrasive blasting) generate dust, particulate matter, and emissions containing lead and other contaminants. These pollutants are hazardous to human health, potentially causing acute and chronic toxic effects in workers and possibly causing cancers. For example, lead can cause poisoning and long-term damage to the central nervous system. Though they can be absorbed and ingested, the main pathway of concern for these pollutants is inhalation.

> **Tip:** Paints containing PCBs cannot be removed with a torch or flame. This is considered open burning and is prohibited. Only non-thermal methods can be used to remove paints containing PCBs.

Wastes (e.g., blasting residue, paint chips) generated from paint removal can have negative impacts on the environment if they are not properly contained and disposed of. If not contained by engineering controls, lead and other compounds from the waste may be discharged into nearby surface waters or may contaminate the soil at a facility.

6.2 WHO REGULATES PAINT REMOVAL AND DISPOSAL ACTIVITIES?

The activities associated with the removal and disposal of paint and other coatings are regulated because of their potential to release toxic pollutants, thereby potentially endangering both human health and the environment.

- **EPA**. EPA regulates paint removal and disposal activities through the Clean Air Act (CAA) and the Resource Conservation and Recovery Act (RCRA). Facilities that emit regulated amounts of air pollutants must obtain the appropriate permit and comply with all

> **Note:** If paint contains PCBs, it may be regulated under the Toxic Substances Control Act (TSCA) at 40 CFR 761.

emissions requirements (40 CFR 50-99). Under RCRA's hazardous waste regulations (40 CFR 261-270), facilities that generate hazardous waste (e.g., paint chips containing heavy metals, spent solvents) must meet accumulation, manifesting, and recordkeeping requirements. Some of these are discussed in more detail in the next section.

- **OSHA**. OSHA is responsible for ensuring that workers are not at risk or in danger when conducting surface preparation activities. OSHA regulations include specific requirements or procedures for surface preparation activities, specifically to protect the health of workers (29 CFR 1915). These and other worker safety requirements are described in the following section.

6.3 PAINT REMOVAL ACTIVITIES

Worker exposure limits

During paint removal activities, your facility must ensure that workers are not exposed to any listed contaminant in excess of the permissible exposure limit (PEL) (20 CFR 1915 (Subpart Z)). For lead, which is commonly found in paint, the PEL is 50 Fg/m^3 of air averaged over an eight-hour work day. The action level is 30 Fg/m^3 of air, also based on an eight-hour work day. The action level triggers several requirements such as exposure monitoring, medical surveillance, and training and education (29 CFR 1915.1025).

Your facility can control a worker's exposure by using engineering controls, work practices, and/or administrative controls. However, if exposure cannot be reduced to or below the PEL through the use of such control or practices, your facility must provide personal protective equipment including, but not limited to, respiratory protection.

Have paints and coatings been tested to determine if they are flammable?

Before cutting a surface covered by a paint or preservative coating, your facility is required to know the flammability of that coating. If not known, your facility's competent person (see Section 6.3, Measures used to protect worker's health during paint removal activities, for definition) must conduct a test to determine the coating's flammability [29 CFR 1915.53(b)].

Is it highly flammable? Paints and preservative coatings are considered to be highly flammable when scrapings burn with extreme rapidity [29 CFR 1915.53(b)].

An inspector may review your facility's records to verify that tests were conducted to determine if coatings were flammable.

Highly flammable paints and coatings must be removed prior to metal cutting

When paints and hardened preservative coatings are determined to be highly flammable, they must be removed from the area to be heated (i.e., cut) to prevent ignition. In the case of ship scrapping, these coatings may be burned away under controlled conditions. As a precaution, your facility must have a 1½ inch or larger tire hose with a fog nozzle, which has been uncoiled and placed under pressure, available for instant use in the immediate vicinity [29 CFR 1915.53(c)].

An inspector may verify that highly flammable coatings have been removed prior to cutting.

Have paints and coatings been tested to determine if they are toxic?

Your facility may conduct tests to determine whether paints and coatings are toxic. If it chooses not to conduct such tests, your facility should assume that all paints and coatings are toxic. If testing is used to determine the presence and concentrations of toxic metals, it should consist of, but is not limited to, collecting random and representative bulk samples of suspect coatings. Samples should be analyzed in accordance with the *Test Methods for Evaluating Solid Waste, Physical and Chemical Methods* (SW-846, 3rd Edition, U.S. Environmental Protection Agency, 1986) for the appropriate metal.

Removing toxic paints and coatings in enclosed spaces

If surfaces in an enclosed space are covered with toxic paints and preservative coatings and <u>will be cut</u>, your facility must take one of the following actions [29 CFR 1915.53(d)(1)]:

- Strip all toxic paints and coatings for a distance of at least 4 inches (10 centimeters) from the area to be heated (i.e., cut); <u>or</u>

- Ensure that, during the cutting, workers are protected by approved air line respirators. This requirement is discussed in more detail in Section 7. *Metal Cutting and Metal Disposal*.

Measures used to protect worker health during paint removal activities

There are several measures that can be used to safeguard the health of employees exposed to solvents and chemicals used to prepare surfaces for cutting. These measures are not required under OSHA regulations for ship scrapping (they are required for shipbuilding and ship repair), however, they can be implemented by your ship scrapping facility as best management practices.

When using stripping techniques to remove paints:

- **For chemical paint and preservative removers**. Workers should be protected against all skin contact during handling and application of these removers. Additionally, workers should be protected against eye injury by goggles or face shields using approved personal protective equipment (PPE) (29 CFR 1915.33). When using chemical paint and preservative removers which contain volatile or toxic solvents (e.g., benzol, acetone, amyl acetate) or are flammable, your facility should follow the provisions described below.

- **For toxic solvents**. When toxic solvents (e.g., benzol, acetone, amyl acetate) are used, your facility can completely enclose the area to prevent the escape of vapor into the working space. Either natural ventilation or mechanical exhaust ventilation can be used to remove the vapor at the source and dilute the concentration of vapors in the working space to a concentration that is safe (i.e., below the PEL) for the entire work period. Workers should be protected against toxic vapors from these solvents by wearing approved respiratory protective equipment. They should also be protected against exposure of skin and eyes to contact with toxic solvents and their vapors by suitable clothing and equipment (29 CFR 1915.32). If flammable solvents are used, your facility should also use the protective measures described below.

- **For flammable liquids**. If flammable liquids, including flammable solvents or removers, are used to remove coatings, your facility should take additional precautions. For example, your facility should provide ventilation so that the concentration of vapors is below 10 percent of their lower explosive limit. This concentration should be

determined and monitored by your facility's competent person. Additionally, your facility should keep scrapings and rags soaked with flammable solvents in a covered metal container; use only explosion proof lights; and keep fire extinguishing equipment immediately available in the work area (29 CFR 1915.36).

Who is a "competent person"?
A competent person is a person who is capable of recognizing and evaluating worker exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to take to ensure worker safety. Your facility may designate any person who meets the requirements found in 29 CFR 1915.7 to be a competent person responsible for performing testing in certain situations (29 CFR 1915.7). The facility may use a Marine Chemist, or in some cases, a certified industrial hygienist to perform the same activities as a competent person.

When using abrasive blasting to remove paints:

- **Equipment.** When blasting, your facility should use equipment (e.g., hoses and fittings) that meets the following requirements. Hoses should be of a type to prevent shocks from static electricity. Hose lengths should be joined by metal couplings secured to the outside of the hose to avoid erosion and weakening of the couplings. Nozzles shall be attached to the hose by fittings that will prevent the nozzle from disengaging by accident, and nozzle attachments should be metal and fit onto the hose externally. A dead-man control at the nozzle should either provide direct cutoff or signal the operator to cut off the flow. Your facility should frequently inspect hoses and all fittings used for abrasive blasting to ensure timely replacement before an unsafe amount of wear has occurred.

- **Worker PPE**. Your facility should protect workers (referred to as abrasive blasters) conducting blasting in enclosed spaces by hoods and air-fed respirators or by positive-pressure air helmets. Abrasive blasters working in the open could use filter-type respirators when synthetic abrasives containing less than 1 percent free silica are being used. Workers other than blasters, including machine tenders and the abrasive recovery team, should use eye and respiratory protective equipment in areas where unsafe concentrations of abrasive materials and dusts are present [29 CFR 1915.34(c)].

When using mechanical removers to remove paints:

- **Power tools.** To protect against eye injuries, workers using power tools should be required to wear goggles or face shields. Portable electric tools should be grounded,

and portable rotating tools should be adequately guarded to protect all workers from flying missiles [29 CFR 1915.34(a)].

- **Flame removal**. Your facility should not allow hardened preservative coatings to be removed by flame in enclosed spaces unless workers exposed to the fumes are protected by air line respirators. Additionally, workers performing this operation in the open air, and those exposed to the resulting fumes, should be protected by fume filter type respirators [29 CFR 1915.34(b)].

> **Tip:** If your facility burns away **flammable** coatings, it is required to have a 1.5 inch (3.75 centimeter) or larger fire hose with a fog nozzle, which has been uncoiled and placed under pressure, immediately available for instant use [29 CFR 1915.53(c)].

An inspector may review surface preparation activities at the facility to verify that measures are being taken to protect worker health.

Air permit requirements

Ship scrapping activities, including surface preparation, will generate air pollutants subject to regulation under the Clean Air Act (CAA). Specifically, the use of solvents to strip coatings may result in the release of volatile organic compounds and hazardous air pollutants to the atmosphere. Because small quantities of solvent are used overall, these emissions are not likely to be of sufficient magnitude to have appreciable ambient air quality impacts. Likewise, the use of grit blasting medium would generate particulate matter, most of which would be larger than 10 microns and, thus, not regulated under the CAA. The regulated portion of the particulate matter (i.e., smaller than 10 microns) is not likely to cause ambient air quality impacts.

If your facility emits regulated amounts of air pollutants, your facility must obtain the appropriate operating or preconstruction permit and comply with all emissions requirements set forth in that permit. Contact EPA or your state or local air pollution control authority for more information about air permit requirements.

If a permit has been issued by EPA or the state or local air pollution control authority, an inspector may evaluate the facility for compliance with the specific permit conditions.

6.4 Managing and Disposing of Paint Removal Wastes

The removal of paints and coatings, regardless of the process used, will generate wastes that must be managed and disposed of. Your facility must implement procedures to ensure that all wastes are contained and stored in a manner that will prevent their release into the environment.

Does your facility have a storm water permit?

> The term "storm water" includes storm water runoff, snow melt runoff, and surface runoff and drainage [40 CFR 122.26(b)(13)].

Your facility may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for its storm water discharges. Typically, storm water discharge associated with industrial activity must be covered by an NPDES permit. The term "storm water discharge associated with industrial activity" means any discharge from a conveyance which is used for collecting and conveying storm water and is directly related to storage areas at an industrial facility. There are 11 categories of facilities considered to be engaged in industrial activity as defined in 40 CFR 122.26; one of which includes ship scrapping facilities. Contact EPA or your state regulatory agency for more information regarding NPDES storm water permitting requirements.

An inspector may review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit.

Measures or controls used to prevent or minimize storm water pollution

If your facility is required to obtain an NPDES storm water permit, it will likely be required to prepare and implement a storm water pollution prevention plan (SWPPP). Each plan is facility-specific because every facility is unique in its source, type and volume of contaminated storm water discharges. Regardless of the variations, all plans must include several common elements, such as a map and site-specific considerations. Additional elements include:

- Facility size and location
- A description of the volume of storm water and pollutants that could potentially be discharged
- Hydrogeology
- Environmental setting of each facility
- Predicted flow of storm water discharges

- Climate

As part of your plan, your facility must address how it will develop and use general and specific measures and controls (e.g., best management practices) to prevent or minimize pollution from storm water. One such measure may be to prevent storm water from coming in contact with wastes, including paint removal wastes.

Additionally, your facility's SWPPP must address how the facility will complete the following activities: develop a pollution prevention (P2) team; train employees; conduct inspections and evaluations; test outfalls; and perform recordkeeping.

An inspector may review your facility's SWPPP to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent storm water from coming into contact with wastes, including paint removal wastes.

Are paint removal wastes hazardous?

If your facility prepares surfaces for cutting, it is most likely generating hazardous waste, which is regulated under the Resource Conservation and Recovery Act (RCRA). Wastes that may be hazardous include contaminated or spent solvents; solvents that have become contaminated or have deteriorated due to improper storage or handling; solvent residues and sludges; solvent-contaminated rags; abrasive residues; and paint chips.

Tip: Paint waste that contains PCBs may also be regulated as a TSCA waste under 40 CFR 761. Some states regulate PCBs under their state RCRA programs and may have their own waste code for PCBs (even though there is no federal TSCA or RCRA waste code for PCBs).

To be considered "hazardous waste," materials must first meet EPA's definition of "solid waste." Solid waste is discarded material, such as garbage, refuse, and sludge, and it can include solids, semisolids, liquids, or contained gaseous materials. Solid wastes that meet the following criteria are considered hazardous and subject to RCRA regulations 40 CFR Part 261:

- **Listed waste.** Waste is considered hazardous if it appears on one of four lists of hazardous wastes published in 40 CFR 261 Subpart D. Currently, more than 400 wastes are listed. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not properly managed. Even when properly managed, some listed wastes are so dangerous that they are called "acutely

hazardous wastes." Examples of acutely hazardous wastes include wastes generated from some pesticides that can be fatal to humans even in low doses.

- **Characteristic waste**. If waste does not appear on one of the hazardous waste lists, it still might be considered hazardous if it demonstrates one or more of the following characteristics:

  - *Ignitable*: Ignitable wastes can create fire under certain conditions (e.g., temperature, pressure) or are spontaneously combustible (40 CFR 261.21). Examples include certain used paints, degreasers, oils and solvents.

  - *Corrosive:* Corrosive wastes are acids or bases that are capable of corroding metal, such as storage tanks, containers, drums, and barrels (40 CFR 261.22). Examples include rust removers, acid or alkaline cleaning fluids, and battery acid.

  - *Reactive:* Reactive wastes are unstable and explode or produce toxic fumes, gases, and vapors when mixed with water (40 CFR 261.23). Examples include lithium-sulfide batteries and explosives.

  - *Toxic:* Toxic wastes are harmful or fatal when ingested or absorbed, or leach toxic chemicals into the soil or groundwater when disposed of on land (40 CFR 261.24). Examples include wastes that contain high concentrations of heavy metals, such as cadmium, lead, or mercury.

Determining toxicity: A facility can determine if its waste is toxic by having it tested using the Toxicity Characteristic Leaching Procedure (TCLP), or by process knowledge. TCLP can be done at a local certified laboratory. It is designed to replicate the leaching process and other effects that occur when wastes are buried in a typical municipal landfill. If the waste contains any of the regulated contaminants at concentrations equal to or greater than the regulatory levels, then the waste exhibits the toxicity characteristic. Process knowledge is detailed information on wastes obtained from existing published or documented waste analysis data or studies conducted on hazardous wastes generated by similar processes. For example, EPA's lists of hazardous wastes in 40 CFR Part 261 (as discussed above) can be used as process knowledge.

If your facility generates hazardous waste, what is your generator category?

Determining your generator category. Your facility's hazardous waste generator category is determined by the amount of hazardous waste that it generates each month (40 CFR 261). There are three federal categories of hazardous waste generators:

- **Conditionally exempt small quantity generator (CESQG)**. CESQGs generate #220 pounds (100 kg) of hazardous waste per month or #220 pounds of spill cleanup debris containing hazardous waste per month. CESQGs have no maximum on-site time limits for storage, *but cannot accumulate more than 2,200 lbs. (1,000 kg) of hazardous waste onsite*. If a CESQG accumulates more than this amount, it becomes an SQG or LQG.

- **Small quantity generator (SQG)**. SQGs generate >220 pounds (100 kg) and <2,200 pounds (1,000 kg) of hazardous waste per month or >220 pounds and <2,200 pounds of spill cleanup debris containing hazardous waste per month. SQGs may accumulate no more than 6,000 kg of hazardous waste in storage, which may be stored on site for no more than 180 days (or no more than 270 days if the treatment/disposal facility is more than 200 miles away). If an SQG accumulates more than the specified amount, it becomes an LQG.

- **Large quantity generator (LQG)**. LQGs generate $2,200 pounds (1,000 kg) of hazardous waste per month or $2,200 pounds of spill cleanup debris containing hazardous waste per month. LQGs may accumulate any amount of hazardous waste for no more than 90 days.

Facilities that generate 2.2 pounds or less of acutely hazardous wastes per month are classified as CESQGs, whereas facilities that generate more than 2.2 pounds of acutely hazardous wastes per month are classified as LQGs.

Adding waste quantities. To determine which category applies to your facility, your facility must count all quantities of listed and characteristic hazardous wastes. This includes wastes that are, during a one month period: (1) generated and collected at your facility prior to treatment or disposal; and (2) packaged and transported off site.

Many hazardous wastes are liquids and are measured in gallons, not pounds. To approximate the number of pounds of

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- 27 gallons (about half of a 55-gallon drum) of waste with a density similar to water weighs about 220 pounds (100 kg).
- 270 gallons of waste with a density similar to water weighs about 2,200 lbs (1,000 kg).

liquid your facility has, multiply the number of gallons by 8.3 (because a gallon of water weighs 8.3 pounds and many liquids have a density similar to water).

When adding up all the hazardous wastes generated, keep in mind that your facility does NOT have to count the following:

- Wastes that are left on the bottom of containers that have been emptied by conventional means (i.e., pouring or pumping) and where no more than 2.5 cm (1 inch) of residue remains in the bottom of the container or no more than 3 percent by weight of the total capacity of the container remains in the container if the container is less than or equal to 110 gallons in size.

- Residues in the bottom of storage tanks, if the residue is not removed (i.e., residues left in the bottom of the storage container are not counted as long as they are not removed when the tank is refilled).

- Wastes that are reclaimed continuously on site without storing the waste prior to reclamation.

- Wastes that have already counted once during the calendar month, and treated on site or reclaimed in some manner and used again.

- Wastes that are directly discharged to a municipal treatment plant or POTW without being stored or accumulated first.

- Waste oil that meets the criteria for used oil and is to be managed and handled as used oil (40 CFR 279).

- Scrap metal that is recycled [40 CFR 261.6(a)(3)].

If your facility is a CESQG, does it meet all applicable requirements?

As a CESQG, your facility's requirements are quite simple. There are three basic hazardous waste management requirements that apply to CESQGs:

- Identify all hazardous and acutely hazardous wastes (40 CFR 262.11). For help in identifying hazardous wastes, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

An inspector may review your facility's waste determinations and any analytical data.

- Do not generate more than 220 lbs. (or 100 kg) per month of hazardous waste or more than 2.2 lbs. (1 kg) per month of acutely hazardous waste (this includes any wastes your facility has shipped off site for disposal during that month); and never store more than 2,200 lbs. (1,000 kg) of hazardous waste or 2.2 lbs. of acutely hazardous waste for any period of time.

An inspector may evaluate the total volume of waste on site at the time of the
inspection and verify that it is within the limits for your facility's generator category.

- Ensure proper disposal of your hazardous waste. For CESQGs, proper treatment and disposal of hazardous wastes are fairly simple. It involves ensuring that the waste is shipped to one of the following facilities:

  – A state or federally regulated hazardous waste management treatment, storage, or disposal facility (if your facility's waste is hazardous).

  – A facility permitted, licensed, or registered by a state to manage municipal or industrial solid waste.

  – A facility that uses, reuses or legitimately recycles the waste (or treats the waste prior to use, reuse, or recycling).

  Self-transporting hazardous waste. CESQGs are allowed to transport their own wastes to the treatment or storage facility, unlike SQGs and LQGs which are required to use a licensed, certified transporter. While there are no specific RCRA requirements for CESQGs who transport their own wastes, DOT requires all transporters of hazardous waste to comply with all applicable DOT regulations. Specifically, DOT regulations require all transporters, including CESQGs, transporting hazardous waste that qualifies as DOT hazardous material to comply with EPA hazardous waste transporter requirements see 40 CFR 263.

As a CESQG, your facility is not required by federal laws to train its employees on hazardous waste handling or emergency preparedness, however, it is strongly advised.

Tip: Keep in mind that your employees responding to releases of hazardous substances and hazardous wastes are required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120.

Your facility must comply with the above requirements to retain its CESQG status, and remain exempt from the more stringent hazardous waste regulations that apply to SQGs and LQGs. Though not required, it is recommended that your facility follow the waste storage and handling requirements for SQGs to minimize the possibility of any leaks, spills, or other releases that potentially could cause economic hardship to your facility. States may have more stringent and/or different requirements, so contact your state hazardous waste agency for these requirements.

If your facility is an SQG or LQG, does it meet all applicable requirements?

If your facility determines, based on the amount of waste generated, that it is an SQG or LQG, it must comply with a variety of requirements covering the storage and handling, treatment, and disposal of the hazardous waste, from generation to final disposal. These requirements include:

- **Waste identification**. As a generator, your facility must determine whether wastes are hazardous using the hazardous waste identification process (40 CFR 261). For assistance, call EPA or your state regulatory agency; a consultant; a licensed transporter; or the RCRA/UST, Superfund and EPCRA hotline at 703-412-9810 or 1-800-424-9346.

  An inspector may review your facility's waste determinations and any analytical data.

- **EPA identification number**. An EPA hazardous waste generator identification number must be entered on all hazardous waste manifests (40 CFR 262.12). For assistance in obtaining a hazardous waste generator identification number (EPA form 8700-12 "Notification of Hazardous Waste Activity"), your facility may contact EPA or the state regulatory agency.

- **Accumulation and storage limits**. Onsite accumulation (storage) limits are based on the total **weight** of hazardous waste that can be accumulated at any time at your facility before it must be shipped off site (40 CFR 262.34).

  An inspector may evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category (e.g., SQG or LQG).

- **Container management**. Your facility can store hazardous waste in 55-gallon drums, tanks, or other suitable containers, and it must comply with rules intended to protect human health and the environment and reduce the likelihood of damages or injuries caused by leaks or spills (40 CFR 265).

  An inspector may look at all hazardous waste on site noting the size and type of containers, their condition, and whether they are closed and protected from the weather. He/she may check the labels on the containers for the words "hazardous waste," and verify that the date information is complete on the label. The inspector may also check the containment for cracks or leaks.

- **Personnel training**. Proper waste handling can save your facility money in waste treatment and disposal and in lost time due to employee illness or accidents. Your facility must train its employees on the procedures for properly handling hazardous waste, as well as on emergency procedures [40 CFR 262.34(a)]. For LQGs, the training must be formalized and be completed by employees within six months of accepting a job involving the handling of hazardous waste, and your facility is required to provide annual review of the initial training.

  Keep in mind that employees who are responding to releases of hazardous substances or waste are also required to be trained under OSHA's Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements see 29 CFR 1910.120, in addition to EPA's hazardous waste management training.

  An inspector may check personnel records to determine when hazardous waste duties were assigned and if proper training was provided by your facility.

- **Contingency planning, emergency procedures, and accident prevention**. If an LQG, your facility is required to have a **written contingency plan**. If an SQG, your facility must have **basic contingency procedures** in place. Although a **written** contingency plan is not federally required for SQGs or CESQGs, it is strongly recommended. It is also important to check with your state and local authorities for any additional contingency plan or emergency preparedness requirements (40 CFR 262).

  An inspector may review your facility's contingency plan or basic contingency procedures, and ask about any incidents requiring implementation of the plan or procedures.

- **Hazardous waste shipment labeling and placarding**. When your facility prepares hazardous wastes for shipment, it must put the wastes in properly labeled containers that are appropriate for transportation according to the DOT regulations (40 CFR 262).

- **Reporting and recordkeeping requirements**. Your facility is required to meet various reporting and recordkeeping requirements as part of your hazardous waste management activities. Reports include the following:

  - **Manifest form**. The Uniform Hazardous Waste Manifest Form (EPA Form 8700-22) is a multi-copy shipping document that reports the contents of your shipment, the transport company used, and the treatment/disposal facility receiving the wastes (40 CFR 262.20). Your facility (i.e., the hazardous waste generator), the transporter, and the treatment/disposal facility must each sign this document and keep a copy. Your facility must keep the copy of the manifest signed by all three parties on file for three years.

  - **Exception report**. Exception reports document a missing return copy of the hazardous waste manifest. Your facility must maintain copies of exception reports for three years.

  - **Biennial report**. If an LQG, your facility must submit a biennial report (EPA 8700-13A) on March 1 of each even-numbered year to the appropriate EPA or state regulatory agency (40 CFR 262.41). Some states impose this requirement on SQGs. Your facility can obtain biennial report applications and instructions from EPA or its state regulatory agency.

- **Land disposal restriction notification**. Land disposal restrictions (LDRs) are regulations prohibiting the disposal of hazardous waste on land without prior treatment of the waste (40 CFR 268). Your facility is required to provide a **one-time notification** about your wastes to the treatment or disposal facility with the first shipment of waste off site, and keep a copy in your files.

In addition to these reports, your facility is required by EPA to keep certain records on file to show that good housekeeping practices and monitoring are being performed. EPA requires that records be kept on file at your facility for three years (40 CFR 262.40). These records include:

- Laboratory analyses and waste profile sheets for determining whether wastes generated by your facility are hazardous.

- Copies of all hazardous waste manifests, land disposal restriction notification, and exception reports.

- Copies of all Notification of Hazardous Activity forms submitted to and received from the state or EPA.

- For LQGs only, copies of: (1) all personnel training plans and documentation that indicate employees have completed the required training; (2) the facility's contingency plan; and (3) the facility's biennial report.

An inspector will most likely review all records including, but not limited to, annual or biennial reports and manifests.

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7. METAL CUTTING AND METAL DISPOSAL

During ship scrapping, the activities of metal cutting and scrap metal management present environmental as well as worker health and safety concerns. The following sections present background information on metal cutting, regulatory requirements to be met during metal cutting, and management options for metal scrap disposal.

7.1 INFORMATION ABOUT METAL CUTTING AND METAL DISPOSAL

This section provides a brief introduction to the metal cutting process and the tools used to perform cutting, a description of the kinds of scrap metal generated, and a summary of the environmental impacts and worker safety concerns relating to metal cutting activities.

What is metal cutting?

Metal cutting is the process of cutting a ship apart for the recovery of materials, including several grades and types of scrap metal (see below). During ship scrapping, the upper decks (i.e., the superstructure) and systems of the ship are cut first, followed by the main deck and lower decks. As large parts of the ship are cut away, they are lifted by crane to the ground where they are further cut into the shapes and sizes required by buyer (e.g., smelter, scrap metal broker). As cutting continues and the weight of the structure is reduced, the remaining hulk floats higher exposing lower regions of the hull for cutting. Finally, the remaining portion of the hull is pulled ashore and cut into sections.

How are metals cut?

The metals on ships are typically cut using a variety of torches and mechanical cutters. Some of these are described below.

While not as common as torches or cutters, some facilities employ the use of detonation charges to cut ship hulls.

- **Oxygen-fuel torches**. An oxygen-fuel torch is the tool of choice for cutting steel. It burns a wide variety of fuel (e.g., acetylene, propane, butane, fuel gas, natural gas) and uses either oxygen (liquid or compressed) or liquid air as the oxidizer and "cutting gas" that serves to burn (oxidize) iron along the cut line. Oxygen-fuel torches operate with a flame temperature of 3,500E- 4,000EF and flame velocities of 290 - 425 feet per second. Dozens of different styles of torches and torch tops are available depending on the type and supply pressure of the fuel and oxidizer, the thickness of the metal to be cut, and the environment where the work is done. The cutting speed of these torches ranges from

17 to 26 inches per minute depending on the steel thickness, fuel, oxidizer, and torch tip.

- **Electric arc or plasma arc torches**. These torches generate temperatures high enough to liquefy almost any metal by the discharge of electric arcs. A cutting gas, often air, is used to blow away the molten metal. Manual electric arc torches are much slower than oxygen-fuel torches, cutting at rates of no more than 10 inches per minute.

- **Shears**. Large industrial shears can quickly reduce large metal parts to small dimensions suitable for a remelting furnace with less labor than torch or saw cutting. There are dozens of sizes of stationary and mobile shears available. Large shears have cutting rates measured in tens of feet per minute. The thickness, toughness, and dimensions of the metal to be sheared, the required cutting rate, and the product dimensions are important for selecting the proper kind of shears for the job.

- **Saws.** Several kinds of electric power metal cutting saws are available, including those with circular and reciprocating blades. Saws can be used only on nonferrous metals (see below).

What kinds of metal scrap are generated?

Ship scrapping generates several grades and kinds of scrap metal, commonly called scrap species, that are bought and sold in scrap materials markets. The scrap markets can be broadly classified as those dealing in **ferrous** scrap and **nonferrous** scrap.

- **Ferrous scrap.** Ferrous scrap from ships comes from forgings and castings, shell plating, framing, deck plating and beams, bulkheads, pillars and girders, miscellaneous hull steel, foundations, and steel superstructures. In addition, some structural steel outfit, hull attachments, doors and hatches, deck outfit, steward's outfit, hull engineering items, piping, and miscellaneous machinery are ferrous scrap. Of these sources, the largest proportion is co-called "carbon steel," described in the scrap trade as No. 1 heavy melting scrap.

- **Nonferrous scrap**. While there are many kinds of nonferrous scrap, one of particular interest is copper-yielding scrap (i.e., cuprous scrap). Cuprous scrap, which has a number of subspecies, includes bronze, brass, and various other copper alloys.

Know the Value of Cuprous Scrap: While copper and copper alloys represent a small fraction of the total weight of the metals recovered from a ship, they return a large fraction of the revenue because of their high value.

To be marketable, scrap metal typically has to meet certain standards, such as quality and specific dimensions, which a buyer (e.g., a smelter or scrap metal broker) imposes on a seller (i.e., a ship scrapping facility).

An Example of a Buyer-Imposed Standard: No. 1 heavy melting scrap, a ferrous scrap metal species, is dimensionally limited by the buyer to the size of the scrap receiver box for the smelting furnace.

Potential environmental impacts from metal cutting

Ship scrapping will generate air pollutants subject to regulation under the Clean Air Act. Specifically, torch cutting will generate large amounts of fumes and some or all of the following materials as particulates: manganese, nickel, chromium, iron, aluminum, asbestos, and lead. It will also initiate small fires when oil or sludge is ignited by the torch. These fires are usually short-lived, but may generate some intense black smoke. The cutting torches themselves generate oxides of nitrogen (NOx) and sulfur (SOx), and the process of combustion produces carbon dioxide and carbon monoxide. In spite of these releases, air pollutants from metal cutting are not likely to have a major air quality impact.

New technology to reduce air emissions: The use of new technology may reduce air emissions from metal cutting operations. The employment of FireJet® torches, lasers, water-jets, explosives, and shears may produce fewer emissions from ship cutting than conventional torches. To the extent that cold cutting (e.g., water- jet cutting) is used, fumes from heated metals will be reduced or even eliminated. The FireJet® Torch produces fewer emissions than conventional torches.

The improper storage or disposal of scrap metal and other waste generated from metal cutting (e.g., filings, shavings) may result in soil and/or water contamination, primarily from lead and other compounds. Specifically, if metal scrap and waste are not protected from exposure to storm water, then metal wastes and contaminants from the scrap will be carried to surface waters and contribute to water contamination.

Worker health and safety concerns during metal cutting

One worker safety issue during metal cutting is exposure to air contaminants, including metal fumes, particulates, and smoke. These contaminants can have acute and chronic toxic effects on workers. For example, exposure to lead can cause poisoning and long-term damage to the

central nervous system. Although ingestion, and in some cases, absorption of these contaminants are possible, inhalation is the main pathway of concern.

OSHA has exposure limits for various air contaminants that are considered toxic. If instantaneous monitoring is not feasible, the ceiling is a 15-minute time-weighted average exposure, which must not be exceeded at any time over a working day. For example, there is such an instantaneous standard for manganese compounds and manganese fumes. In both cases, the limit is 5 milligrams per cubic meter (mg/m^3). For other contaminants, the exposure limit must not exceed a substance-specific, 8-hour time-weighted average in any 8-hour work shift of a 40-hour work week.

Examples of the maximum exposure limits (8-hour time-weighted average) for air contaminants potentially generated from torch cutting include the following:

Chromium metal	1 mg/m^3
Nickel	1 mg/m^3
Particulates not otherwise regulated	15 mg/m^3

Additionally, there are similar requirements that apply to occupational exposure to lead and cadmium. Lead and cadmium emissions may be generated during the torch cutting of metals containing these materials. The permissible exposure limit for lead is 50 Fg/m^3 averaged over an 8-hour work day. The action level is 30 Fg/m^3, also based on an 8-hour work day. The action level triggers several requirements such as exposure monitoring, medical surveillance, training, and education (29 CFR 1915.1025). The permissible exposure limit for cadmium is five Fg/m^3 averaged over an 8-hour workday. The action level is 2.5 Fg/m^3 of air, based on an 8-hour work day.

Note: OSHA is considering more stringent exposure limits for chromium, nickel, and manganese fumes, which are released in large amounts during torch cutting. The new limits being considered are as low as 0.5 Fg/m^3 and will be difficult to meet with existing cutting technology and ventilation practices.

7.2 WHO REGULATES METAL CUTTING AND METAL DISPOSAL ACTIVITIES?

Regulations governing metal cutting activities are important for the protection of the environment, as well as worker safety. These regulations are intended to (1) reduce the amount of pollutants released into the environment through air emissions, wastewater, and soil contamination, and (2) protect workers performing metal cutting activities.

- **EPA.** EPA is responsible for developing and enforcing regulations necessary to protect human health and the environment. EPA has regulatory oversight authority of metal

cutting activities under the following federal laws. Some of the requirements for these regulations will be presented in the following section.

- Under the Clean Air Act (CAA), air pollutants from ship scrapping facilities are subject to regulation. If emitted in regulated quantities, facilities will be required to obtain operating or preconstruction permits (40 CFR 50-99).

- Under the Resource Conservation and Recovery Act (RCRA) hazardous waste regulations (40 CFR 261-270), facilities that generate hazardous waste (e.g., scrap metal that is not recycled) must meet waste accumulation, manifesting, and recordkeeping requirements.

- Regulations under the Clean Water Act (CWA) require certain facilities to limit the amount of pollutants in their storm water discharges, and obtain a National Pollutant Discharge Elimination System (NPDES) permit (40 CFR 122.26). These facilities will be required to develop and implement storm water pollution prevention plans to prevent storm water from coming into contact with potential contaminants.

- **OSHA.** OSHA is responsible for the health and safety of workers who perform metal cutting operations. OSHA's regulations 29 CFR 1910 and 1915 include provisions to be followed by employers and workers regarding personal protective equipment, tools and equipment, and hot work being performed in the open air, as well as confined and enclosed spaces. These worker safety requirements will be described in more detail in the following sections.

7.3 METAL CUTTING PRACTICES AND PROCEDURES

7.3.1 Testing Required Prior to Hot Work

Prior to any cutting activities, have preservative coatings on surfaces been tested and removed if required?

For any surface covered by a preservative coating whose flammability is not known, your facility's competent person must test this coating prior to the surface being cut [29 CFR 1915.53(b)]. Under certain circumstances, your facility may be required to remove highly flammable or toxic coatings on surfaces to be cut. Please see *Section 6. Paint Removal and Disposal* for more information.

Have work areas been tested and certified as "Safe for Hot Work"?

If your facility is conducting metal cutting with torches, commonly called burning, it is performing what is considered by OSHA to be "hot work" [29 CFR 1915.11(b)]. Depending on the type of area where torch cutting will be conducted, your facility may have to test those areas prior to any work beginning.

- **Hot work requiring testing by a Marine Chemist or a U.S. Coast Guard authorized person**. If hot work is to be performed in certain confined or enclosed spaces or other dangerous atmospheres, boundaries of those spaces, or pipelines, your facility **cannot** start the work until those areas have been **tested** and **certified** by a Marine Chemist or a U.S. Coast Guard authorized person as "Safe for Hot Work." This includes areas that are:

> A **Marine Chemist** is a person who has a current Marine Chemist Certificate issued by the National Fire Protection Association.
>
> A **U.S. Coast Guard authorized person** is someone who meets certain requirements (found in Appendix B of 29 CFR 1915, Subpart B) for tank, cargo, and miscellaneous vessels.

  - Within, on, or immediately adjacent to spaces that contain or have contained combustible or flammable liquids or gases;
  - Within, on, or immediately adjacent to fuel tanks that contain or previously contained fuel; and
  - On pipelines, heating coils, pump fittings or other accessories connected to spaces that contain or previously contained fuel.

If a certain area is determined to be safe for hot work by the Marine Chemist or U.S. Coast Guard authorized person, a certificate, commonly called a hot work permit, will be issued by that person for that specific work area. Your facility must post this certificate in the immediate vicinity of the area while metal cutting is in progress, and keep it on file for at least three months from the completion date of the operation for which the certificate was issued.

> **What are hot work permits?** Hot work permits allow cutting torches and saws to be used to dismantle the ship. The hot work permits do not deal with environmental concerns such as cutting through lead or PCBs present in painted surfaces.

- **Hot work requiring testing by a competent person**. Hot work cannot be performed in or on the spaces or adjacent spaces or other dangerous atmospheres listed below until they have been tested by a competent person and determined to contain concentrations of flammable vapors or gases less than 10 percent of the lower explosive limit:

> **Who is a competent person?** A competent person is a person who is capable of recognizing and evaluating worker exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to take to ensure worker safety. Your facility may designate any person who meets the competent person requirements to be responsible for performing testing in certain situations (29 CFR 1915.7). The facility may use a Marine Chemist, or in some cases, a certified industrial hygienist to perform the same activities as a competent person.

  - Dry cargo holds;
  - Bilges;
  - Engine room and certain boiler spaces;
  - Vessels or vessel sections; and
  - Landside confined and enclosed spaces or other dangerous atmospheres.

  If vapor concentrations are found to be equal to or greater than 10 percent of the lower explosive limit, an area will be labeled "Not Safe for Hot Work" and ventilated until the limits are met [29 CFR 1915.14(b)].

7.3.2 Performing Metal Cutting

Do workers wear appropriate personal protective equipment when metal cutting?

Your facility must ensure that all workers performing any type of metal cutting are wearing suitable eye protective equipment (29 CFR 1915.153), as well as appropriate hand and body protection (29 CFR 1915.157). Workers performing metal cutting must not wear clothing impregnated or covered in full or in part with flammable or combustible materials (e.g., grease or oil).

Metal cutting at your facility may produce noise levels in excess of 100 decibels (dBA). If workers are subjected over a constant period of time to sound exceeding certain levels (29 CFR 1910.95), your facility must use feasible

> For acoustic measurements of effects on humans, sound levels are denoted as dBA.

administrative or engineering controls to reduce the noise. If these controls fail to reduce the noise, then your facility must supply workers with personal protective equipment.

Equipment requirements when conducting gas or arc cutting

Your facility must comply with certain requirements when cutting with torches that burn gas. These requirements apply to transporting, moving, and storing compressed gas cylinders; placing cylinders; the treatment of cylinders; using fuel gas; fuel gas and oxygen manifolds; hoses; torches; and pressure regulators [29 CFR 1915.55].

Additionally, your facility must comply with certain requirements when arc cutting. These requirements apply to manual electrode holders; welding cables and connectors; ground returns and machine grounding; operation instructions; and shielding (29 CFR 1915.56).

Air permit requirements

Ship scrapping activities, including metal cutting, will generate air pollutants subject to regulation under the Clean Air Act. Specifically, torch cutting will generate large amounts of fumes and particulate matter, including particulate matter with a particle size of less than 10 microns (PM_{10}), and will initiate small fires when oil or sludge is ignited by the torch. These fires are usually short-lived, but may generate some intense black smoke.

If your facility emits regulated amounts of air pollutants, it must obtain the appropriate operating or preconstruction permit and comply with all emissions requirements set forth in that permit. Contact EPA or your state or local air pollution control authority for more information about air permit requirements.

An inspector may investigate any open burning activities at the facility. In addition, if a permit has been issued by EPA or the state or local regulatory agency, the inspector may evaluate the facility for compliance with the specific permit conditions.

Is mechanical ventilation provided when metal cutting?

In Open Areas:

In open areas, workers at your facility can normally perform general metal cutting **without** mechanical ventilation or

Even in open areas, it is recommended that air sampling be conducted to ensure that there is no exposure to workers during metal cutting.

respiratory protective equipment, provided that (1) it is not done in confined or enclosed spaces and (2) metals containing or coated with toxic materials are not being cut [29 CFR 1915.51(f)]. If, however, unusual physical or atmospheric conditions, such as confined spaces, result in the unsafe accumulation of contaminants, your facility must provide workers with suitable mechanical ventilation or respiratory protective equipment [29 CFR 1915.51(f)].

Mechanical ventilation can consist of either a general mechanical ventilation system or a local exhaust system [29 CFR 1915.51(b)].

- **General mechanical ventilation** must have sufficient capacity and provide the number of air changes necessary to maintain fumes and smoke within safe limits.

- **Local exhaust ventilation** must have freely movable hoods that can be placed as close as practicable by the metal cutter to the work. This system must have sufficient capacity and be arranged so as to remove fumes and smoke at the cutting site and keep the concentrations in the breathing zone within safe limits.

In Confined Spaces:

What is a confined space? A confined space is a compartment of small size and limited access (e.g., double bottom tank, cofferdam) which by its small size and confined nature can readily create or aggravate a hazardous exposure.

While not common, metal cutting may have to be performed in a confined space during scrapping activities. If this occurs, your facility must provide one kind of mechanical ventilation described above and must provide the required means of access to the space for workers. There must be more than one way to access the confined space (unless the arrangement of the space makes this impractical), and if the ventilation ducts must pass through these means of access, they must be arranged so as to allow workers to freely pass through at least two of these means of access [29 CFR 1915.76(b)(1)-(2)].

If sufficient ventilation is not possible without blocking the means of access, workers must use air line respirators and a worker outside of the confined space must maintain communication with those working within and aid them in an emergency [29 CFR 1915.51(c)].

An inspector may verify that appropriate mechanical ventilation is provided for workers, if required, during metal cutting.

Is the proper mechanical ventilation or respiratory protection used when cutting certain metals?

Within Enclosed Spaces:

While also not a common ship scrapping activity, your workers may be required to conduct metal cutting of certain metals in enclosed spaces. These metals may be described as containing or being coated with toxic materials. If cutting or heating these metals in enclosed spaces, your facility must provide workers with the appropriate kind of mechanical ventilation or respiratory protection [29 CFR 1915.51(d)(1)-(2)] as presented below:

> **What is an enclosed space?** An enclosed space is any space, other than a confined space, which is enclosed by bulkheads and overhead. This includes cargo holds, tanks, quarters, and machinery and boiler spaces.

- Workers must be provided with and use either **general mechanical ventilation** or **local exhaust ventilation** (described above) when cutting the following kinds of metals:

  - Zinc-bearing base or filler metals or metals coated with zinc-bearing materials
  - Lead based metals
  - Cadmium-bearing filler materials
  - Chromium-bearing metals or metals coated with chromium-bearing materials

- Workers must be provided with and use **local exhaust ventilation** or **air line respirators** when cutting the following kinds of metals:

  - Metals containing lead (other than as an impurity) or metals coated with lead-bearing materials
  - Cadmium-bearing or cadmium-coated base materials
  - Metals coated with mercury-bearing materials

In Open Air:

If your workers are cutting the same metals containing toxic materials described above in the open air, they must wear filter-type respirators [29 CFR 1915.51(d)(3)].

> **Tip:** Be sure to protect workers exposed to the smoke and fumes from these operations in the same manner as the worker(s) actually doing the work.

For Beryllium-Containing Base or Filler Metals:

Your facility must provide workers with local exhaust ventilation and air line respirators regardless of whether this work is being performed in an **enclosed space** or in the **open air** [29 CFR 1915.51(d)(2)-(3)].

Are hollow metal containers and structures cleaned, vented, or tested before cutting?

For drums, containers, or hollow structures which have contained flammable substances, your facility must fill them with water or thoroughly clean them of such substances, and ventilate and test them prior to cutting. Your facility must provide a vent or opening in each drum, container, hollow structure, or jacketed vessel for the release of any pressure which may build up during heating.

For structural voids such as skegs, bilge keels, fair waters, masts, booms, support stanchions, pipe stanchions or railings, your facility's competent person must inspect the object and, if necessary, test for the presence of flammable liquids or vapors and nonflammable liquids that could heat up and cause pressure (29 CFR 1915.54).

Fire prevention requirements

Your facility must take the appropriate steps during metal cutting to prevent fires. This can include moving objects to be cut to a safe location or taking all movable fire hazards away from the object to be cut. If either of these is not possible, then your facility must take all steps possible to confine the heat, sparks, and slag, and to protect the immovable fire hazards from them [29 CFR 1915.52(a)(1)-(2)].

The cutting of particular objects (e.g., tank shells, decks, overheads) may result in the direct penetration of sparks or heat transfer which can cause a fire in an adjacent compartment. In these situations, the same precautions must be taken on the opposite side as are taken on the side where the cutting is being performed [29 CFR 1915.52(a)(3)].

Additionally, your facility must eliminate the possibility of fire in confined spaces as a result of gas escaping through leaking or improperly closed torch valves. This can be done by positively shutting off the gas supply to the torch at some point outside the confined space whenever the torch is not used or whenever the

Tip: Open end fuel gas and oxygen hoses must be immediately removed from confined spaces when they are disconnected from the torch or other gas consuming device [29 CFR 1915.52(a)(4)].

torch is left unattended for a substantial period of time (e.g., lunch hour). The torch and hose must be removed from the confined space overnight and at shift changes [29 CFR 1915.52(a)(4)].

7.3.3 Managing Scrap Metal

s all scrap metal recycled?

If your facility **recycles** its "processed scrap metal," it does not have to manage this scrap according to the RCRA regulations [40 CFR 261.4 (a)(13)]. "Processed scrap metal" basically includes the hulls or other surfaces which are cut up during scrapping. Additionally, all other scrap metal (scrap metal that is not "processed scrap metal") onsite is classified by EPA as "hazardous waste that is recyclable," and if recycled, is not subject to RCRA regulations [40 CFR 261.6(a)(3)(ii)].

Basically, this means that if your facility **recycles** all of its processed and other scrap metal**,** these materials are not subject to regulation under RCRA. Your facility can recycle scrap metal by selling it to a resmelting firm or scrap metal broker.

Note: All scrap metal that is **not recycled** must be managed and disposed of according to the hazardous waste regulations (40 CFR 261-270).

s recyclable metal recovered using shredders and separators?

Recyclable metal that is <u>intermixed with nonmetallic material</u> can be recovered for reuse using shredders and separators. For example, shipboard electric cables, when averaged over a whole ship, can range from 40% - 75% by weight copper. These cables are often shredded for the recovery of the copper by recyclers specializing in this process.

- **Shredders.** Shredders, of which hundreds of kinds are available, basically reduce the parts to a gravel-like mixture of metal particles and non-metal "fluff."

What is "fluff"? Fluff is a term used in the recycling trade for solid and liquid nonrecoverable nonmetallic materials obtained during the ship scrapping process. Fluff is not salable. Because it may contain regulated hazardous waste (e.g., asbestos, PCBs, hydrocarbons), it must be managed and disposed of according to the hazardous waste regulations (40 CFR 261-270).

- **Separators.** After shredding, the metals can then be separated from the fluff by several kinds of separators. These include, but are not limited to magnetic separators, air floatation separator columns, and shaker tables.

Is cable burning for copper recovery prohibited?

For the recovery of copper wire, facilities burn cables to remove coverings. However, your facility should be aware that cable burning may be regulated by state or local open burning regulations. Additionally, cutting cable coverings containing PCBs and/or asbestos is considered open burning and is prohibited according to TSCA requirements (see *Section 3.0*) and asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements (see *Section 2.0*), respectively.

Is wastewater from metal cutting operations managed with bilge water?

During metal cutting operations, water is used to extinguish small fires which may occur. Such water typically drains to the lower areas of the ship, commonly called bilge areas. All wastewater (i.e., bilge water) in these areas must be removed and disposed of according to the applicable regulations, as described in *Section 4. Bilge and Ballast Water Removal*.

Does your facility have a storm water permit?

Your facility may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for its storm water discharges.

> The term "storm water" includes storm water runoff, snow melt runoff, and surface runoff and drainage [40 CFR 122.26(b)(13)].

Typically, storm water discharge associated with industrial activity must be covered by an NPDES permit. The term "storm water discharge associated with industrial activity" means any discharge from a conveyance which is used for collecting and conveying storm water and is directly related to storage areas at an industrial facility. There are 11 categories of facilities considered to be engaged in industrial activity as defined in 40 CFR 122.26; one of which includes ship scrapping facilities. Contact EPA or your state regulatory agency for more information regarding NPDES storm water permitting requirements.

An inspector may review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit.

Measures or controls used to prevent or minimize storm water pollution

If your facility is required to obtain an NPDES storm water permit, it will likely be required to prepare and implement a storm water pollution prevention plan (SWPPP). Each plan is facility-specific because every facility is unique in its source, type and volume of contaminated storm water discharges. Regardless of the variations, all plans must include several common elements, such as a map and site-specific considerations. Additional elements include:

- Facility size and location
- A description of the volume of storm water and pollutants that could potentially be discharged
- Hydrogeology
- Environmental setting of each facility
- Predicted flow of storm water discharges
- Climate

As part of your plan, your facility must address how it will develop and use general and specific measures and controls (e.g., best management practices) to prevent or minimize pollution from storm water. One such measure may be to prevent storm water from coming in contact with wastes, including metal cutting wastes.

Additionally, your facility's SWPPP must address how the facility will complete the following activities: develop a pollution prevention (P2) team; train employees; conduct inspections and evaluations; test outfalls; and perform recordkeeping.

An inspector may review your facility's SWPPP to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent storm water from coming into contact with wastes, including metal cutting wastes.

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8. REMOVAL AND DISPOSAL OF MISCELLANEOUS SHIP MACHINERY

During ship scrapping, there are many types of machinery that are removed from a ship. Some of this machinery may be sold for reuse or recycled as scrap. The following section presents background information on miscellaneous ship machinery, regulatory requirements applicable to the removal and disposal of this machinery, as well as options for recycling and reusing these components.

8.1 INFORMATION ABOUT MISCELLANEOUS SHIP MACHINERY

This section provides a brief introduction to the kinds of miscellaneous ship machinery that are recovered during ship scrapping, and the possible environmental impacts and worker health and safety concerns during removal and disposal activities.

What is miscellaneous ship machinery and where is it found on a ship?

Ship machinery consists of various components that are removed from a ship during the scrapping process. These include, but not limited to, the following:

- Main propulsion; turbine drain and leakoff system
- Main reduction gears
- Main condenser
- Main air ejector
- Main circulating system
- Feed heaters
- Feed and condensate system
- Saltwater evaporator system
- Shafting, bearings, and stern tubes
- Propellers
- Miscellaneous shafting parts
- Lubrication oil system
- Miscellaneous engine oil tanks
- Cables/wires
- Fluff from wire/cable stripping
- Boilers including fuel oil burners and soot blowers
- Boiler draft system
- Air systems
- Automatic combustion system
- Stacks and uptakes
- Fuel oil service system
- Main steam piping
- Auxiliary stem piping
- Exhaust and escape piping
- Steam drain system
- Access systems
- Work shop, lifting, and handling gear
- Machinery space ventilation and fixtures
- Machinery space fixtures
- Miscellaneous instruments and gauges

When are components removed during scrapping?

Machinery components are typically removed throughout the scrapping process. During the preparation phase of scrapping, small articles and the propellors are removed which allows the hulk to be pulled into shallow water where scrapping usually takes place. As layers of the ship are cut, large reusable or recyclable components are removed as they become accessible.

What are potential worker health and safety and environmental impacts from ship machinery removal and disposal?

When removed from the ship, ship machinery components are typically handled in the shipyard, or what is commonly called the scrap yard. These components, which may be stripped of valuable materials and/or cut into smaller pieces, may contain or be contaminated with hazardous materials, including asbestos, polychlorinated biphenyls (PCBs), oils, and fuels.

In the scrap yard, facilities should ensure that machinery components are being handled in such a manner as to prevent soil, surface water, and groundwater contamination. If improperly stored, residues and hazardous materials from ship machinery components may come in contact with rain water and cause soil and/or water contamination.

Avoid lead contamination: Lead contamination of soil and groundwater has been found at ship scrapping facilities due to the improper handling and storage of ship components. Facilities should take extra measures to prevent this type of contamination from occurring at their site.

Workers exposure to any hazardous materials in ship machinery may potentially have serious health effects. More information on specific impacts of asbestos, PCBs, and oils and fuels can be found in Sections 2, 3, and 5, respectively, of this guide.

8.2 WHO REGULATES THE REMOVAL AND DISPOSAL OF MISCELLANEOUS SHIP MACHINERY?

Regulations governing the removal and disposal of miscellaneous ship machinery are important for the protection of the environment, as well as worker health and safety. These regulations are intended to (1) reduce the amount of pollutants released into the environment through air emissions, wastewater, and soil contamination, and (2) protect workers performing machinery removal activities.

- **EPA.** EPA is responsible for developing and enforcing regulations necessary to protect human health and the environment. EPA has regulatory oversight authority of ship

machinery removal and disposal activities under the Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA), and the Clean Water Act (CWA). In addition, if ship machinery contains or is contaminated by PCBs, it or its components may be regulated under the Toxic Substances Control Act (TSCA). These requirements are described in more detail in this section and other sections of this guide.

- **OSHA.** OSHA is responsible for the health and safety of workers who perform ship machinery removal activities. OSHA regulations (29 CFR 1915) include provisions to control worker exposure to hazards encountered during ship machinery removal. These requirements are described in more detail in this section and other sections of this guide.

8.3 SHIP MACHINERY REMOVAL AND DISPOSAL ACTIVITIES

Are worker health and safety requirements met?

Your facility must protect workers during ship machinery removal activities according to OSHA's Shipyard Industry standards (29 CFR 1915.1001) and General Industry standards (29 CFR 1910). These rules regulate general working conditions (e.g., housekeeping, illumination, first aid); the use of scaffolds, ladders, and other working surfaces; gear and equipment for rigging and materials handling; and tools and equipment. Additionally, if any machinery components contain or are covered with asbestos or PCBs, your facility must ensure that all workers are protected from exposure to these contaminants as required (see below).

Are asbestos requirements met during ship machinery removal?

Asbestos may be part of a machinery component or may be encountered by workers when removing and handling a machinery component. Regardless of its occurrence, your facility must comply with all applicable asbestos requirements, many of which are highlighted in *Section 2. Asbestos Removal and Disposal*. For additional information on asbestos, please refer to the appropriate parts of *Section 9. Resources*.

Are PCB requirements met during ship machinery removal?

Like asbestos, PCBs may be found in a machinery component or may have contaminated a component. For example, cable and chain anchor may contain PCB-laden materials. If found, your facility must comply with all applicable PCB requirements, many of which are highlighted in *Section 3. Sampling, Removal, and Disposal of Polychlorinated Biphenyls*. For additional information on PCBs, please refer to the appropriate parts of *Section 9. Resources*.

Are oils/fuels removed from ship machinery components handled as required?

Your facility may encounter for removal (1) machinery containing oils or fuels, or (2) machinery containing small compressors or engines which contain oils or fuels. Your facility must ensure that all oils/fuels found in machinery or machinery components are properly handled as described in *Section 5. Oil and Fuel Removal*. For additional information on oil removal, please refer to the appropriate parts of *Section 9. Resources*.

Are paint removal and metal cutting requirements met during ship machinery removal?

If paint removal and subsequent metal cutting are required to remove a machinery component, your facility must comply with all applicable requirements for these activities, some of which are presented in *Section 6. Paint Removal and Disposal* and *Section 7. Metal Cutting and Metal Disposal*. For additional information on these activities, please refer to the appropriate parts of *Section 9. Resources*.

Is machinery recycled or sold for reuse?

Your facility may remove miscellaneous ship machinery that may be categorized as reusable or recyclable.

- **Reuse.** Reusable equipment and components (e.g., compressors, electric motors) can be sold directly with little or no refurbishment by your facility. However, while there is a market for these components, it is presently not very active as many components recovered from ships are obsolete by current standards or can be obtained elsewhere either in better used condition or unused at a lower price.

> Ship propulsion machinery that is certified by a recognized organization, such as the American Bureau of Shipping, can be resold for use in other ships.

- **Recycle.** A large portion of ship machinery is considered ferrous scrap, and can be sold to resmelters or recyclers. In addition, some components, such as main generators, motors, and other electrical items, are high in copper content, making them intrinsically more valuable than merely ferrous materials.

Is recyclable metal recovered using shredders and separators?

Recyclable metal that is intermixed with nonmetallic material can be recovered for reuse using shredders and separators. For example, shipboard electric cables, when averaged over a whole ship, can range from 40% - 75% by weight copper. These cables are often shredded for the recovery of the copper by recyclers specializing in this process.

- **Shredders.** Shredders, of which hundreds of kinds are available, basically reduce the parts to a gravel-like mixture of metal particles and non-metal "fluff."

- **Separators.** After shredding, the metals can then be separated from the fluff by several kinds of separators. These include, but are not limited to magnetic separators, air floatation separator columns, and shaker tables.

Is cable burning for copper recovery prohibited?

For the recovery of copper from electrical systems, facilities may burn cables to remove coverings. However, your facility should be aware that cable burning may be regulated by state or local open burning regulations. Additionally, if these coverings contain PCBs and/or asbestos, your facility is prohibited from burning the coverings according to TSCA requirements (see *Section 3.0*) and asbestos NESHAP requirements (see *Section 2.0*), respectively.

Does your facility have a storm water permit?

> The term "storm water" includes storm water runoff, snow melt runoff, and surface runoff and drainage [40 CFR 122.26(b)(13)].

Your facility may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for its storm water discharges. Typically, storm water discharge associated with industrial activity must be covered by an NPDES permit. The term "storm water discharge associated with industrial activity" means any discharge from a conveyance which is used for collecting and conveying storm water and is directly related to storage areas at an industrial facility. There are 11 categories of facilities considered to be engaged in industrial activity as defined in 40 CFR 122.26; one of which includes ship scrapping facilities. Contact EPA or your state regulatory agency for more information regarding NPDES storm water permitting requirements.

An inspector may review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit.

Measures or controls used to prevent or minimize storm water pollution

If your facility is required to obtain an NPDES storm water permit, it will likely be required to prepare and implement a storm water pollution prevention plan (SWPPP). Each plan is facility-specific because every facility is unique in its source, type and volume of contaminated storm water discharges. Regardless of the variations, all plans must include several common elements, such as a map and site-specific considerations. Additional elements include:

- Facility size and location
- A description of the volume of storm water and pollutants that could potentially be discharged
- Hydrogeology
- Environmental setting of each facility
- Predicted flow of storm water discharges
- Climate

As part of your plan, your facility must address how it will develop and use general and specific measures and controls (e.g., best management practices) to prevent or minimize pollution from storm water. One such measure may be to prevent storm water from coming in contact with wastes, including scrap metal and other wastes.

Additionally, your facility's SWPPP must address how the facility will complete the following activities: develop a pollution prevention (P2) team; train employees; conduct inspections and evaluations; test outfalls; and perform recordkeeping.

An inspector may review your facility's SWPPP to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent storm water from coming into contact with wastes, including scrap metal and other wastes.

9. RESOURCES

9.1 CONTACT INFORMATION

9.1.1 EPA Headquarters and EPA Regional Offices

EPA Headquarters

U.S. Environmental Protection Agency
Attn: Federal Facilities Enforcement Office (2261A)
1200 Pennsylvania Ave. NW
Washington, DC 20460
Telephone: (202) 564-2461
Fax: (202) 564-0069
Website: http://www.epa.gov/fedfac/fflex.html

EPA Regional Offices

EPA Regional Office Information

Region	Address	Telephone & Fax Numbers Web Address
1 (CT, MA, ME, NH, RI, VT)	Environmental Protection Agency Region 1 One Congress Street Suite 1100 Boston, MA 02214-2023	Telephone: (617) 918-1111 Toll Free: (617) 918-1809 Website: http://www.epa.gov/region1/
2 (NJ, NY, PR, VI)	Environmental Protection Agency Region 2 290 Broadway New York, NY 10007-1866	Telephone: (212) 637-3000 Fax: (212) 637-3526 Website: http://www.epa.gov/region2/
3 (DC, DE, MD, PA, VA, WV)	Environmental Protection Agency Region 3 1650 Arch Street Philadelphia, PA 19103-2029	Telephone: (215) 814-5000 Toll free: (800) 438-2474 Fax: (215) 814-5103 Website: http://www.epa.gov/region3/

EPA Regional Office Information

Region	Address	Telephone & Fax Numbers Web Address
4 (AL, FL, GA, KY, MS, NC, SC, TN)	Environmental Protection Agency Region 4 Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303-3104	Telephone: (404) 562-9900 Toll free: (800) 241-1754 Fax: (404) 562-8335 Website:http://www.epa.gov/region4/
5 (IL, IN, MI, MN, OH, WI)	Environmental Protection Agency Region 5 77 West Jackson Boulevard Chicago, IL 60604-3507	Telephone: (312) 353-2000 Toll free: (800) 621-8431 Fax: (312) 353-1155 Website: http://www.epa.gov/region5/
6 (AR, LA, NM, OK, TX)	Environmental Protection Agency Region 6 1445 Ross Avenue, Suite 1200 Dallas, TX 75202-2733	Telephone: (214) 665-2200 Toll free: (800) 887-6063 Fax: (214) 665-2146 Website:http://www.epa.gov/region6/
7 (IA, KS, MO, NE)	Environmental Protection Agency Region 7 901 N. 5th Street Kansas City, KS 66101	Telephone: (913) 551-7003 Toll free: (800) 223-0425 Fax: (913) 551-7467 Website: http://www.epa.gov/region7/
8 (CO, MT, ND, SD, UT, WY)	Environmental Protection Agency Region 8 999 18th Street Suite 500 Denver, CO 80202-2466	Telephone: (303) 312-6312 Toll free: (800) 227-8917 Fax: (303) 312-7061 Website: http://www.epa.gov/region8/
9 (AZ, CA, HI, NV)	Environmental Protection Agency Region 9 75 Hawthorne Street San Francisco, CA 94105	Telephone: (415) 744-1305 Fax: (415) 744-1070 Website: http://www.epa.gov/region9/
10 (AK, ID, OR, WA)	Environmental Protection Agency Region 10 1200 6th Avenue Seattle, WA 98101	Telephone: (206) 553-1200 Toll free: (800) 424-4372 Fax: (206) 553-6984 Website: http://www.epa.gov/region10/

9.1.2 OSHA Headquarters and OSHA Regional Offices

OSHA Headquarters

U.S. Department of Labor
Occupational Safety and Health Administration (OSHA)
200 Constitution Avenue, N.W.
Washington, D.C. 20210
Telephone: 1-800-321-6742 (In case of emergency)
Website: http://www.osha.gov

OSHA Regional Offices

OSHA regional offices as listed below can be contacted for additional information. Additional contact information for area offices, which are located within each region, can be found at each regional office's website listed below or at http://spider.osha.gov/oshdir/. You may also visit OSHA's State Offices at the following website: http://www.osha.gov/oshdir/states.htm

OSHA Regional Office Information

Region (Area Offices)	Address	Telephone & Fax Numbers Web Address
1 (CT, MA, ME, NH, RI, VT)	Occupational Safety and Health Administration, Region 1 JFK Federal Building Room E340 Boston, MA 02203	Telephone: (617) 565-9860 Fax: (617) 565-9827 Website: http://www.osha.gov/oshdir/r01.html
2 (NJ, NY, PR, VI)	Occupational Safety and Health Administration, Region 2 201 Varick Street, Room 670 New York, NY 10014	Telephone: (212) 337-2378 Fax: (212) 337-2371 Website: http://www.osha.gov/oshdir/r02.html
3 (DC, DE, MD, PA, VA, WV)	Occupational Safety and Health Administration, Region 3 Gateway Building, Suite 2100 3535 Market Street Philadelphia, PA 19104	Telephone: (215) 596-1201 Fax: (215) 596-4872 Website: http://www.osha.gov/oshdir/r03.html
4 (AL, FL, GA, KY, MS, NC, SC, TN)	Occupational Safety and Health Administration, Region 4 Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303	Telephone: (404) 562-2300 Fax: (404) 562-2295 Website: http://www.osha.gov/oshdir/r04.html
5 (IL, IN, MI, MN, OH, WI)	Occupational Safety and Health Administration, Region 5 230 South Dearborn Street Room 3244 Chicago, IL 60604	Telephone: (312) 353-2220 Fax: (312) 353-7774 Website: http://www.osha.gov/oshdir/r05.html

OSHA Regional Office Information

Region (Area Offices)	Address	Telephone & Fax Numbers Web Address
6 (AR, LA, NM, OK, TX)	Occupational Safety and Health Administration, Region 6 525 Griffin Street, Room 602 Dallas, TX 75202	Telephone: (214) 767-4731 Fax: (214) 767-4137 Website: http://www.osha.gov/oshdir/r06.html
7 (IA, KS, MO, NE)	Occupational Safety and Health Administration, Region 7 City Center Square 1100 Main Street, Suite 800 Kansas City, MO 64105	Telephone: (816) 426-5861 Fax: (816) 426-2750 Website: http://www.osha.gov/oshdir/r07.html
8 (CO, MT, ND, SD, UT, WY)	Occupational Safety and Health Administration, Region 8 1999 Broadway, Suite 1690 Denver, CO 80202-5716	Telephone: (303) 844-1600 Fax: (303) 844-1616 Website: http://www.osha.gov/oshdir/r08.html
9 (AZ, CA, HI, NV, and Guam and American Samoa)	Occupational Safety and Health Administration, Region 9 71 Stevenson Street, Room 420 San Francisco, California 94105	Telephone: (415) 975-4310 (Main Public - 8 am - 4:30 pm Pacific) (800) 475-4019 (For Technical Assistance) (800) 475-4020 (For Complaints - Accidents/Fatalities) (800) 475-4022 (For Publication Requests) Fax: (415) 975-4319 Website: http://www.osha.gov/oshdir/r09.html
10 (AK, ID, OR, WA)	Occupational Safety and Health Administration, Region 10 1111 Third Avenue, Suite 715 Seattle, WA 98101-3212	Telephone: (206) 553-5930 Fax: (206) 553-6499 Website: http://www.osha.gov/oshdir/r10.html

9.1.3 State and Local Contacts

State Environmental Agencies

Links to all state environmental agencies can be accessed at the Environmental Professional's Homepage at http://www.clay.net/.

State Air Pollution Agencies: State and Territorial Air Pollution Administrators (STAPPA) and Association of Local Air Pollution Control Officials (ALAPCO)

This website contains links to state government agency home pages and other state government resources and can be accessed at http://www.4cleanair.org/.

9.2 HOTLINES

There are various sources your facility can contact to receive additional information and assistance regarding the requirements presented in this guide. Some of these hotlines and the related ship scrapping processes are listed below.

For Help Relating to:	Call This Hotline:
Asbestos Removal and Disposal	**Asbestos Ombudsman Clearinghouse/Hotline** Toll-free: (800) 368-5888 Telephone: (703)305-5938 or 202-260-0490 Fax: (703) 305-6462 The Asbestos Ombudsman Clearinghouse/Hotline provides general information about asbestos to the public. Operated by EPA's Small Business Ombudsman's Office, it also assists small businesses in complying with EPA regulations.
Asbestos Removal and Disposal Sampling, Removal and Disposal of PCBs Removal and Disposal of Misc. Ship Machinery	**Toxic Substances Control Act (TSCA) Assistance** Telephone: (202) 554-1404 Fax: (202) 554-5603 Email: tscahotline@epamail.epa.gov The EPA TSCA Hotline provides up-to-date technical assistance and information about programs implemented under TSCA. In addition, the Hotline provides a variety of documents, including *Federal Register* notices, reports, informational brochures, and booklets. It can also provide referrals to specific sources of information. The Hotline is a free service.

For Help Relating to:	Call This Hotline:
Bilge and Ballast Water Removal Oil and Fuel Removal Removal and Disposal of Misc. Ship Machinery	**EPA's Oil Spill Information Line** To access the EPA's Oil Spill Program Information Line, call the RCRA/UST, Superfund and EPCRA Hotline (see below). To report an oil or hazardous substance release, call the National Response Center at (800) 424-8802 (see below). EPA's Oil Spill Program is designed to prevent oil spills, as well as prepare for and respond to any oil spill affecting the inland waters of the U.S. The program is administered by EPA Headquarters and the 10 EPA Regions. Website: http://www.epa.gov/oilspill
Bilge and Ballast Removal Oil and Fuel Removal Paint Removal and Disposal Removal and Disposal of Misc. Ship Machinery	**RCRA/UST, Superfund and EPCRA Hotline** Toll-free: (800) 424-9346 Telephone: (703) 412-9810, (800)-535-7672 TDD line for the hearing-impaired, or (703) 412-3323 TDD in the Washington DC area Fax: (703) 603-9234 This hotline provides information about the regulations and programs implemented under RCRA, CERCLA (Superfund), EPCRA/SARA Title III. This hotline also provides referrals for documents related to these programs. Translation is available for Spanish-speaking callers.

For Help Relating to:	Call This Hotline:
Bilge and Ballast Removal Oil and Fuel Removal Removal and Disposal of Misc. Ship Machinery	**National Response Center (NRC)** Toll-free: 1-800-424-8802 Telephone: 703-412-9810 (Washington, D.C. area) Website: http://www.epa.gov/oilspill/NRC or http://www.nrc.uscg.mil/ The National Response Center (NRC) is the federal government's national communications center, which is staffed 24 hours a day by U.S. Coast Guard officers and marine science technicians. The NRC receives all reports of releases involving hazardous substances and oil that trigger the federal notification requirements under several laws. It is the responsibility of the NRC staff to collect available information on the size and nature of the release, the facility or vessel involved, and the party(ies) responsible for the release. The NRC relays the spill information to the EPA and/or the U.S. Coast Guard (USCG), depending on the location of the incident. The NRC records and maintains all spill reports in a computer database called the Emergency Response Notification System (ERNS), which is available to the public.
All processes	**OSHA Public Affairs** Telephone: 202-693-1999

9.3 ADDITIONAL CONTACTS AND RESOURCES

General Tools For Ship Scrapping Activities

OSHA Expert Advisor Tools

- **Hazard Awareness Advisor - (Public Test Version *)**
  This is a powerful, interactive, expert software to identify hazards in General Industry workplaces. It can be accessed at http://www.osha.gov/oshasoft/hazexp.html. It is designed to help users, particularly small businesses, to identify and understand common occupational safety and health hazards in their work places. (*Note: Public Test Versions do not represent official OSHA policy).

  Once installed on your PC, it asks you about activities, practices, materials, equipment, and policies in your work places, and it asks follow-up questions based on your answers. From the users' answers, the Hazard Awareness Advisor draws inferences about the

hazards that are likely to be present. It prepares a customized report that briefly describes the likely hazards and the OSHA standards which address those hazards.

This Advisor is an introduction to hazard recognition. It is NOT able to identify ALL hazards. It is NOT a substitute for safety and health professionals. The system will NOT determine compliance with OSHA standards. It is intended for beginners not experts.

- **$AFETY PAYS**
  OSHA's "$AFETY PAYS" program is interactive software developed by OSHA to assist employers in assessing the impact of occupational injuries and illnesses (with Lost Work Days) on their profitability. It uses a company's profit margin, the AVERAGE costs of an injury or illness, and an indirect cost multiplier to project the amount of sales a company would need to generate in order to cover those costs. It can be accessed at http://www.osha.gov/oshasoft/safetwb.html.

OSHA Technical Advisor Tools

- **Respiratory Protection Technical Advisor - (Public Test Version *)**
  The purpose of this Advisor is to help you comply with the new OSHA respirator standard. This interactive online Advisor will instruct you on the proper selection of respiratory protection and the development of change schedules for gas/vapor cartridges. It can be accessed at http://www.osha-slc.gov/SLTC/respiratory_advisor/change_schedule.html. (*Note: Public Test Versions do not represent official OSHA policy).

Asbestos Removal and Disposal

EPA Asbestos Coordinators

EPA has asbestos coordinators, including TSCA and NESHAP coordinators, located in the regional offices. These coordinators (as of August 1999) are listed below. For the most up-to-date listing, your facility should check EPA's asbestos website at http://www.epa.gov/asbestos/contacts.htm.

EPA Asbestos Coordinator Information

Region	TSCA Coordinator Information	NESHAP Coordinator Information
1	Jim Bryson U.S. EPA, Region 1 One Congress Street Suite 1100 Mailcode: CPT Boston, MA 02214-2023 Telephone: (617) 918-1524 Fax: (617) 918-1505	Wayne Toland U.S. EPA, Region 1 One Congress Street Suite 1100 Mailcode: SEA Boston, MA 02214-2023 Telephone: (617) 918-1852 Fax: (617) 918-1810
2	Bob Fitzpatrick U.S. EPA, Region 2 290 Broadway, 21st Floor Mailcode: DECA/ACB New York, NY 10007-1866 Telephone: (212) 637-4042 Fax: (212) 637-3998	Bob Fitzpatrick U.S. EPA, Region 2 290 Broadway, 21st Floor Mailcode: DECA/ACB New York, NY 10007-1866 Telephone: (212) 637-4042 Fax: (212) 637-3998
3	Garry Sherman U.S. EPA, Region 3 1650 Arch Street Mailcode: 3WC32 Philadelphia, PA 19103 Telephone: (215) 814-5267 Fax: (215) 814-3113	Garry Sherman U.S. EPA, Region 3 1650 Arch Street Mailcode: 3WC32 Philadelphia, PA 19103 Telephone: (215) 814-5267 Fax: (215) 814-3113
4	Alfreda Freeman U.S. EPA, Region 4 61 Forsyth Street SW Mailcode: APTMD Atlanta, GA 30303-8960 Telephone: (404) 562-8977 Fax: (404) 562-8972, 8973	Leia Richardson U.S. EPA, Region 4 61 Forsyth Street SW Mailcode: 4APT-AEEB Atlanta, GA 30303-8960 Telephone: (404) 562-9199 Fax: (404) 562-9164
5	Phil King U.S. EPA, Region 5 77 West Jackson Boulevard Mailcode: DT-8 J Chicago, IL 60604 Telephone: (312) 353-9062 Fax: (312) 353-4342	Rochelle Marceillars U.S. EPA, Region 5 77 West Jackson Boulevard Mailcode: AE-17 J Chicago, IL 60604 Telephone: (312) 353-4370 Fax: (312) 353-8289

EPA Asbestos Coordinator Information

Region	TSCA Coordinator Information	NESHAP Coordinator Information
6	Neil Pflum U.S. EPA, Region 6 1445 Ross Avenue Rm. 1200 Mailcode: 6T-ET Dallas, TX 75202-2733 Telephone: (214) 655-2295 Fax: (214) 655-6762	Elvia Evering U.S. EPA, Region 6 1445 Ross Avenue Rm 1200 Mailcode: 6EN-AT Dallas, TX 75202-2733 Telephone: (214) 655-7575 Fax: (214) 655-7446
7	Greg Crable U.S. EPA, Region 7 901 N. 5th Street Kansas City, KS 66101 Telephone: (913) 551-7391 Fax: (913) 551-7065	Greg Crable U.S. EPA, Region 7 901 N. 5th Street Kansas City, KS 66101 Telephone: (913) 551-7391 Fax: (913) 551-7065
8	Bob Vick U.S. EPA, Region 8 999 18th Street, Suite 500 Mailcode: 8ENF-T Denver, CO 80202-2466 Telephone: (303) 312-6204 Fax: (303) 312-6409	Bob Vick U.S. EPA, Region 8 999 18th Street, Suite 500 Mailcode: 8ENF-T Denver, CO 80202-2466 Telephone: (303) 312-6204 Fax: (303) 312-6409
9	Patricia Maravilla U.S. EPA, Region 9 75 Hawthorne Street Mailcode: CMD-4-2 San Francisco, CA 94105 Telephone: (415) 744-1122 Fax: (415) 744-1073	Bob Trotter U.S. EPA, Region 9 75 Hawthorne Street Mailcode: A-3-3 San Francisco, CA 94105 Telephone: (415) 744-1145 Fax: (415) 744-1076
10	Jayne Carlin U.S. EPA, Region 10 1200 6th Avenue Mailcode: WCM-128 Seattle, WA 98101 Telephone: (206) 553-4762 Fax: (206) 553-8509	Kathleen S. Johnson U.S. EPA, Region 10 1200 6th Avenue Mailcode: OAQ-107 Seattle, WA 98101 Telephone: (206) 553-1757 Fax: (206) 553-0110

OSHA Expert Advisor Tool - The Asbestos Advisor 2.0

The Asbestos Advisor 2.0 is an interactive compliance assistance tool. It can be accessed at http://www.osha.gov/oshasoft/asbestos/. Once installed on your facility's computer, it can interview you (as the site supervisor) or your colleagues about buildings and worksites, and the kinds of tasks workers perform there. It will produce guidance on how the asbestos standard may apply to that work. Its guidance depends on your answers. This tool can provide general guidance, but may also be focused on a particular project. It provides pop-up definitions through "hypertext." Remember: This interactive expert program provides guidance, much as you would get from a pamphlet. It is **NOT** a substitute for the standards.

Sampling, Removal and Disposal of PCBs

EPA Regional PCB Coordinators

Within each EPA Region, the EPA Regional Administrator has designated regional PCB coordinators to oversee the development of PCB efforts within each Region. A list of these coordinators, which is **updated monthly**, can be viewed at http://www.epa.gov/opptintr/pcb/coordin.htm. The PCB coordinators, as of December 1999, are listed below.

EPA Regional PCB Coordinators

Region	Contact and Phone Number		Fax Number
1	Kim Tisa Abdi Mohamoud	(617) 918-1527 (617) 918-1858	(617) 918-0527
2	Dave Greenlaw John Brogard (Permits) Ann Finnegan Dan Kraft Vivian Chin Dorothy Zoledziowska	(732) 906-6817 (212) 637-4162 (732) 906-6177 (732) 321-6669 (732) 906-6179 (732) 906-6811	(732) 321-6788
3	Scott Rice Charlene Creamer	(304) 231-0501 (215) 814-2145	(215) 814-3114
4	Stuart Perry Craig Brown	(404) 562-8980 (404) 562-8990	(404) 562-8972

EPA Regional PCB Coordinators

Region	Contact and Phone Number		Fax Number
5	Tony Martig John Connell Priscilla Fonseca Jean Greensley (Permit Writer) Steve Johnson (Permit Writer)	(312) 353-2291 (312) 886-6832 (312) 886-1334 (312) 353-1171 (312) 886-1330	(312) 353-4788
6	Lou Roberts Jim Sales (Permits)	(214) 665-7579 (214) 665-6796	(214) 665-7446
7	Dave Phillippi Gene Evans (Permit Writer) James Callier (Permits)	(913) 551-7395 (913) 551-7731 (913) 551-7646	(913) 551-7065
8	Dan Bench Francis Tran Kim Le (Enforcement)	(303) 312-6027 (303) 312-6036 (303) 312-6973	 (303) 312-6044 (303) 312-6409
9	Max Weintraub Christopher Rollins Yosh Tokiwa	(415) 744-1129 (415) 744-1130 (415) 744-1118	(415) 744-1073
10	Dan Duncan Cathy Massimino Viccy Salazar	(206) 553-6693 (206) 553-4153 (206) 553-1060	(206) 553-8509

Bilge and Ballast Water Removal

EPA Headquarters and EPA Regional NPDES and Pretreatment Coordinators

If your facility has questions regarding its NPDES permit requirements, contact the appropriate EPA permit regional contact. These contacts (as of October 1999) are listed below. For the most up-to-date listing, your facility should check EPA's website at http://www.epa.gov/owm/wm05000.htm#regions.

In addition, EPA regional industrial pretreatment coordinators and state pretreatment coordinators are available to assist you with questions regarding your pretreatment requirements. These coordinators (as of October 1999) are listed below. For the most up-to-

date listing, your facility should check EPA's website at http://www.epa.gov/owm/permits/pretreat/ptregcon.htm.

EPA Headquarters

U.S. Environmental Protection Agency
Pretreatment and Multimedia Branch
Permits Division (MC4203)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Telephone: (202) 260-1090
Fax: (202) 260-1460
Website: http://www.epa.gov/owm/

EPA Regional NPDES Permit and Industrial Pretreatment Coordinators

Region	NPDES Permit Coordinator Information	Industrial Pretreatment Coordinator Information
1	Roger Janson 617-918-1621 Fax: 617-918-1505 U.S. EPA, Region 1 Water Quality Management Unit One Congress Street Suite 1100 Boston, MA 02214-2023	Justin (Jay) Pimpare (617) 918-1531 Joseph Canzano (617) 918-1763 Fax: (617) 918-2064 U.S. EPA, Region 1 One Congress Street Suite 1100-CMU Boston, MA 02214-2023
2	Walter Andrews (212) 637-3880 Fax: 212-637-3887 Phil Sweeney 212-637-3873 Chief, Permits & Pretreatment Section U.S. EPA, Region 2 Water Programs Branch 290 Broadway, 21st Floor New York, NY 10007	Virginia Wong (212) 637-4241 Phil Sweeney (212) 637-3873 Jacqueline Rios (212) 637-3859 Fax: (212) 637-4211 U.S. EPA, Region 2 Water Compliance Branch 290 Broadway, 20th Floor New York, NY 10007-1866

EPA Regional NPDES Permit and Industrial Pretreatment Coordinators

Region	NPDES Permit Coordinator Information	Industrial Pretreatment Coordinator Information
3	Joseph Piotrowski 215-814-5730 Fax: 215-814-2301 U.S. EPA, Region 3 Office for Watersheds 1650 Arch Street Philadelphia, PA 19103	John Lovell (215) 814-5790 Steve Copeland (215) 814-5792 Fax: (215) 814-2302 U.S. EPA, Region 3 Office of Municipal Assistance 1650 Arch Street (3WP24) Philadelphia, PA 19103-2029
4	Douglas Mundrick 404-562-9328 Fax: 404-562-8692 U.S. EPA, Region 4 Surface Water Permits & Facilities Branch 61 Forsyth Street SW Atlanta, GA 30303-8960	Melinda Mallard Greene (404) 562-9771 Fax: (404) 562-9729 U.S. EPA, Region 4 Atlanta Federal Center - 16th Floor Water Permits & Enforcement Branch 61 Forsyth Street, SW Atlanta, GA 30303-3415
5	Gene Chaiken 312-886-0120 Fax: 312-886-7804 U.S. EPA, Region 5 NPDES Support & Technical Assistance Branch 77 West Jackson Boulevard Chicago, IL 60604-3507	Matthew Gluckman (312) 886-6089 Cathy Scudieri (312) 353-2098 Carol Staniec (312) 886-1436 Fax: (312) 886-7804 U.S. EPA, Region 5 NPDES Support & Technical Assistance Branch (WN-16J) 77 West Jackson Boulevard Chicago, IL 60604-3507

EPA Regional NPDES Permit and Industrial Pretreatment Coordinators

Region	NPDES Permit Coordinator Information	Industrial Pretreatment Coordinator Information
6	Jack V. Ferguson 214-665-7170 Fax: 214-665-2191 U.S. EPA, Region 6 Permits Branch 1445 Ross Avenue Dallas, TX 75202-2733	Lee Bohme (214) 665-7532 Mike Tillman (214) 665-7531 Al Hernandez (214) 665-7522 Fax: (214) 665-2191/665-6490 U.S. EPA, Region 6 NPDES Permits Branch (6WQ-PO) 1445 Ross Avenue Dallas, TX 75202-2733 Bob Goodfellow (214) 665-6632 Fax: (214) 665-2168 U.S. EPA, Region 6 Water Enforcement Branch (6EN-WO) 1445 Ross Avenue Dallas, Texas 75202-2733
7	Paul Marshall 913-551-7419 Fax: 913-551-7765 U.S. EPA, Region 7 NPDES, Facilities Management Branch 726 Minnesota Avenue Kansas City, KS 66101	Paul Marshall, P.E. (913) 551-7419 Mike Turvey (913) 551-7424 Fax: (913) 551-7765 U.S. EPA, Region 7 726 Minnesota Avenue Kansas City, KS 66101
8	Steve Tuber 303-312-6260 Fax: 303-312-7084 Debrah Thomas 303-312-6373 Fax:303-312-7084 U.S. EPA, Region 8 Water Program 999 18th Street, Suite 500 Denver, CO 80202-2413	Curt McCormick (303) 312-6377 Fax: (303) 312-7084 U.S. EPA, Region 8 NPDES Branch (8P-W-P) 999 18th Street Suite 500 Denver, CO 80202-2466

EPA Regional NPDES Permit and Industrial Pretreatment Coordinators

Region	NPDES Permit Coordinator Information	Industrial Pretreatment Coordinator Information
9	Terry Oda 415-744-2001 Fax: 415-744-1235 U.S. EPA, Region 9 Standards and Permits Office 75 Hawthorne Street San Francisco, CA 94105	Keith Silva (415) 744-1907 Fax: (415) 744-1235 U.S. EPA, Region 9 Clean Water Act Compliance Office (WTR-7) 75 Hawthorne Street San Francisco, CA 94105
10	Bob Robichaud 206-553-1448 Fax: 206-553-0165 U.S. EPA, Region 10 NPDES Permits Unit 1200 6th Avenue Seattle, WA 98101	Sharon Wilson (206) 553-0325 Fax: (206) 553-0165/553-1280 U.S. EPA, Region 10 NPDES Permits Unit (OW-130) 1200 6th Avenue Seattle, WA 98101

Oil and Fuel Removal

EPA Headquarters and EPA Regional SPCC/FRP Contacts and Spill Lines

If your facility has questions regarding its SPCC/FRP requirements, contact the appropriate EPA regional contact. These contacts (as of October 1999) are listed below. For the most up-to-date listings, your facility should check EPA's website at http://www.epa.gov/oilspill/sspcccont.htm.

In the event of a discharge of oil, your facility should contact the appropriate EPA regional spill line listed below. For the most up-to-date listings, your facility should check EPA's website at http://www.epa.gov/oilspill/.

EPA Headquarters
U.S. Environmental Protection Agency
Director, Oil Program (5203G)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Telephone: (703) 603-8760

U.S. Environmental Protection Agency
Oil Spill Program
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Website: Http://www.epa.gov/oilspill

U.S. Environmental Protection Agency
Chemical Emergency Preparedness and Prevention Office
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Website: Http://www.epa.gov/swercepp

EPA Regional SPCC/FRP Contacts and Spill Lines

Region	SPCC/FRP Contact Information	Spill Line
1	SPCC/FRP Coordinator c/o Emergency Response Section U.S. EPA - Region I (HBR) 1 Congress St., Suite 1100 Boston, MA 02114-2023	617-223-7265
2	SPCC Coordinator U.S. EPA - Region II 2890 Woodbridge Ave. Building 209, MS211 Edison, NJ 08837-3679	(732) 548-8730
3	SPCC Coordinator U.S. EPA - Region III 1650 Arch St. (3HS32) Philadelphia, PA 19103-2029	(215) 566-3255

EPA Regional SPCC/FRP Contacts and Spill Lines

Region	SPCC/FRP Contact Information	Spill Line
4	SPCC/FRP Coordinator U.S. EPA - Region IV 61 Forsyth St. Atlanta, GA 30365-3415	(404) 562-8700
5	Oil Program Section Chief U.S. EPA - Region V (SE5J) 77 W. Jackson Blvd. Chicago, IL 60604-3590	(312) 353-2318
6	SPCC/FRP Coordinator U.S. EPA - Region VI (6SF-RP) 1445 Ross Ave. Dallas, TX 75202-2733	(214) 665-222
7	Oil/SPCC Coordinator U.S. EPA - Region VII (SUPRER+R) 901 N. 5th Street. Kansas City, KS 66101	(913) 281-0991
8	Oil Program Coordinator U.S. EPA - Region VIII (8EPR-SA) 999 18th St., Suite 500 Denver, CO 80202-2466	(303)-293-1788
9	Oil Team/SPCC Coordinator U.S. EPA - Region IX (SFD1-4) 75 Hawthorne St. San Francisco, CA 94105	(415) 744-2200

EPA Regional SPCC/FRP Contacts and Spill Lines

Region	SPCC/FRP Contact Information	Spill Line
10	SPCC/FRP Coordinator U.S. EPA - Region X 1200 6th Ave. (ECL-216) Seattle, WA 98101 Alaska SPCC/FRP Coordinator U.S. EPA - Alaska Operations Office Federal Building/Room 537 222 West 7th Ave., #19 Anchorage, AK 99513-7588	(206) 553-1263

EPA Regional Solid Waste and Hazardous Waste Programs

For information about regional solid waste and hazardous waste programs, access http://www.epa.gov/epaoswer/osw/regions.htm#reg.

Paint Removal and Disposal

EPA Regional Solid Waste and Hazardous Waste Programs

For information about regional solid waste and hazardous waste programs, access http://www.epa.gov/epaoswer/osw/regions.htm#reg.

EPA Regional and State Water Programs

For information about regional and state water programs, access http://www.epa.gov/ow/region.html.

Metal Cutting and Metal Disposal

EPA Regional and State Water Programs

For information about regional and state water programs, access http://www.epa.gov/ow/region.html.

Removal and Disposal of Miscellaneous Ship Machinery

Please refer to the resources listed in the addition contacts and resource section in Section 9.3.

9.4 PUBLICATIONS AND INTERNET SITES

General

Environmental Assessment of the Sale of National Defense Reserve Fleet Vessels for Scrapping. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003. July 1997.

Appendix A: The Legal Environment for Environmentally Compliant Ship Breaking/Recycling in the United States. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-A. July 1997.

Appendix B: Substantive Law on Environmentally Compliant Ship Breaking/Recycling in the United States. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-B. July 1997.

Appendix C: Current and Advanced Technologies for the Ship Breaking/Recycling Industry. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-C. July 1997.

Appendix D: Sampling and Analysis. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-D. July 1997.

Appendix E: Survey of Ships and Materials. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-E. July 1997.

Appendix F: The Markets, Cost and Benefits of Ship Breaking/Recycling in the United States. The Maritime Administration, U.S. Department of Transportation. Report No. MA-ENV-820-96003-F. July 1997.

Memo to Honorable John Glenn regarding ship scrapping. Prepared by U.S. General Accounting Office, National Security and International Affairs Division. 1998

Ship Scrapping Activities of the United States Government. The Subcommittee on Coast Guard and Maritime Transportation Hearing, June 4, 1998.

Report of the Interagency Panel on Ship Scrapping, April 1998. Http://www.denix.osd.mil/denix/Public/News/OSD/Ships/Final/final.html

Multimedia Compliance Monitoring Investigation Protocol for the Ship Scrapping Industry, U.S. Environmental Protection Agency, National Enforcement Investigations Center, EPA-331/9-99-001, February 1999.

The Yellow Book: Guide to Environmental Enforcement and Compliance at Federal Facilities, U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance, EPA 315-B-98-011, February 1999.

Asbestos Removal and Disposal

A Guide to the Asbestos NESHAP, U.S. Environmental Protection Agency, Air and Radiation, EPA 340/1-90-015, Revised November 1990.

Reporting and Recordkeeping Requirements for Waste Disposal - A Field Guide, U.S. Environmental Protection Agency, Air and Radiation, EPA 340/1-90-016, November 1990.

Asbestos/NESHAP Adequately Wet Guidance, U.S. Environmental Protection Agency, Air and Radiation, EPA 340/1-90-019, December 1990.

Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance, U.S. Environmental Protection Agency, Air and Radiation, EPA 340/1-90-018, December 1990. OSHA: Asbestos Standard for Construction (OSHA 3096), OSHA: Asbestos Standard for General Industry (OSHA 3095), and OSHA: Asbestos Standard for the Shipyard Employment Industry (OSHA 3145).

Common Questions on the Asbestos NESHAP, U.S. Environmental Protection Agency, Air and Radiation, EPA 340/1-90-021, December 1990.

Shipyard Industry, U.S. Department of Labor, Occupational Safety and Health Administration, OSHA 2268, 1998 (Revised).

Multimedia Compliance Monitoring Investigation Protocol for the Ship Scrapping Industry, U.S. Environmental Protection Agency, National Enforcement Investigations Center, EPA-331/9-99-001, January 1999.

OSHA Fact Sheet - Better Protection Against Asbestos in the Workplace (93-06), U.S. Department of Labor, Occupational Safety and Health Administration, 1/1/93. Http://www.osha-slc.gov/OshDoc/Fact_data/FSN093-06.html

Inspection Procedures for Occupational Exposure to Asbestos Final Rule 29 CFR Parts 1910.1001, 1926.1101, and 1915.1001, OSHA Directive CPL 2-2.63 (REVISED), U.S. Department of Labor, Occupational Safety and Health Administration, 11/03/95. Http://www.osha-slc.gov/OshDoc/Directiv_data/CPL_2-2_63_REVISED_.html

OSHA Web Site on Asbestos
Http://www.osha-slc.gov/SLTC/asbestos/index.html

Information on Asbestos
Http://www.epa.gov/opptintr/asbestos/inforev.txt

EPA Asbestos Materials Bans: Clarification, May 18, 1999
Http://www.epa.gov/asbestos

Sampling, Removal and Disposal of PCBs

EPA's PCB Home Page.
Http://www.epa.gov/pcb/

Office of Prevention, Pesticides and Toxic Substances Home Page
Http://www.epa.gov/opptintr/

1994 PCB Questions and Answers Manual
Http://www.epa.gov/opptintr/pcb/manual.pdf

Letter to MARAD from EPA, November 30, 1995. Includes *Sampling Ships for PCBs Regulated for Disposal.*

EPA Fact Sheet. Final Rule: Amendments to the TSCA PCB Disposal Regulations Including Amendments to the PCB Notification and Manifesting Rule, June 1998. U.S. Environmental Protection Agency.
Http://www.epa.gov/opptintr/pcb/pcbfs.pdf

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The Paint and Coatings Resource Center
Http://www.paintcenter.org

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APPENDIX A
WHY THIS GUIDE WAS DEVELOPED

Recommendations of the Interagency Panel on Ship Scrapping

This guide was developed in response to a recommendation in 1998 by the Interagency Panel on Ship Scrapping. This panel, which was formed in December 1997 by the Department of Defense, included representatives from EPA; the Defense Logistics Agency (DLA); and the Departments of State, Navy, Justice, Labor, and Transportation. The panel was convened in response to issues raised in a series in *The Baltimore Sun* newspaper about the poor environmental, health, and safety conditions in both domestic and overseas scrapping facilities.

The panel reviewed both domestic and international issues relating to the ship scrapping industry. These issues included, but were not limited to:

- U.S. Department of the Navy (Navy) and U.S. Maritime Administration (MARAD) programs for scrapping ships
- Processes and procedures in place for domestic as well as international ship scrapping
- Information about the hazardous and toxic materials on scrapped ships
- Criteria used to evaluate contractor proposals and bids
- Oversight of ship scrapping contractor operations
- Export of non-liquid PCBs in vessels to be scrapped

Based on this review, the panel developed a set of recommendations which were presented in the *April 20, 1998 Report of the Interagency Panel on Ship Scrapping*. The recommendations covered many aspects of the ship scrapping industry, including contracting improvements, performance bonds, data gathering and pilot projects, PCB guidance, leveraging regulatory oversight, and international issues. The panel's report can be viewed in its entirety at http://www.denix.osd.mil/denix/Public/News/OSD/Ships/Final/final.html.

Under the category of leveraging regulatory oversight, the panel recommended that EPA and the Occupational Safety and Health Administration (OSHA), in conjunction with DLA, the Navy, and MARAD, develop this compliance guide. The guide outlines the relevant environmental and occupational health and safety requirements applicable to ship scrapping.

Gathering Stakeholder Input

In the early stages of developing this guide, EPA requested input from various stakeholders, including ship scrappers and federal and state regulators, regarding the scope, content, and format of the guide. The following comments were provided:

- Stakeholders identified several processes that could be addressed in the guide because they pose the greatest challenges in compliance. These processes included PCB sampling and removal; asbestos identification and removal; contaminated wastewater; copper wire control procedures; and lead contamination (both at the site and by worker exposure).

- Stakeholders commented that they were not aware of any existing guidance, other than the regulations, for this industry. They currently obtain guidance from OSHA, EPA, state and local regulatory agencies, or the U.S. Coast Guard (USCG) on an ad hoc basis. Some noted that they rely on the regulations found in the CFR, while others are using information found on the Internet.

- Stakeholders identified training as a key requirement to enhance compliance. However, they noted that language is often a prominent obstacle when providing training because many workers are not fluent in English.

Leading and Supporting Guide Development

EPA's Federal Facilities Enforcement Office (FFEO) within the Office of Enforcement and Compliance Assurance and the Manufacturing, Energy and Transportation Division of EPA's Office of Compliance led the development of this compliance guide. To assist in this process, EPA formed the Interagency Ship Scrapping Compliance Manual/Guide Workgroup, which included representatives from EPA, USCG, Navy, Defense Reutilization and Marketing Service (DRMS), OSHA, MARAD, National Enforcement Investigations Center (NEIC), National Oceanic and Atmospheric Administration (NOAA), and the DLA.

A.1 OVERVIEW OF SHIP SCRAPPING

The Ship Scrapping Industry

As part of the domestic ship scrapping industry, your facility is one of a small number of facilities that primarily dismantles or breaks ships, commonly called ship scrapping. Basically, when scrapping a ship, facilities are able to recover certain materials, mainly scrap steel, copper and other metals, that can be resold or recycled. Additionally, wastes are generated during scrapping that must be managed and disposed of according to the appropriate regulations.

According to the North American Industry Classification System (NAICS) (see box below), facilities that conduct ship scrapping are classified in NAICS Code 48839 *Other Support Activities for Water Transportation*. Previously, the Standard Industrial Classification (SIC) Code for facilities engaged in ship dismantling or ship breaking was 4499 *Water Transportation Services, Not Elsewhere Classified*.

A New Industry Classification System

In the United States, the NAICS replaces the SIC system. NAICS was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America. NAICS also provides for increased comparability with the International Standard Industrial Classification System (ISIC, Revision 3), developed and maintained by the United Nations. For more information on NAICS, access http://www.census.gov/epcd/www/naics.html.

As mentioned above, the domestic ship scrapping industry has historically been and presently remains small. Currently, there are approximately four private ship scrappers in the United States, located in California, Maryland, Pennsylvania, and Texas, actively scrapping federal surplus ships. The small size of this industry can partially be attributed to the risky nature of the work. Ship scrapping is a labor-intensive industry with extremely high environmental and worker safety and health risks. Ship scrappers typically hire workers with a variety of skills and training, including welders, crane operators, forklift operators, sweepers, and loaders. At some facilities, it is common that supervisors are bilingual because some workers are not able to speak English.

Although ship scrapping can be done at a shipyard, it is more often conducted at less developed facilities. Ship scrapping sites are typically less than 10 acres, are located in urban industrial areas coincident with other industrial and maritime-related facilities, and require substantial electrical services. Rail access to the sites is often available, although some scrapping is done in areas serviced only by truck. Ship scrapping facilities usually work on one or two ships at a time, completing 2-3 ships per year.

The Process of Ship Scrapping

After removal from the fleet site, a ship is towed to the site where ship scrapping will occur. The ship is then scrapped while either moored, beached, or in drydock. Most ship scrapping is performed at slips, which are dredged openings in the bank of the ship channel. Slips are generally 400 to 700 feet long and 100 to 120 feet wide at the entrance. A large winch at the head of the slip is used to drag the hull farther into the slip as work progresses. The scrapping process usually occurs in a series of steps:

- **Conduct a vessel survey**. A diagram of all rooms, compartments, tanks, and storage areas is used (or prepared if not available) to identify areas that may contain hazardous materials, such as fuels, oils, asbestos, PCBs, and hazardous waste. Preliminary sampling of media is conducted, starting in the compartment that will be cut first.

- **Remove fuels, oils, and other liquids**. The removal of fuels, oils, other liquids (e.g., bilge and ballast water), and combustible materials from the ship generally occurs throughout the ship scrapping process. The U.S. Coast Guard requires booms around the ship to help contain any spills. Following removal activities, a marine chemist is contracted to certify that the ship is safe for workers or safe for hot work allowing the issuance of hot work permits. Hot work permits allow cutting torches and saws to be used to dismantle the ship. During the ship scrapping process, water will continue to accumulate and will have to be removed.

- **Remove equipment**. Fixtures, anchors, chains, and small equipment are removed initially. Large reusable components (e.g., engine parts) are removed as they become accessible. Reusable materials and equipment may be sold directly with little or no refurbishment by the scrapping facility. Propellors may also be removed so the hulk can be pulled into shallow water.

- **Remove and dispose of asbestos and PCBs**. Asbestos-containing material (ACM) is removed from cut lines so that large sections of the ship can be removed. The engine rooms usually contain the most asbestos and, therefore, take the longest for asbestos removal to be complete. PCB-containing materials that are accessible are removed, as well as PCB-containing materials from areas to be cut. Some PCB-containing materials may be left in place on the room-sized pieces, only to be removed after the large piece is moved to shore.

- **Prepare surfaces for cutting**. Following asbestos and PCB removal, paint is removed, if required, from surfaces to be cut. The presence of hard-to-remove and

potentially toxic materials may require specific cut-line preparation, such as grit blasting.

- **Cut metal.** During the cutting phase, the upper decks and the superstructure and systems are first cut, followed by the main deck and lower decks. Metal cutting is typically done manually using oxygen-fuel cutting torches, but may be done with shears or saws (for nonferrous metals). Typically, as large parts of the ship are cut away, they are lifted by crane to the ground where they are cut to specific shapes and sizes required by the foundry or smelter to which the scrap is shipped. As cutting continues and the weight of the structure is reduced, the remaining hulk floats higher, exposing lower regions of the hull. Bilge water is sampled and discharged appropriately. Ultimately, the remaining portion of the hull is pulled ashore and cut.

- **Recycle or dispose of materials**. Scrap metals, including steel, aluminum, copper, copper nickel alloy, and lesser amounts of other metals, are sorted by grade and composition and sold to remelting firms or to scrap metal brokers. Valuable metals, such as copper in electric cable, that are mixed with nonmetal material may be recovered using shredders and separators. The shredders produce a gravel-like mixture of metal particles and non-metal "fluff" (see box). The metals are then separated from the fluff using magnetic separators, air flotation separator columns, or shaker tables.

> **What is "fluff"?** Fluff is a term used in the recycling trade for solid and liquid nonrecoverable, nonmetallic materials obtained during the ship scrapping process. Fluff is not salable. Because it contains regulated hazardous waste (e.g., asbestos, PCBs, hydrocarbons), it must be managed and disposed of according to the hazardous waste regulations (40 CFR 261-270).

Other materials that are not recycled, including hazardous materials and other wastes, are disposed of according to applicable laws and regulations.

A.2 THE UNITED STATES SHIP SCRAPPING PROGRAM

Currently, federal agencies have approximately 250 ships located throughout the United States awaiting scrapping or some other method of disposal (e.g., such as donating them to an organization or using them for experimental and training purposes). The Navy and MARAD own the majority of these government ships.

Many of the vessels currently designated for scrapping were built in the 1940s, 1950s, and 1960s using what was then state-of-the-art material in their construction. Many of these materials have since been classified as hazardous, including, but are not limited to, asbestos, PCBs, lead, chromates, mercury, and cadmium. Recently, the U.S. Government ship scrapping program has come under criticism because some ship scrapping companies have violated environmental standards, worker health and safety regulations, and accepted ship scrapping practices. Some instances of illegal dumping of asbestos, PCBs, oil, lead, and chromates, as well as dangerous working conditions, have been reported in the United States.

MARAD is the U.S. Government disposal agent for surplus merchant-type ships of 1,500 tons or more. To comply with the National Maritime Heritage Act (NMHA) of 1994, MARAD has to dispose of certain obsolete, surplus ships by September 30, 2001[3]. In disposing of these ships, MARAD is required to maximize the financial return on the vessels to the United States, and comply with Section 510(I) of the Merchant Marine Act. To meet these objectives, MARAD is compelled to scrap the majority of these vessels because other alternatives, such as transferring the vessels for use as reefs or using the vessels for nontransportation uses, are limited by MARAD's disposal authority.

In the 1970s and early 1980s, the Navy scrapped hundreds of ships using private contractors. Navy ship scrapping was minimal throughout the 1980s because of the naval build up, but increased in 1991 as part of military downsizing. Historically, Navy ships have been sold for scrapping by its sales agent, the Defense Reutilization and Marketing Service (DRMS). As of May 1999, DRMS will no longer sell Navy ex-combatant ships for scrapping, but will, however, continue to administer the existing sales contracts for scrapping these ships. DRMS will continue to sell Navy service craft and boats for scrapping as appropriate.

As of September 1999, the Navy had 63 ships designated for scrapping and MARAD reported having 113 ships available for scrapping. Also, the U.S. Coast Guard (USCG) and NOAA reported having several ships available for scrapping -- 14 and three, respectively. The combined weight of the Navy and MARAD surplus ships is approximately one million tons. If not scrapped, the storage, maintenance, and security of the surplus ships will cost the government approximately $58 million between fiscal years 1999 and 2003. Some MARAD surplus ships are in very poor condition and may need repairs to stay afloat. MARAD estimates that its annual dry-docking and repair costs could be as high as $800,000 per ship.

[3] The date was changed from September 30, 1999, to September 30, 2001, by Section 1026 of the National Defense Authorization Act of 1998, Public Law 105-85.

Scrapping Domestically Versus Internationally

According to a 1997 MARAD study, the ship scrapping industry is a risky, highly speculative business, and domestic ship scrapping companies tend to be thinly capitalized. Despite efforts by the Navy and MARAD to dispose of ships domestically, there appear to be only a few qualified domestic scrapping firms.

In terms of international scrapping activity, the export of ships for scrapping from the United States to foreign countries has come under criticism in recent years. The criticism mainly focuses on reports that some foreign scrapping facilities are creating environmental problems due to the poor management of PCBs and other hazardous materials removed from ships, and they are risking the health and safety of their workers. In addition, foreign laws and regulations are viewed as poorly enforced.

Historically, government-owned ships have been scrapped both domestically and overseas. The Navy, as shown in Exhibit 1, has relied mainly on the domestic industry to scrap its ships, while MARAD has relied primarily on overseas scrapping. The Navy has not sold any ships for overseas scrapping since 1982. MARAD suspended overseas scrapping in 1994 in response to a 1993 EPA letter advising MARAD that exporting PCBs greater than 50 ppm for disposal was prohibited.

Exhibit 1. Overseas Ship Scrapping by Navy and MARAD

Timeframe	Number of ships scrapped (% scrapped overseas)	
	Navy	MARAD
1970 - 1982	533 (10%)	781 (38%)
1983 - 1994	35 (0%)	213 (>99%)
Since 1994	2 (0%)	2 (0%)

Source: April 20, 1998 Report of the Interagency Panel on Ship Scrapping

Recognizing a need to reduce their backlog of surplus ships and the limitations of the domestic scrapping efforts, the Navy and MARAD each negotiated an agreement with EPA in 1997 to allow the export of ships for scrapping. These agreements provided for:

(1) Removing all liquid PCBs prior to export.

(2) Removing all items containing solid PCBs that are readily removable when it does not affect the structural integrity of the ship prior to export.

(3) Notifying a country of a pending sale of a ship (which is being exported for scrapping from the United States) to one of its ship scrapping companies.

Despite these agreements with EPA, the export of ships for scrapping was suspended by the Navy in December 1997 and MARAD in January 1998 because of continuing concerns about environmental pollution and worker health and safety, as well as potential impacts on the domestic ship scrapping industry. These voluntary suspensions on ship exports are still in effect.

Initiatives to Address Domestic Ship Scrapping Issues

To improve the domestic ship scrapping process, the Navy and MARAD began instituting changes in their programs in 1996 to address management practices, ship preparation processes, contracting processes, contractor oversight, and vessel exports.

Changes to the Navy Program: According to the 1998 GAO report, the changes to the Navy's ship scrapping program included:

- Developing and implementing a two-step bid process requiring contractors to submit a technical proposal for approval before they can be considered viable candidates to place a financial bid for the surplus ships. The technical proposals are to consist of an environmental compliance plan, operational plan, business and management plan, and a safety and health plan. A technical evaluation team will evaluate each plan and those contractors found to have an acceptable proposal will be asked to submit a financial bid.

- Using quarterly progress reviews at each scrapping site to assess the contractor's progress and compliance with contract provisions, including environmental and safety requirements.

- Using a contractor rating system when deciding how closely to provide contract surveillance.

- Advertising and selling ships by lot and allowing contractors to remove the ships from government storage as they are ready to be scrapped.

- Holding periodic industry workshops to inform contractors of what is expected of them in the scrapping of federal surplus ships and obtain feedback on their concerns and desires.

- Evaluating the potential for removing more hazardous materials before ships are advertised for sale.

- Notifying state and local regulators where the ship scrapping will be performed after contracts are awarded.

Changes to MARAD's program: MARAD's ship scrapping program is similar in material respects, except that MARAD adopted a single step bid process in which bidders are simultaneously required to submit a bid and a technical compliance plan. Technical compliance plans consist of an operations plan, a business plan, and an environmental, health, and safety plan. MARAD culls out all negative bids and reviews only the technical compliance plans for those companies that have provided positive bids.

Ensuring safe scrapping. Currently, EPA is working with MARAD to address issues related to permitting, financial assurance, sampling of potential PCB-containing materials on vessels, and other issues to ensure that, to the extent possible, U.S. government vessels can be safely scrapped in the domestic market.

The Navy's 1999 Ship Disposal Project: On September 29, 1999, NAVSEA awarded 4 Indefinite Delivery, Indefinite Quantity (IDIQ) task order contracts for the disposal of conventionally-powered U.S. Navy warships that have been decommissioned and stricken from the Naval Vessel Register. These contracts represent the pilot phase of the Navy's Ship Disposal Project (SDP), a primary purpose of which is to obtain the cost data for dismantling ships in the United States, and to demonstrate environmentally-sound and cost-effective methods for dismantling the Navy's decommissioned vessels.

"Disposal" includes the complete dismantling of the hull for recycling, and the proper removal and disposal of all hazardous materials that are part of the construction of these ships.

These contracts are a significant departure from the sales contracting methodology previously used, under which purchasers paid the Government for the right to dismantle ships and to dispose of the hazardous wastes generated. The viability of ship dismantling under sales contracting depended on the metal value of the ship exceeding the costs of dismantling and hazardous waste disposal. In contrast, the SDP contracts are cost plus incentive fee contracts with a performance incentive for environmental and safety compliance. Additionally, the SDP contractors will sell the scrap metal generated from dismantling the ships, and the proceeds will be credited to the cost of the contract.

The contracts under this acquisition will provide the capability to scrap additional ships beyond the pilot phase. Based on the success of the pilot phase, the contract structure allows the Navy to compete additional task orders among the current contract awardees for dismantling the

remaining inventory of decommissioned conventionally-powered cruisers, destroyers, frigates, and minesweepers that have been designated for scrapping. Additional information concerning the Ship Disposal Project can be found at http://www.contracts.hq.navsea.navy.mil/home.html.

A.3 REGULATING THE SHIP SCRAPPING INDUSTRY

Identifying Compliance Issues for the Ship Scrapping Industry

In recent years, domestic ship scrappers have experienced difficulties in complying with various contractor performance provisions, including environmental and worker safety and health requirements. From 1991-1996, the Navy repossessed 20 of the 52 ships sold to domestic ship scrapping firms in North Carolina, Rhode Island, and California. While changes in the economy contributed to these events, the repossessions were mainly the result of contractor performance issues and environmental and worker safety and health compliance issues.

Inspections conducted by EPA and OSHA have identified potential violations of applicable regulations and requirements.

- **EPA inspection findings**. To develop a protocol for conducting compliance investigations at ship scrapping facilities (see box), EPA and state health inspectors participated in multimedia compliance inspections of three ship scrapping facilities from April 28-30, 1998. These inspections, which were intended to determine each facility's compliance status, focused on PCB, asbestos, hazardous waste, storm water, and SPCC plan requirements.

> As recommended by the Interagency Panel on Ship Scrapping, EPA developed the *Multimedia Compliance Monitoring Investigation Protocol for the Ship Scrapping Industry* (EPA-331/9-99-001, February 1999) for conducting environmental compliance inspections at ship scrapping facilities.

  The following lists areas of potential problems or noncompliance found during the inspections:

  - *Improper waste management*. Several 55-gallon drums of mercury fluorescent bulbs were dated April 29, 1997. If the drums contained more than 100 kilograms of bulbs, they are required to be disposed of within 180 or 270 days depending on distance to a treatment/disposal facility.

- *Improper labeling.* Many containers of used oil stored onsite were not marked with the words "Used Oil." Fuel tanks were not labeled.

- *No plans/permits or failure to certify plans*. Facilities were missing plans and permits, including SPCC plans, NPDES permits, storm water permits, and storm water pollution prevention plans. If the facilities did have the plans, they were often out-of-date. One SPCC plan had not been signed by a registered professional engineer.

- *Lack of shower drain filters or leaking showers*. Some shower drains used by workers, did not appear to have filters. These filters collect lead and asbestos. One facility's shower water was leaking to the ground which may add to lead contamination at the site.

- *Failure to understand requirements.* One facility's operations manager did not have any understanding of environmental requirements.

- *Possible soil contamination*. The soil throughout one facility may be contaminated with lead and asbestos because the ground was covered with pieces of cable, tiles, suspected ACM, metal, and paint chips. At another facility, there were bulldozed piles at various locations potentially containing hazardous materials (e.g., pieces of cable, suspected ACM).

- *Improper burning of cables*. Cables appeared to have been burned (i.e., cut by torch) on sections of a ship.

> Cutting PCB-containing cable (or any material contaminated with or containing PCBs) with a torch is considered open burning and is prohibited. Additionally, emissions from cable burning may be regulated by state or local laws.

- **OSHA inspection findings**. While ship scrapping is a small industry, separate from the larger shipbuilding and ship repair industries, OSHA has inspected these ship scrapping operations and detected multiple violations of OSHA standards. For example, based on these inspections and other visits, a very common worker safety and health concern for this industry is insufficient worker training. Many ship scrapping facilities are deficient in providing overall worker training in areas, including, but not limited to, hazardous materials; personal protective equipment; proper storage, labeling, and marking of waste; and health and safety requirements in various work conditions (e.g., confined space, hot work, heights).

Regulating Agencies

Because ship scrapping is subject to federal, state, and local government rules and regulations for the protection of the environment and worker safety and health, your ship scrapping facility may be visited or inspected by representatives from various regulatory agencies. These can include, but are not limited to, EPA (including Headquarters, regional offices, and the National Enforcement Investigations Center (NEIC)), OSHA, DRMS, MARAD, state environmental regulatory offices, and state and local health departments.

Environmental Protection Agency (EPA)

EPA has regulatory oversight with respect to the environmental aspects of domestic ship scrapping. Ship scrapping operations have become a concern for environmental regulators because they:

- Generate large amounts of waste, including asbestos and PCBs, that potentially pose significant environmental impacts if managed poorly, and

- Have demonstrated difficulties in complying with the environmental regulations that are applicable to their operations.

Your ship scrapping facility may be required to comply with various federal EPA laws and regulations. These include, but are not limited to:

> **Know your state regulations**. State regulations must be at least as strict as the federal requirements.

- Air pollution control regulations under the Clean Air Act (CAA) (40 CFR 50-99), including the National Emission Standards for Hazardous Air Pollutants (NESHAP)(40 CFR 61 Subpart M).

- Water pollution control regulations under the Clean Water Act (CWA), including the National Pollutant Discharge Elimination System (NPDES) and storm water permit requirements (40 CFR 122); pretreatment requirements (40 CFR 403); and requirements under EPA's Discharge of Oil regulation (40 CFR 110) and the Oil Pollution Prevention regulation (40 CFR 112). As of December 1999, EPA had authorized 43 states and 1 territory to administer the NPDES permit.

- Safe Drinking Water Act (SDWA) regulations, including Underground Injection Control (UIC) requirements and public water supply (PWS) requirements (40 CFR 142 and 40 CFR 144-148).

- Solid and hazardous waste management requirements under the Resource Conservation and Recovery Act (RCRA), including land disposal restriction (LDR) requirements. RCRA provides a comprehensive program to protect human health and the environment from the improper management of hazardous waste. RCRA Subtitle C regulations establish a "cradle-to-grave" system governing hazardous waste from the point of generation to disposal (40 CFR 261-270). Used oil is regulated under the Used Oil Management Standards (40 CFR 279). Although RCRA is a federal statute, many states implement the RCRA program. Currently, EPA has delegated its authority to implement various provisions of RCRA to 47 of the 50 states and two U.S. territories. Delegation has not been given to Alaska, Hawaii, or Iowa.

- Requirements for PCBs under the Toxic Substances Control Act (TSCA) regulations (40 CFR 761).

- Emergency Planning and Community Right-to-Know Act (EPCRA) regulations (40 CFR 355 and 370).

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations (40 CFR 302).

Occupational Safety and Health Administration (OSHA)

OSHA's mission is to save lives, prevent injuries and protect the health of America's workers according to the rules and regulations of the Occupational Safety and Health Act (Act) of 1970. Under the Act, OSHA has promulgated standards that apply generally to all employers and standards that apply to specific industries.

There are currently no geographical limitations to maritime jurisdiction on shore other than limitations of the *Occupational Safety and Health Act* itself. Employees performing maritime activities on shore, yard, shipyard, vessels afloat, drydocks, or graving docks, are now covered by shipyard standards.

- **General Industry Standards and the General Duty Clause**. There are General Industry Standards (29 CFR 1910) which apply to all employers, regardless of the type of industry. Additionally, because not every possible safety and health problem can be

covered by a workplace standard, the Occupational Safety and Health Act includes a "general duty" clause. This clause requires employers to furnish employment and a place of employment "free from recognized hazards that are causing or likely to cause death or serious physical harm" to employees.

- **Shipyard Industry Standards**. To specifically address worker hazards at shipyards, OSHA developed safety and health standards called the Shipyard Industry standards (29 CFR 1915). Facilities affected by these standards include not only ship scrapping facilities, but also shipbuilding and ship repairing facilities, as they are all considered part of the shipyard industry. While some of the requirements in the Shipyard Industry standards apply to all three types of facilities, others apply only to shipbuilding and/or ship repair facilities.

  Because of this, ship scrappers must review the Shipyard Industry standards and become familiar with those that do apply to their facilities. Some of these standards include, but are not limited to:

  - Confined and enclosed spaces and other dangerous atmospheres (29 CFR 1915 Subpart B)
  - Cutting and heating, including requirements for ventilation, fire prevention, and working with preservative coatings (29 CFR 1915 Subpart D)
  - Scaffolds or staging; ladders; access to vessels, dry docks, cargo spaces, and confined spaces; and working surfaces (29 CFR 1915 Subpart E)
  - General working conditions, such as housekeeping, illumination, utilities, health and sanitation (29 CFR 1915 Subpart F)
  - Gear and equipment for rigging and materials handling, including requirements for inspections; ropes, chains, and slings; shackles and hook; chain falls and pull-lifts; hoisting and hauling equipment; and operator qualifications (29 CFR 1915 Subpart G)
  - Tools and equipment, such as hand tools, portable electric tools, abrasive wheels, and internal combustion engines (29 CFR 1915 Subpart H)

- **S** Personal protective equipment for the eyes, face, head, and body, including respiratory protection, lifesaving equipment, personal fall arrest systems, and positioning device systems (29 CFR 1915 Subpart I)

Remember that hazards not covered by the Shipyard Industry standards may be covered by the General Industry standards found in 29 CFR 1910.

> **Tip:** Where a hazard is covered by both Shipyard Industry and General Industry standards, only the Shipyard Industry standard will be cited by an OSHA inspector.

- **Competent person**. Throughout many parts of the Shipyard Industry standards, tests and inspections are required to be performed by a marine chemist, a certified industrial hygienist, or some other "competent person." A competent person must be capable of recognizing and evaluating worker exposure to hazardous substances or to other unsafe conditions and specifying the necessary protection and precautions to take to ensure worker safety. Ship scrapping facilities must have a person who meets the "competent person" requirements (found in 29 CFR 1915.7) for performing testing in certain situations. The facility can also use a Marine Chemist to perform the same activities as a competent person. A Marine Chemist is a person who has a current Marine Chemist Certificate issued by the National Fire Protection Association.

- **State Safety and Health Programs**. States administering their own occupational safety and health program through plans approved by OSHA [Section 18(b)] must adopt standards and enforce requirements that are at least as effective as federal requirements. Of the states with approved plans, only five (California, Minnesota, Oregon, Vermont, and Washington) include some coverage for workers at ship scrapping facilities. Otherwise, in all other states, these workers are subject to the federal OSHA requirements. For a more detailed summary of maritime coverage under particular state plans, see 29 CFR 1952 or access http://www.osha-slc.gov/fso.osp/index.

- **Maritime Advisory Committee Health Programs**. Effective workplace management of safety and health issues greatly reduces worker deaths, illnesses, injuries, and costs associated with them. According to The Maritime Advisory Committee for Occupational Safety and Health (MACOSH), all workplaces in the shipyard industry should have a safety and health program regardless of size or number of hazards [OSHA: Shipyard Industry (OSHA 2268) 1998 (Revised)]. The basic

elements listed below are essential for an effective workplace safety and health program:

- Employee Participation
- Training
- Program Evaluation
- Recordkeeping
- Procedures for Multi-Employer Workplaces
- Management Commitment and Leadership
- Accident and Incident Investigation
- Hazard Identification, Assessment and Control

These elements are performance-based and flexible enough to be adapted to workplace conditions, size and nature of hazards present. For more detailed information concerning these issues refer to OSHA: Shipyard Industry (OSHA 2268) publication.

DRMS and MARAD Contracts

To monitor whether scrapping facilities are meeting the requirements of their current contracts, DRMS and MARAD may conduct unannounced environmental, safety, and health evaluations at the facilities. On occasion, daily on site surveillance using either a naval engineer, industrial hygienist, or architect may also occur. In addition, DRMS and MARAD may use a third-party (e.g., contractor) to conduct independent evaluations of scrapping operations.

> Historically, DRMS has been the Navy's sales agent for surplus ships. As of May 1999, DRMS will no longer sell Navy ex-combatant ships for scrapping, but will continue to administer the existing sales contracts for scrapping these ships.

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APPENDIX B
LIST OF ACRONYMS

ACM	Asbestos-containing material
ACP	Area contingency plan
ACWM	Asbestos-containing waste material
AST	Aboveground storage tank
BOD	Biochemical oxygen demand
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESQG	Conditionally exempt small quantity generator
CFR	Code of Federal Regulations
COD	Chemical oxygen demand
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DLA	Defense Logistics Agency
DOT	U.S. Department of Transportation
DRMS	Defense Reutilization and Marketing Service
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERNS	Emergency Response Notification System
FFEO	Federal Facilities Enforcement Office
FRP	Facility response plan
GAO	General Accounting Office
HAP	Hazardous air pollutant
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High efficiency particulate air
IDIQ	Indefinite Delivery Indefinite Quantity
LDR	Land disposal restriction
LQG	Large quantity generator
MACOSH	Maritime Advisory Committee for Occupational Safety and Health
MARAD	United States Maritime Administration
NAICS	North American Industrial Classification System
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEIC	National Enforcement Investigations Center
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association

LIST OF ACRONYMS (CONTINUED)

NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NMHA	National Maritime Heritage Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPE	Negative pressure enclosure
NRC	National Response Center
NVLAP	National Voluntary Laboratory Accreditation Program
OC	Office of Compliance
OECA	Office of Enforcement and Compliance Assurance
OPA	Oil Pollution Act
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
P2	Pollution prevention
PACM	Presumed asbestos containing material
PCB	Polychlorinated biphenyl
PE	Professional engineer
PEL	Permissible exposure limit
PLM	Polarized light microscopy
POTW	Publicly owned treatment works
PPE	Personal protective equipment
ppm	Parts per million
PREP	National Preparedness for Response Exercise Program
PWS	Public water supply
RA	Regional Administrator
RACM	Regulated asbestos-containing material
RCRA	Resource Conservation and Recovery Act
SDP	Ships Disposal Project
SDWA	Safe Drinking Water Act
SIC	Standard Industrial Classification
SIU	Significant industrial user
SPCC	Spill Prevention, Control, and Countermeasures
SQG	Small quantity generator
SWPPP	Storm water pollution prevention plan
TOC	Total organic carbon
TSCA	Toxic Substances Control Act
TSI	Thermal system insulation
TSS	Total suspended solids
TWA	Time weighted average

LIST OF ACRONYMS (CONTINUED)

UIC	Underground injection control
USCG	United States Coast Guard
UST	Underground storage tank
VOC	Volatile organic compound
WSR	Waste shipment record

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APPENDIX C

INSPECTOR HIGHLIGHTS

This Appendix contains summaries of Inspector Highlights noted in check boxes throughout sections of this guide. These summaries contain important *federal* regulatory requirements for each process that can be the target of federal or state inspectors when they visit your site. You may want to laminate copies of the summaries for supervisors and individual workers or post the summaries at or near the job site as reminders of regulations and best practices.

Disclaimer: The summaries in Appendix C provide guidance to assist you in understanding your obligations under environmental laws; however, for a complete understanding of all legal requirements, you must refer to applicable federal and state statutes and regulations. Appendix C, as well as the guide itself, is a compliance assistance tool only, and it neither changes nor replaces any applicable legal requirements, nor does it create any rights or benefits for anyone.

ASBESTOS REMOVAL AND DISPOSAL

"Asbestos" – mineral fibers often mixed with other material to provide insulation for pipes, fireproofing, thermal insulation, etc. CAUTION: exposure to airborne-asbestos may cause health problems.

DANGER
ASBESTOS
Cancer and Lung Disease Hazard
Authorized Personnel Only

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . check to see that workers at your facility received training in a language that they understand. (pg 2-7)

. . . check the training records for the workers and supervisors listed on the daily work logs. (pg 2-7)

. . . check the shower drains from the worker showers to make sure they have filters. Filters help remove lead and asbestos from the wastewater. (pg 2-8)

. . . check to verify that the notification of intent to scrap was submitted and that activities have been conducted according to the notification. (pg 2-11)

. . . observe on-site equipment and ask for verbal explanations to determine whether wetting and handling requirements are being met. (pg 2-12)

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ASBESTOS REMOVAL AND DISPOSAL - Continued

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . check to determine whether regulated asbestos-containing material has been adequately wetted. (pg 2-12)

. . . examine removed units or sections to ensure that the regulated asbestos-containing material in these components is still intact. This may include looking at cut cables to see if any cables covered with asbestos were cut by torch or burned, both of which are violations of the asbestos requirements. An inspector may also want to know how the regulated asbestos-containing material on these units or sections will be removed, if applicable. (pg 2-13)

. . . examine any material that appears to be asbestos-containing material that is on the ground at your facility. The inspector may sample and photograph suspected asbestos-containing material, as well as the sources (such as nearby cable) that it may have come from. (pg 2-13)

. . . examine the waste shipment records to ensure that the records are complete, including all required signatures for each shipment. (pg 2-18)

. . . check for consistency between the facility asbestos-containing material waste logs and the disposal site records. Additionally, the inspector may check to see that the asbestos waste is placed in the disposal site without dispersing asbestos to the atmosphere, and that the site covers the asbestos waste daily. (pg 2-18)

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SAMPLING, REMOVAL AND DISPOSAL OF POLYCHLORINATED BIPHENYLS (PCBs)

"PCBs" – man-made organic chemicals used in electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics and rubber products, etc. CAUTION: toxic; may cause adverse health effects.

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . check to see that workers at your facility received training in a language that they understand. (pg 3-5)

. . . review the PCB sampling plans and laboratory analysis results for the ship. (pg 3-7)

. . . verify that all PCB items are being identified and disposed of properly. For example, the painted canvas cover which is attached to fiberglass insulation may be a source of PCBs. (pg 3-7)

. . . conduct laboratory audits to verify that the laboratory is analyzing the PCB samples properly and that analytical results are accurate and reliable. (pg 3-8)

. . . examine PCB storage-for-disposal areas and check the floor and curb for cracks, measure to verify that the curb is at least 6 inches high, and check the capacity of the containment storage area against the total volume of PCBs in storage. He/she may also determine the 100-year flood plain location with respect to any storage area. Many ship scrappers are located within the 100-year flood plain and cannot have storage areas. (pg 3-11)

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BILGE AND BALLAST WATER REMOVAL

"Bilge Water" – "dirty" water in oily waste holding/slop tanks which may contain pollutants, such as oil and grease, metals, etc. CAUTION: take precautions when entering confined spaces that contain bilge and ballast water.

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . check each item in storage for appropriate PCB marks and labels. (pg 3-13)

. . . evaluate transfer operations equipment to verify that all equipment is in proper working order and there is no evidence of spills or leaks. (pg 4-6)

. . . review site records to verify that the proper testing was conducted prior to and during the time that workers conducted cleaning in bilge and ballast water spaces. (pg 4-7)

. . . review site records to verify that proper air sampling was conducted prior to workers entering confined or enclosed spaces. (pg 4-8)

. . . review training records to verify that workers have the appropriate training to be working in confined and enclosed spaces. (pg 4-8)

. . . ask to see a copy of your facility's discharge permit covering wastewater discharges. (pg 4-9)

. . . ask to see your facility's wastewater monitoring records. (pg 4-11)

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BILGE AND BALLAST WATER REMOVAL- Continued

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . prior to inspection, contact the publicly-owned treatment works to determine if a pretreatment permit is required for your facility. During the inspection, the inspector may review the permit to determine if your facility is in compliance with permit conditions. (pg 4-14)

. . . verify that the number of underground storage tanks match the number reported on the notification form(s) to the state. (pg 4-19)

. . . verify that there are appropriate containment and diversionary structures or equipment at the facility for all above ground storage tanks. (pg 4-20)

. . . inspect all oil storage containers or tanks to verify that they are labeled properly and there is no evidence of leaks or discharges of oil. (pg 4-23)

. . . track the shipments from your facility through the reclaimers to verify that the shipments of fuel and oil do not contain spent solvent or other hazardous waste liquids. (pg 4-24)

. . . ask if you have tested the oil and oily wastes to determine their pollutant concentrations and if they are hazardous. He/she may ask to review the test results. (pg 4-25)

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<u>BILGE AND BALLAST WATER REMOVAL</u> - Continued

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

. . . review your facility's analytical data for hazardous waste determinations. (pg 4-27)

An inspector may

. . . evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category. (pg 4-27)

. . . look at all hazardous waste on site noting the size and type of containers, their condition, and whether they are closed and protected from the weather. He/she may check the labels on the containers for the words "hazardous waste," and verify that the dates/information is complete on the label. The inspector may also check the containment for cracks or leaks. (pg 4-29)

. . . check personnel records, including job titles, to determine when hazardous waste duties were assigned and if proper training was provided to employees. (pg 4-30)

. . . review your facility's contingency plan or basic contingency procedures, and ask about any incidents requiring implementation of the plan or procedures. (pg 4-30)

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<u>BILGE AND BALLAST WATER REMOVAL</u> - Continued

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

. . . review the facility's spill prevention plans to ensure that they are certified by a registered professional engineer and that they are up to date. (pg 4-33)

. . . evaluate your facility's response plan measures for their ability to facilitate adequate response to a worst-case discharge of oil. (pg 4-36)

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OIL AND FUEL REMOVAL

"Oil and fuel" – include petroleum, fuel oil, sludge, oil refuse, oil mixed with waste, etc.
CAUTION: Fire dangers!

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . evaluate transfer operations equipment to verify that all equipment is in proper working order and there is no evidence of spills or leaks. (pg 5-5)

. . . review site records to verify that the proper testing was conducted prior to and during the time that workers conducted cleaning in oil and fuel compartments. (pg 5-7)

. . . review site records to verify that proper testing was conducted prior to workers entering confined or enclosed spaces. (pg 5-7)

. . . review training records to verify that workers have the appropriate training to be working in confined and enclosed spaces. (pg 5-7)

. . . check with the state underground storage tank program office to verify that the number of underground storage tanks match the number reported on the notification form(s) to the state. (pg 5-9)

. . . verify that there are appropriate containment and diversionary structures or equipment at the facility for all above ground storage tanks. (pg 5-11)

refer to applicable federal and state statutes and regulations. These summaries are a compliance assistance tool only, and they neither change nor replace any applicable legal requirements, nor do they create any rights or benefits for anyone.

OIL AND FUEL REMOVAL - Continued

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

An inspector may

. . . inspect all oil storage containers or tanks to verify that they are labeled properly and there is no evidence of leaks or discharges of oil. (pg 5-13)

. . . track the shipments from your facility through the reclaimers to verify that the shipments of fuel and oil do not contain spent solvent or other hazardous waste liquids. (pg-5-14)

. . . review your facility's analytical date for hazardous waste determinations. (pg 5-18)

. . . evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category. (pg 5-18)

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PAINT REMOVAL AND DISPOSAL

"Paint" – you may find paint and preservative coatings on both interior and exterior surfaces of the ship.
CAUTION: paint may be flammable or contain toxic compounds and be harmful to you and the environment.
(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

The inspector may

. . . review your facility's records to verify that tests were conducted to determine if paints or other coatings were flammable. (pg 6-3)

. . . verify that highly flammable coatings have been removed prior to cutting. (pg 6-4)

. . . review surface preparation activities at the facility to verify that measures are being taken to protect worker health. (pg 6-6)

. . . evaluate the facility for compliance with specific permit conditions, if a permit has been issued by EPA or the state or local air pollution control authority. (pg 6-7)

. . . review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit.
(pg 6-7)

. . . review your facility's storm water pollution prevention plan to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent

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PAINT REMOVAL AND DISPOSAL - Continued

storm water from coming into contact with wastes, including paint removal wastes. (pg 6-8)

The inspector may

. . . review your facility's analytical date for hazardous waste determinations. (pg 6-12)

. . . evaluate the total volume of waste on site at the time of the inspection and verify that it is within the limits for your facility's generator category. (pg 6-12)

. . . look at all hazardous waste on site noting the size and type of containers, their condition, and whether they are closed and protected from the weather. He/she may check the labels on the containers for the words "hazardous waste," and verify that the date/information is complete on the label. The inspector may also check the containment for cracks or leaks. (pg 6-13)

. . . check personnel records to determine when hazardous waste duties were assigned and if proper training was provided to employees. (pg 6-13)

. . . review your facility's contingency plan or basic contingency procedures, and ask about any incidents requiring implementation of the plan or procedures. (pg 6-13)

. . . review all records including but not limited to, annual or biennial reports and manifests. (pg 6-14)

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METAL CUTTING AND METAL DISPOSAL

"Metal Cutting" – metals on ships are cut using a variety of torches and mechanical cutters.
CAUTION: air pollutants, exposure to metal fumes, particulates, and smoke may be harmful to your health.

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

The inspector may

. . . investigate any open burning activities at the facility. In addition, if a permit has been issued by EPA or the state or local regulatory agency, the inspector may evaluate the facility for compliance with the specific permit conditions. (pg 7-8)

. . . verify that appropriate mechanical ventilation is provided for workers, if required, during metal cutting. (pg 7-9)

. . . review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit.
(pg 7-13)

. . . review your facility's storm water pollution prevention plan to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent storm water from coming into contact with wastes, including metal cutting wastes. (pg 7-13)

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REMOVAL AND DISPOSAL OF MISCELLANEOUS SHIP MACHINERY

"Ship Machinery" – various types of machinery are sold for reuse or recycled as scrap.
CAUTION: protect yourself from exposure to contamination with hazardous materials, including asbestos, PCBs, oils, and fumes.

(references are to pages in "A Guide for Ship Scrappers–Tips for Regulatory Compliance")

The inspector may

. . . review your facility storm water permit to ensure that your facility is meeting all of the requirements of that permit. (pg 8-5)

. . . review your facility's storm water pollution prevention plan to ensure that it addresses all of the required elements. He/she may also review the waste storage area to ensure that your facility is taking appropriate measures to prevent storm water from coming into contact with wastes, including scrap metal and other wastes. (pg 8-6)

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