



Protocol for Conducting Environmental Compliance Audits for Hazardous Waste Generators under RCRA



EPA Office of Compliance

Notice

U.S. EPA's Office of Compliance prepared this document to aid regulated entities in developing programs at individual facilities to evaluate their compliance with environmental requirements arising under federal law. The statements in this document are intended solely as guidance to you in this effort. Among other things, the information provided in this document describes existing requirements for regulated entities under the *Resource Conservation and Recovery Act (RCRA)* and their implementing regulations at 40 CFR 260 through 268. While the Agency has made every effort to ensure the accuracy of the statements in this document, the regulated entity's legal obligations are determined by the terms of its applicable environmental facility-specific permits, and underlying statutes and applicable state and local law. Nothing in this document alters any statutory, regulatory or permit requirement. In the event of a conflict between statements in this document and either the permit or the regulations, the document would not be controlling. U.S. EPA may decide to revise this document without notice to reflect changes in EPA's regulations or to clarify and update the text. To determine whether U.S. EPA has revised this document and/or to obtain additional copies, contact EPA's National Center for Environmental Publications at (1-800-490-9198). **The contents of this document reflect regulations issued as of April 30, 2001.**

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Section I Introduction

Background

The Environmental Protection Agency (EPA) is responsible for ensuring that businesses and organizations comply with federal laws that protect the public health and the environment. EPA’s Office of Enforcement and Compliance Assurance (OECA) has begun combining traditional enforcement activities with more innovative compliance approaches including the provision of compliance assistance to the general public. EPA’s Office of Compliance Assistance was established in 1994 to focus on compliance assistance-related activities. EPA is also encouraging the development of self-assessment programs at individual facilities. Voluntary audit programs play an important role in helping companies meet their obligation to comply with environmental requirements. Such assessments can be a critical link, not only to improved compliance, but also to improvements in other aspects of an organization’s performance. For example, environmental audits may identify pollution prevention opportunities that can substantially reduce an organization’s operating costs. Environmental audits can also serve as an important diagnostic tool in evaluating a facility’s overall environmental management system or EMS.

EPA is developing 13 multi-media Environmental Audit Protocols to assist and encourage businesses and organizations to perform environmental audits and disclose violations in accordance with OECA’s Audit and Small Business Policies. The audit protocols are also intended to promote consistency among regulated entities when conducting environmental audits and to ensure that audits are conducted in a thorough and comprehensive manner. The protocols provide detailed regulatory checklists that can be customized to meet specific needs under the following primary environmental management areas:

- | | | |
|--------------------------------------|--|---|
| • Generation of RCRA Hazardous Waste | • Treatment Storage and Disposal of RCRA Hazardous Waste | • EPCRA |
| • CERCLA | • Clean Air Act | • Clean Water Act |
| • Safe Drinking Water Act | • TSCA | • Universal Waste and Used Oil |
| • Managing Nonhazardous Solid Waste | • Pesticides Management (FIFRA) | • Management of Toxic Substances (e.g., PCBs, lead-based paint, and asbestos) |
| | • RCRA Regulated Storage Tanks | |

Who Should Use These Protocols?

EPA has developed these audit protocols to provide regulated entities with specific guidance in periodically evaluating their compliance with federal environmental requirements. The specific application of this particular protocol, in terms of which media or functional area it applies to, is described in Section II under “Applicability”.

The Audit Protocols are designed for use by individuals who are already familiar with the federal regulations but require an updated comprehensive regulatory checklist to conduct environmental **compliance** audits at regulated facilities. Typically, compliance audits are performed by persons who are not necessarily media or legal experts but instead possess a working knowledge of the regulations and a familiarity with the operations and practices of the facility to be audited. These two basic skills are a prerequisite for adequately identifying areas at the facility subject to environmental regulations and potential regulatory violations that subtract from the organizations environmental performance. With these basic skills, audits can be successfully conducted by persons with various educational backgrounds (e.g., engineers, scientists, lawyers, business owners or operators). These protocols are not intended to be a substitute for the regulations nor are they intended to be instructional

to an audience seeking a primer on the requirements under Title 40, however, they are designed to be sufficiently detailed to support the auditor's efforts.

The term "Protocol" has evolved over the years as a term of art among the professional practices of auditing and refers to the actual working document used by auditors to evaluate facility conditions against a given set of criteria (in this case the federal regulations). Therefore these documents describe "what" to audit a facility for rather than "how" to conduct an audit. To optimize the effective use of these documents, you should become familiar with basic environmental auditing practices. For more guidance on how to conduct environmental audits, EPA refers interested parties to two well known organizations: The Environmental Auditing Roundtable (EAR) and the Institute for Environmental Auditing (IEA).

Environmental Health and Safety Auditing Roundtable
35888 Mildred Avenue
North Ridgeville, Ohio 44039
(216) 327-6605

The Institute for Environmental Auditing
Box 23686
L'Enfant Plaza Station
Washington, DC 20026-3686

U.S. EPA's Public Policies that Support Environmental Auditing

In 1986, in an effort to encourage the use of environmental auditing, EPA published its "Environmental Auditing Policy Statement" (see 51 FR 25004). The 1986 audit policy states that "it is EPA policy to encourage the use of environmental auditing by regulated industries to help achieve and maintain compliance with environmental laws and regulation, as well as to help identify and correct unregulated environmental hazards." In addition, EPA defined environmental auditing as "a systematic, documented, periodic, and objective review of facility operations and practices related to meeting environmental requirements." The policy also identified several objectives for environmental audits:

- verifying compliance with environmental requirements,
- evaluating the effectiveness of in-place environmental management systems, and
- assessing risks from regulated and unregulated materials and practices.

In 1995, EPA published "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations" – commonly known as the EPA Audit Policy – which both reaffirmed and expanded the Agency's 1986 audit policy (see 60 FR 66706 December 22, 1995). The 1995 audit policy offered major incentives for entities to discover, disclose and correct environmental violations. On April 11, 2000, EPA issued a revised final Audit Policy that replaces the 1995 Audit Policy (65 FR 19,617). The April 11, 2000 revision maintains the basic structure and terms of the 1995 Audit Policy while lengthening the prompt disclosure period to 21 days, clarifying some of its language (including the applicability of the Policy in the acquisitions context), and conforming its provisions to actual EPA practices. The revised audit policy continues the Agency's general practice of waiving or substantially mitigating gravity-based civil penalties for violations discovered through an environmental audit or through a compliance management system, provided the violations are promptly disclosed and corrected and that all of the Policy conditions are met. On the criminal side, the revised policy continues the Agency's general practice of not recommending that criminal charges be brought against entities that disclose violations that are potentially criminal in nature, provided the entity meets all of the policy's conditions. The policy safeguards human health and the environment by precluding relief for violations that cause serious environmental harm or may have presented an imminent and substantial endangerment. The audit policy is available on the Internet at www.epa.gov/auditpol.html.

In 1996, EPA issued its "Policy on Compliance Incentives for Small Businesses" which is commonly called the "Small Business Policy" (see 61 FR 27984 June 3, 1996). The Small Business Policy was intended to promote environmental compliance among small businesses by providing them with special incentives to participate in government sponsored on-site compliance assistance programs or conduct environmental audits. EPA will eliminate or reduce penalties for small businesses that voluntarily discover, promptly disclose, and correct violations in a timely manner.

On April 11, 2000, EPA issued its revised final Small Business Policy (see 65 FR 19630) to expand the options allowed under the 1996 policy for discovering violations and to establish a time period for disclosure. The major changes contained in the April 11, 2000 Small Business Policy revision include lengthening the prompt disclosure period from 10 to 21 calendar days and broadening the applicability of the Policy to violations uncovered by small businesses through any means of voluntary discovery. This broadening of the Policy takes advantage of the wide range of training, checklists, mentoring, and other activities now available to small businesses through regulatory agencies, private organizations, and the Internet.

More information on EPA's Small Business and Audit/Self-Disclosure Policies are available by contacting EPA's Enforcement and Compliance Docket and Information Center at (202) 564-2614 or visiting the EPA web site at: <http://es.epa.gov/oeca/main/strategy/crossp.html>

How to Use The Protocols

Each protocol provides guidance on key requirements, defines regulatory terms, and gives an overview of the federal laws affecting a particular environmental management area. They also include a checklist containing detailed procedures for conducting a review of facility conditions. The audit protocols are designed to support a wide range of environmental auditing needs; therefore several of the protocols in this set or sections of an individual protocol may not be applicable to a particular facility. To provide greater flexibility, each audit protocol can be obtained electronically from the EPA Website (www.epa.gov/oeca/ccsmd/profile.html). The EPA Website offers the protocols in a word processing format which allows the user to custom-tailor the checklists to more specific environmental aspects associated with the facility to be audited.

The protocols are not intended to be an exhaustive set of procedures; rather they are meant to inform the auditor, about the degree and quality of evaluation essential to a thorough environmental audit. EPA is aware that other audit approaches may also provide an effective means of identifying and assessing facility environmental status and in developing corrective actions.

It is important to understand that there can be significant overlap within the realm of the federal regulations. For example, the Department of Transportation (DOT) has established regulations governing the transportation of hazardous materials. Similarly, the Occupational Safety and Health Administration (OSHA) under the U.S. Department of Labor has promulgated regulations governing the protection of workers who are exposed to hazardous chemicals. There can also be significant overlap between federal and state environmental regulations. In fact, state programs that implement federally mandated programs may contain more stringent requirements that are not included in these protocols. There can also be multiple state agencies regulating the areas covered in these protocols. The auditor also should determine which regulatory agency has authority for implementing an environmental program so that the proper set of regulations is consulted. Prior to conducting the audit, the auditor should review federal, state and local environmental requirements and expand the protocol, as required, to include other applicable requirements not included in these documents.

Review of Federal Legislation and Key Compliance Requirements:

These sections are intended to provide only supplementary information or a "thumbnail sketch" of the regulations and statutes. These sections are not intended to function as the main tool of the protocol (this is the purpose of the checklist). Instead, they serve to remind the auditor of the general thrust of the regulation and to scope out facility requirements covered by that particular regulation. For example, a brief paragraph describing record keeping and reporting requirements and the associated subpart citations will identify and remind the auditor of a specific area of focus at the facility. This allows the auditor to plan the audit properly and to identify key areas and documents requiring review and analysis.

State and Local Regulations:

Each EPA Audit Protocols contains a section alerting the auditor to typical issues addressed in state and local regulations concerning a given topic area (e.g., RCRA and used oil). From a practical standpoint, EPA cannot present individual state and local requirements in the protocols. However, this section does provide general guidance to the auditor regarding the division of statutory authority between EPA and the states over a specific media. This section also describes circumstances where states and local governments may enact more stringent requirements that go beyond the federal requirements.

EPA cannot overemphasize how important it is for the auditor to take under consideration the impact of state and local regulations on facility compliance. EPA has delegated various levels of authority to a majority of the states for most of the federal regulatory programs including enforcement. For example, most facilities regulated under RCRA, and/or CWA have been issued permits written by the states to ensure compliance with federal and state regulations. In turn, many states may have delegated various levels of authority to local jurisdictions. Similarly, local governments (e.g., counties, townships) may issue permits for air emissions from the facility. Therefore, auditors are advised to review local and state regulations in addition to the federal regulations in order to perform a comprehensive audit.

Key Terms and Definitions:

This section of the protocol identifies terms of art used in the regulations and the checklists that are listed in the “Definitions” sections of the Code of Federal Regulations (CFR). It is important to note that not all definitions from the CFR may be contained in this section, however; those definitions which are commonly repeated in the checklists or are otherwise critical to an audit process are included. Wherever possible, we have attempted to list these definitions as they are written in the CFR and not to interpret their meaning outside of the regulations.

The Checklists:

The checklists delineate what should be evaluated during an audit. The left column states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the federal regulations. The right column gives instructions to help conduct the evaluation. These instructions are performance objectives that should be accomplished by the auditor. Some of the performance objectives may be simple documentation checks that take only a few minutes; others may require a time-intensive physical inspection of a facility. The checklists contained in these protocols are (and must be) sufficiently detailed to identify any area of the company or organization that would potentially receive a notice of violation if compliance is not achieved. For this reason, the checklists often get to a level of detail such that a specific paragraph of the subpart (e.g., 40 CFR 262.34(a)(1)(i)) contained in the CFR is identified for verification by the auditor. The checklists contain the following components:

- **“Regulatory Requirement or Management Practice Column”**
The “Regulatory Requirement or Management Practice Column” states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the federal regulations. The regulatory citation is given in parentheses after the stated requirement. Good management practices are distinguished from regulatory requirements in the checklist by the acronym (MP) and are printed in italics.
- **“Reviewer Checks” Column:**
The items under the “Reviewer Checks:” column identify requirements that must be verified to accomplish the auditor’s performance objectives. (*The key to successful compliance auditing is to verify and document site observations and other data.*) The checklists follow very closely with the text in the CFR in order to provide the service they are intended to fulfill (i.e., *to be used for compliance auditing*). However, they are not a direct recitation of the CFR. Instead they are organized into more of a functional arrangement (e.g., record keeping and reporting requirements vs. technical controls) to accommodate an auditor’s likely sequence of review during the site visit. Wherever possible, the statements or items under the “Reviewer Checks” column, will follow the same sequence or order of the citations listed at the end of the statement in the “Regulatory Requirement” column.
- **“NOTE:” Statements**
“Note:” statements contained in the checklists serve several purposes. They usually are distinguished from “Verify” statements to alert the auditor to *exceptions or conditions* that may affect requirements or to referenced standards that are not part of Title 40 (e.g., American Society for Testing and Materials (ASTM) standards). They also may be used to identify options that the regulatory agency may choose in interacting with the facility (e.g., permit reviews) or options the facility may employ to comply with a given requirement.

- **Checklist Numbering System:**

The checklists also have a unique numbering system that allows the protocols to be more easily updated by topic area (e.g., RCRA Small Quantity Generator). Each topic area in turn is divided into control breaks to allow the protocol to be divided and assigned to different teams during the audit. This is why blank pages may appear in the middle of the checklists. Because of these control breaks, there is intentional repetition of text (particularly “Note” Statements) under the “Reviewer Checks” column to prevent oversight of key items by the audit team members who may be using only a portion of the checklist for their assigned area.

Updates:

Environmental regulations are continually changing both at the federal and state level. For this reason, it is important for environmental auditors to determine if any new regulations have been issued since the publication of each protocol document and, if so, amend the checklists to reflect the new regulations. Auditors may become aware of new federal regulations through periodic review of Federal Register notices as well as public information bulletins from trade associations and other compliance assistance providers. In addition, EPA offers information on new regulations, policies and compliance incentives through several Agency Websites. Each protocol provides specific information regarding EPA program office websites and hotlines that can be accessed for regulatory and policy updates.

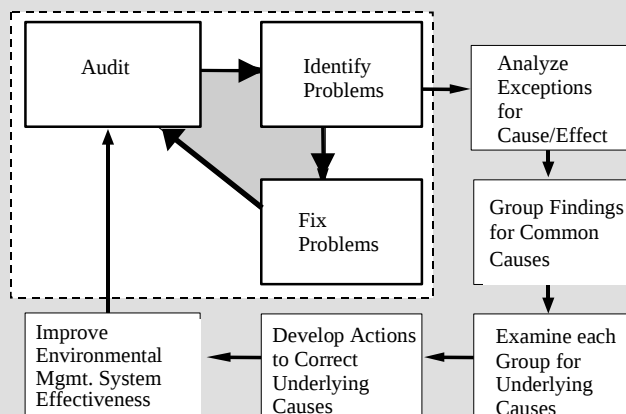
The Relationship of Auditing to Environmental Management Systems

An environmental auditing program is an integral part of any organization’s environmental management system (EMS). Audit findings generated from the use of these protocols can be used as a basis to implement, upgrade, or benchmark environmental management systems. Regular environmental auditing can be the key element to a high quality environmental management program and will function best when an organization identifies the “root causes” of each audit finding. Root causes are the primary factors that lead to noncompliance events. For example a violation of a facility’s wastewater discharge permit may be traced back to breakdowns in management oversight, information exchange, or inadequate evaluations by untrained facility personnel.

As shown in Figure 1, a typical approach to auditing involves three basic steps: conducting the audit, identifying problems (audit findings), and fixing identified deficiencies. When the audit process is expanded, to identify and correct root causes to noncompliance, the organization’s corrective action part of its EMS becomes more effective. In the expanded model, audit findings (exceptions) undergo a root cause analysis to identify underlying causes to noncompliance events. Management actions are then taken to correct the underlying causes behind the audit findings and improvements are made to the organizations overall EMS before another audit is conducted on the facility. Expanding the audit process allows the organization to successfully correct problems, sustain compliance, and prevent discovery of the same findings again during subsequent audits.

Furthermore, identifying the root cause of an audit finding can mean identifying not only the failures that require correction but also successful practices that promote compliance and prevent violations. In each case a root cause analysis should uncover the failures while promoting the successes so that an organization can make continual progress toward environmental excellence.

Figure 1 - Expanded Corrective Action Model



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Section II

Audit Protocols

Applicability

This protocol is intended to help inform facilities that generate hazardous waste, and it includes requirements for waste minimization and export of hazardous waste. There is a separate booklet that applies to treatment, storage, and disposal facilities (TSDFs).

The following pages and checklist items contained in the December 1998 document (Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under the Resource Conservation and Recovery Act (EPA 300-B-98-005)) have been added/revised in this edition:

- Definitions for the terms Aquifer, Battery, Closure Device, Cover, Dike, Equipment, Exempted Hazardous Waste Containers and Surface Impoundments, Exempted Hazardous Waste Management Unit, Hazardous Debris, New Hazardous Waste Management Facility, On-site, Open-end Valve or Line, Qualified Groundwater Scientist, Soil, Treatment, and Used Oil (see pages 6 through 16 of this document)
- HW.10.1
- HW.80.2
- HW.130.7 through HW.130.12
- HW.200.2
- Appendix A

Not all checklist items will be applicable to a particular facility. Guidance is provided on the checklists to direct the auditor to the regulations typically applicable to the type of hazardous waste activities/facilities on the site.

There are numerous environmental regulatory requirements administered by federal, state, and local governments. Each level of government may have a major impact on areas at the facility that are subject to the audit. Therefore, auditors are advised to review federal, state, and location regulations in order to perform a comprehensive audit.

Review of Federal Legislation

The Resource Conservation and Recovery Act, Subtitle C (1976)

The Resource, Conservation and Recovery Act (RCRA) of 1976, which amended the Solid Waste Disposal Act of 1965, addresses hazardous (Subtitle C) and solid (Subtitle D) waste management activities. Subtitle C of RCRA, 42 U.S. Code (USC) sections 6921-6939b, establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. For example, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the “land disposal” of specified wastes and disposal of hazardous waste through underground injection within 1/4 mile (0.40 km) of an underground source of drinking water. Pursuant to Subtitle C of RCRA, the United States Environmental Protection Agency (U.S. EPA) promulgated regulations at 40 CFR Parts 260-299, establishing a “cradle-to-grave” system that governs hazardous waste from the point of generation to its treatment or disposal.

The 1984 Hazardous and Solid Wastes Amendments (HSWA) greatly expanded the requirements and coverage of RCRA. Perhaps the most significant provision of HSWA is the prohibition on the land disposal of hazardous waste. The land disposal restrictions (LDRs) promulgated by U.S. EPA essentially ban the disposal of untreated liquid hazardous waste or hazardous waste containing free liquids in landfills and establish treatment standards for these wastes. In addition to the new statutory and regulatory requirements imposed by HSWA, a new subtitle to the act was created to govern underground storage tanks (USTs). **This document does not provide audit guidance for underground or above ground storage tanks regulated under RCRA.** Audit guidance and technical information on above and underground storage tanks is provided by U.S. EPA in a separate protocol titled *Protocol for Conducting Environmental Compliance Audits of Storage Tanks under the Resource Conservation and Recovery Act*, EPA Document Number 300-B-00-006.

After assessing air emissions at TSDFs, the U.S. EPA ascertained that volatile organic chemicals (VOCs) adversely affect human health and welfare. In response, U.S. EPA promulgated three subparts of RCRA rules designed to control VOCs. In 1990, U.S. EPA issued Subparts AA and BB, which amended 40 CFR Parts 264 and 265. Subpart AA governs organic chemical emissions from certain hazardous waste treatment processes, while Subpart BB governs equipment that contains or contacts hazardous waste with at least 10% organic chemicals by weight. Subpart CC includes requirements for controlling VOC emissions from tanks, surface impoundments, containers, and certain miscellaneous “Subpart X” units. The Subpart CC Final Rule was signed on December 6, 1994, and the Final Rule Amendments were signed on October 4, 1996.

State/Local Regulations

RCRA encourages states to develop their own parallel regulatory programs for hazardous waste management. This includes enacting statutory authority and operating hazardous waste regulatory programs. Many states have met the requirements established by U.S. EPA in 40 CFR 271 (Requirements for Authorization of state Hazardous Waste Programs) and have been approved to manage their own state programs. Many states have adopted the U.S. EPA regulations by reference or have promulgated regulations that are identical to the U.S. EPA regulations, while other states have promulgated regulations stricter than the federal RCRA. These differences between individual state regulations and the federal program require that auditors check the status of their state's authorization and then determine which regulations apply. For example, some states have listed additional waste as hazardous waste (used oil, PCBs, asbestos). Since the section checklists are based exclusively on the requirements of the federal RCRA program, the auditor should determine in what ways the applicable state program differs from the federal program.

Key Compliance Requirements

Identification of Hazardous Waste

Proper identification of hazardous wastes is a complex task that is fundamental to determining which materials at a facility are subject to RCRA Subtitle C requirements. To determine whether or not a material is a hazardous waste, a facility must answer four questions about each waste stream. First, is the material a “solid waste,” as defined by the RCRA regulations? The regulatory framework for distinguishing solid and hazardous wastes can be found at 40 CFR §§261.2 and 261.3. Second, does it fit one of the exclusions from the definition of solid or hazardous waste? Materials that have been excluded are listed in 40 CFR §261.4. Third, is it a listed or characteristic hazardous waste? Listed and characteristic wastes are defined in 40 CFR §261, Subparts B, C, and D. And finally, has the waste been delisted?

Waste Analysis

A solid waste is a hazardous waste if it is a *listed* hazardous waste (defined at 40 CFR §261, Subpart D) or if it exhibits any of the *characteristics* defined in 40 CFR §261, Subpart C. In order to determine whether the waste exhibits any of the characteristics, the generator generally must use analytical methods capable of quantitatively identifying the contaminants in question. Unlike characteristic wastes, listed wastes are generally determined based on the generator's knowledge of its manufacturing process or the chemicals used.

A generator can meet waste analysis requirements using several methods or combinations of methods. Wherever feasible, the preferred method is to conduct sampling and laboratory analysis because it is more accurate than other options. However, generators can also apply “acceptable knowledge,” which includes (1) process knowledge; (2) waste analysis data obtained from facilities that send their waste off-site for treatment, storage, or disposal; or (3) records of analysis performed before the effective date of RCRA regulations, assuming the information is current and accurate.

Process knowledge involves obtaining detailed information on a waste from existing published or documented waste analysis data or studies conducted on hazardous waste generated by processes similar to that which generated the waste.

When using process descriptions and existing data, a facility must carefully scrutinize whether (1) there are any differences between the processes documented and the actual processes and (2) the data used are accurate and current, including (a) whether any wastes are newly regulated as hazardous wastes, (b) whether existing data are sufficient to identify any new constituent concentration limits, and (c) the information is based on currently valid analytical techniques.

Generator Requirements

The responsibilities of any particular facility are based on the amount of hazardous waste being generated in one calendar month. Typical hazardous wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, waste oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste generated. Under federal regulations there are three classifications of generators:

1. A Conditionally Exempt Small Quantity Generator (CESQG) generates no more than 100 kg (220.46 lb.) of hazardous waste or 1 kg (2.20 lb.) of acutely hazardous waste in a calendar month. A CESQG also may not accumulate on-site more than 1,000 kg (2,204.62 lb.) of hazardous waste at any one time. When either the volume of hazardous waste produced in one calendar month exceeds 100 kg (220.46 lb.) or more than 1,000 kg (2,204.62 lb.) of hazardous waste have accumulated on-site, the facility is required to comply with the more stringent standards applicable to a Small Quantity Generator (SQG). When the volume of acutely hazardous waste exceeds 1 kg of spill residue, contaminated soil, waste or other debris exceeds 100 kg, then the waste is subject to standards applicable to large quantity generators (LQGs);
2. An SQG generates between 100 kg (220.46 lb.) and 1,000 kg (2,204.62 lb.) of hazardous waste in a calendar month. The hazardous waste cannot accumulate on-site for more than 180 days unless the waste is transported more than 200 miles (321.87 km) to a treatment, storage and disposal facility (TSDF). If the hazardous waste must be transported more than 200 miles, it can accumulate for up to 270 days. At no time is there to be more than 6,000 kg (13,227.73 lb.) of hazardous waste accumulated at the facility. When the volume of hazardous waste generated in 1 mo exceeds 1,000 kg (2,204.62 lb.) of nonacutely hazardous waste or 1 kg (2.20 lb.) of acutely hazardous waste or the accumulation time limit is exceeded, the facility is required to comply with the standards for an LQG. When more than 6,000 kg (13,227.73 lb.) of hazardous waste is stored on-site, the SQG is required to obtain a storage permit and comply with the requirements of 40 CFR 264 and 40 CFR 265;
3. An LQG generates more than 1,000 kg (2,204.62 lb.) of hazardous waste in a calendar month. (NOTE: Using water, which weighs approximately 8.34 lbs./gal (3.78 kg/gal or 1 kg/L) as a basis of measurement, 100 kg (220.46 lb.) would equal about 26.4 gallons (100 L) (almost one-half of a 55-gal. (208.2 L) drum); 1,000 kg (2,204.62 lb.) would equal about 264 gallons (1000 L) (almost five 55-gal. drums)).

Whether the facility is a CESQG, SQG, or a LQG determines whether and how the RCRA regulations apply to that facility. Storage areas connected with generation points are often referred to as 90 day storage areas. Regardless of the amount of hazardous waste generated, the regulations require every facility to test or use knowledge of materials or processes used to determine if its waste is a listed hazardous waste or exhibits one of four hazardous characteristics (ignitability, corrosivity, toxicity, reactivity).

Comparison of RCRA Generator Requirements

Requirement	CESQG	SQG	LQG
Determine Whether Solid Waste is Hazardous	Yes	Yes	Yes
Quantity Limits	≤100 kg/mo (220.46 lb./mo)	100 kg/mo (220.46 lb.) to 1,000 kg/mo (2,204.62 lb.)	>1,000 kg/mo (2,204.62 lb./mo)
Acute Waste Limits	≤1 kg/mo (2.20 lb./mo)	≤1 kg/mo (2.20 lb./mo)	None
Facility Receiving Waste	State approved, RCRA permitted, interim status, or exempt recycling facility	RCRA permitted, interim status, or exempt recycling facility	RCRA permitted, interim status, or exempt recycling facility
EPA ID Number	Not required	Required	Required
RCRA Personnel Training	Not required	Basic training required	Required
Exception Report	Not required	Required within 60 days of hazardous waste being accepted by initial transporter	Required within 45 days of hazardous waste being accepted by initial transporter
Biennial Report	Not required	Not required	Required
On-site Accumulation Limits (without permit)	1,000 kg (2,204.62 lb.)	6,000 kg (13,227.73 lb.)	Any quantity
Accumulation Time Limits (without permit)	None	180 days [or 270 days if transported more than 200 mi. (321.87 km)] U.S. EPA may grant 30 days for unforeseen, temporary, and uncontrollable circumstances.	90 days + U.S. EPA may grant 30 days for unforeseen, temporary, and uncontrollable circumstances.
Storage Requirements for Accumulated Hazardous Waste	None	Basic requirements with technical standards for containers or tanks	Full compliance with management of containers or tanks
Use Manifests	No	Yes, unless the waste is reclaimed under contractual agreement in accordance with the requirements of 40 CFR 262.20 (e).	Yes, unless the waste is reclaimed under contractual agreement in accordance with the requirements of 40 CFR 262.20 (e).
Contingency Plan	No	No	Required

Pre-Transport Requirements

Hazardous waste shipped off-site must be packaged, labeled and marked. The vehicles used to transport the waste must be placarded in accordance with DOT regulations.

90 Day Storage

90 day storage is an area in or near the place where hazardous waste is accumulated or stored before being sent off-site for disposal. Storage in these areas is temporary, and the permissible length of time for accumulation depends on whether the facility is classified as an LQG, SQG, or CESQG.

Satellite Accumulation Point Management

A satellite accumulation point is an area at or near the point of generation where no more than 55 gal. (208.20 L) of a hazardous waste or one qt. (0.95 L) of acutely hazardous waste is accumulated. The satellite accumulation point is to remain under the control of a single operator. When the 55 gal. (208.20 L) limit is reached, the operator has three days to move the waste to a 90 day storage area or a permitted TSDF. These standards apply to SQGs and LQGs only.

Waste Minimization/Pollution Prevention

Waste minimization and pollution prevention programs are being increasingly discussed and implemented by both environmental managers and environmental policy makers. Usually defined as a reduction in the volume and toxicity of waste, waste minimization often pays for itself through reduced disposal costs, operating costs, and liability. While these cost savings are often enough to justify a program, there are an increasing number of voluntary and mandatory programs that drive waste minimization/pollution prevention.

Under RCRA, LQGs are required to sign a certification on each manifest stating that they have a program in place to reduce waste to the degree that is economically feasible and to select a disposal method that minimizes threats to human health and the environment. SQGs must show a “good faith effort” to minimize waste and to select the best waste management method available.

U.S. EPA has also developed guidelines on a waste minimization program for generators. Issued in 58 Federal Register (FR) 31114 on May 28, 1993, the Interim Final Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program is intended to provide guidance to generators of regulated hazardous wastes. The program includes:

- Provisions for top management assurance that waste minimization is a company-wide effort;
- Characterization of waste generation and waste management costs;
- Periodic waste minimization assessments;
- A cost allocation system;
- Encouragement of technology transfer; and
- Program implementation and evaluation.

For further information regarding the RCRA regulations, contact U.S. EPA’s RCRA/UST, Superfund and EPCRA Hotline at 800-424-9346 (or 703-412-9810 in the D.C. area) from 9 a.m. to 6 p.m., Monday through Friday.

This U.S. EPA hotline provides up-to-date information on regulations developed under RCRA, CERCLA (Superfund), and the Oil Pollution Act. The hotline can assist with Section 112(r) of the Clean Air Act (CAA) and Spill Prevention, Control and Countermeasures (SPCC) regulations. The hotline also responds to requests for relevant documents and can direct the caller to additional tools that provide a more detailed discussion of specific regulatory requirements.

Key Terms and Definitions

Acknowledgement of Consent

The cable sent to the U.S. EPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).

Acute Hazardous Waste

Any waste listed under 40 CFR 261.31 through 261.33(c) with a hazard code of H. These also include U.S. EPA hazardous waste numbers F020, F021, F022, F023, F026, and F027 (40 CFR 261.31) and the P listed wastes in 40 CFR 261.33(e) (40 CFR 261.31 through 261.33).

Approved State Program

A RCRA program administered by a state that has been approved by U.S. EPA according to 40 CFR 271.

Aquifer

A geologic formation or group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).

Average Volatile Organic (VO) Concentration

The mass-weighted average VO concentration of a hazardous waste (40 CFR 265.1081).

Battery

A device consisting of one or more electrically connected electrochemical cells which is designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed (40 CFR 260.10 and 273.9).

Boiler

An enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):

1. The unit has physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases; and
2. The unit's combustion chamber and primary energy recovery section(s) must be of integral design; and
3. While in operation the unit maintains a thermal energy recovery efficiency of at least 60 percent; and
4. The unit has been approved by the Administrator of U.S. EPA; and
5. The unit must export and utilize at least 75% of the recovered energy (40 CFR 260.10).

U.S. EPA may also decide on a case-by-case basis that certain enclosed devices using controlled flame combustion are boilers even though they may not otherwise meet the definition of boiler.

Certification

A statement of professional opinion based upon knowledge and belief (40 CFR 260.10).

Characteristics of Hazardous Waste

The characteristics of ignitibility, corrosivity, reactivity, and toxicity that identify hazardous waste (40 CFR 261.20 through 261.24).

Closure Device

A cap, hatch, lid, plug, seal, valve, or other type of fitting that blocks an opening in a cover such that when the device is secured in the closed position it prevents or reduces air pollutant emissions to the atmosphere. Closure devices include devices that are detachable from the cover (e.g., a sampling port cap), manually operated (e.g., hinged access lid or hatch), or automatically operated (e.g., a spring loaded pressure relief valve) (40 CFR 265.1081).

Competent Authorities

The regulatory authorities of concerned countries having jurisdiction over transfrontier movements of wastes destined for recovery operations (40 CFR 262.81).

Consignee

The ultimate treatment, storage, or disposal facility in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).

Container

Any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).

Containment Building

A hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1102 and 40 CFR 265.1100 through 265.1102 (40 CFR 260.10).

Contingency Plan

A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (40 CFR 260.10).

Cover

A device that provides a continuous barrier over the hazardous waste managed in a unit to prevent or reduce air pollutant emissions to the atmosphere. A cover may have openings (such as access hatches, sampling ports, gauge wells) that are necessary for operation, inspection, maintenance, and repair of the unit on which the cover is used. A cover may be a separate piece of equipment which can be detached and removed from the unit or a cover may be formed by structural features permanently integrated into the design of the unit (40 CFR 265.1081).

Debris

Solid material exceeding a 60 mm particle size that is intended for disposal and that is a manufactured object, plant or animal matter, or natural geologic material. The following materials are not debris: any material for which a specific treatment standard is provided; process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emissions residues; and intact containers of hazardous waste that are not ruptured and retain at least 75 percent of their original volume (40 CFR 268.2).

Dike

An embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).

Discharge or Hazardous Waste Discharge

The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).

Disposal

The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters (40 CFR 260.10).

Disposal Facility

A facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure. The term disposal facility does not include a corrective action management unit into which remediation wastes are placed (40 CFR 260.10).

Elementary Neutralization Unit

A device which is used for neutralizing hazardous wastes that are hazardous only because they exhibit corrosivity (as defined in 40 CFR 261.22) or are listed in Subpart D of 40 CFR 261 and that meets the definition of tank, tank system container, transport vehicle, or vessel (40 CFR 260.10).

Enclosure

A structure that surrounds a tank or container, captures organic vapors emitted from the tank or container, and vents the captured vapors through a closed-vent system to a control device (40 CFR 265.1081).

EPA Hazardous Waste Number

The number assigned by U.S. EPA to each listed hazardous waste under Subpart D and to each characteristic waste under Subpart C (40 CFR 260.10).

EPA Identification Number

The number assigned by U.S. EPA to each generator, transporter, and treatment, storage, or disposal facility (40 CFR 260.10).

Equipment

Each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, or flange or other connector, and any control devices or systems required by this subpart (40 CFR 264.1031) [Added April 1999].

Exempted Hazardous Waste Containers and Surface Impoundments

Containers and surface impoundments are exempt from these air emission control requirements (specified under 40 CFR 264.1084 through 264.1087 or under 40 CFR 265.1085 through 265.1088) if the waste management unit is one of the following (40 CFR 264.1082(c) and 265.1083(b)):

1. containers and surface impoundments for which all hazardous wastes entering the unit have an average VO concentration at the point of waste origination of less than 500 ppmw as determined by using the procedures specified under 40 CFR 264.1083(a) and 40 CFR 265.1084(a). This determination is updated at least every 12 months
2. containers and surface impoundments for which the organic content of all hazardous wastes entering the unit has been reduced by an organic destruction or removal process that achieves any of the following conditions:
 - a. a process that removes or destroys the organics to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit established for the process as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b)
 - b. a process that removes or destroys the organics contained in the hazardous waste to such a level that the organic reduction efficiency for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b)
 - c. a process that removes or destroys the organics contained in the hazardous waste to such a level that the actual organic mass removal rate for the process is greater than the required organic mass removal rate established for the process as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b)
 - d. a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met:
 - (i) the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b)
 - (ii) the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b)
 - e. a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions:
 - (i) from the point of waste origination through the point where the hazardous waste enters the treatment process, the hazardous waste is continuously managed in waste management units which use air emissions controls as specified in 40 CFR 264.1084 through 264.2087 or in 40 CFR 265.1085 through 265.1088, as applicable to the waste management unit

- (ii) from the point of waste origination through the point where the hazardous waste enters the process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere
 - (iii) the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 500 ppmw, whichever value is lower (The average VO concentration of each individual waste stream at the point of waste origination shall be determined using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b))
- f. a process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency for the process is equal to or greater than 95 percent and the owner/operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw, as determined by using the procedures specified under 40 CFR 264.1083(a) and 265.1084(b))
- g. a hazardous waste incinerator for which the owner/operator has been issued a final permit under 40 CFR Part 270, or has designed and operated the incinerator in compliance with 40 CFR 264, Subpart O
- h. a boiler or industrial furnace for which the owner or operator has been issued a final permit under 40 CFR 270, or has designed and operated the unit in compliance with 40 CFR 266, Subpart H.
- 3. a tank, container, or surface impoundment for which all hazardous waste placed in the unit either:
 - a. meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 268, or
 - b. the organic hazardous constituents in the waste have been treated by the treatment technology established by the U.S. EPA for the waste listed under 40 CFR 268.42(a) or have been removed or destroyed by an equivalent method of treatment approved by the U.S. EPA.

Exempted Hazardous Waste Management Unit

The air emission standards specified under Subpart CC of 40 CFR 264 and 265 do not apply to the following waste management units (40 CFR 264.1080(b) and 265.1080(b)):

- 1. a waste management unit that holds hazardous waste placed in the unit before December 6, 1996, and in which no hazardous waste is added to the unit on or after December 6, 1996
- 2. a container that has a design capacity less than or equal to 0.1 m³
- 3. a tank in which an owner/operator has stopped adding hazardous waste and the owner/operator has begun implementing or completed closure pursuant to an approved closure plan
- 4. a surface impoundment in which an owner/operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner/operator has begun implementing or completed closure pursuant to an approved closure plan
- 5. a waste management unit that is used solely for on-site treatment or storage of hazardous waste that is placed in the unit as a result of implementing remedial activities required under the corrective action authorities of RCRA Sect 3004(u), 3004(v), or 3008(h); CERCLA authorities; or similar federal or state authorities
- 6. a waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the Atomic Energy Act and the Nuclear Waste Policy Act
- 7. a waste management unit that the owner or operator certifies is equipped with and operating air emissions controls in accordance with the requirements of an applicable Clean Air Act (CAA) regulation codified under 40 CFR 60, 61, and 63
- 8. a tank that has a process vent as defined in 40 CFR 264.1031.

Existing Hazardous Waste Management Facility or Existing Facility

A facility which was in operation or for which construction commenced on or before November 19, 1980 (40 CFR 260.10).

Facility

All contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).

Fixed Roof

A cover that is mounted on a unit in a stationary position and does not move with fluctuations in the level of the material managed in the unit (40 CFR 265.1081).

Food-Chain Crops

Tobacco, crops grown for human consumption, and crops grown for feed for animals whose products are consumed by humans (40 CFR 260.10).

Free Liquids

Liquids which readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).

Generator

Any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10).

Groundwater

Water below the land surface in a zone of saturation (40 CFR 260.10).

Halogenated Organic Compounds (HOC)

Those compounds having a carbon-halogen bond which are listed in Appendix III (40 CFR 268.2).

Hazardous Debris

Debris that contains a hazardous waste listed in subpart D of 40 CFR 261, or that exhibits a characteristic of hazardous waste identified in subpart C of 40 CFR 26. Any deliberate mixing of prohibited hazardous waste with debris that changes its treatment classification (i.e., from waste to hazardous debris) is not allowed under the dilution prohibition in 40 CFR 268.3 (40 CFR 268.2)

Hazardous Waste

A solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).

Hazardous Waste Constituent

A constituent that caused the hazardous waste to be listed in 40 CFR Part 261, Subpart D (lists of hazardous wastes from non-specific and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic) (40 CFR 260.10).

Hazardous Waste Management Unit

A contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, a waste pile, a treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system, and a container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).

In Light Liquid Service

The piece of equipment contains or contacts a waste stream where the vapor pressure of one or more of the organic components in the stream is greater than 0.3 kPa at 20 degrees Celsius, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 degrees Celsius is equal to or greater than 20 percent by weight, and the fluid is a liquid at operating conditions (40 CFR 264.1031).

In Light Material Service

The container is used to manage material for which both of the following conditions apply:

1. The vapor pressure of one or more of the organic constituents in the material is greater than 0.3 kPa at 20 ° C , and

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2. The total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kPa at 20 °C is equal to or greater than 20 percent by weight (40 CFR 265.1081).

Incompatible Waste

A hazardous waste that is unsuitable for:

1. Placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls); or
2. Commingling with another waste or material under uncontrolled conditions because the commingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mist, fumes, or gases, or flammable fumes or gases (40 CFR 260.10).

Individual Generation Site

The contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).

Industrial Furnace

Any of the following enclosed devices that are integral components of manufacturing processes and that use thermal treatment to accomplish recovery of materials or energy:

1. cement kilns
2. lime kilns
3. aggregate kilns
4. phosphate kilns
5. coke ovens
6. blast furnaces;
7. smelting, melting and refining furnaces;
8. titanium dioxide chloride process oxidation reactors
9. methane reforming furnaces
10. pulping liquor recovery furnaces
11. combustion devices used in the recovery of sulfur values from spent sulfuric acid; certain halogen acid furnaces, and
12. other devices designated by the Administrator of U.S. EPA (40 CFR 260.10).

Injection Wells

A well into which fluids are injected (40 CFR 260.10).

Inner Liner

A continuous layer of material placed inside a tank or container which protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).

International Shipment

The transportation of hazardous waste into or out of the jurisdiction of the United States (40 CFR 260.10).

Land Disposal

Placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes (40 CFR 268.2).

Land Treatment Facility

A facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).

Landfill

A disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit (40 CFR 260.10).

Large Quantity Generator

A facility generating hazardous waste in quantities greater than 1000 kg (2,204.62 lbs.) per calendar month or greater than 1 kg of acutely hazardous waste per calendar month (40 CFR 260.10).

Leachate

Any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste (40 CFR 260.10).

Leak Detection System

A system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a system must employ operational controls (e.g., daily visible containment for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to detect continuously and automatically the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).

Malfunction

Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operations are not malfunctions (40 CFR 265.1081).

Management or Hazardous Waste Management

The systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).

Management Practice (MP)

Practices which, although not mandated by law, are encouraged to promote safe operating procedures.

Manifest

The shipping document originated and signed by the generator containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).

Manifest Document Number

The U.S. EPA 12-digit identification number assigned to the generator plus a unique 5-digit number assigned to the manifest by the generator for recording and reporting purposes (40 CFR 260.10).

Movement

That hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).

New Hazardous Waste Management Facility

A facility that began operation, or for which construction commenced after October 21, 1976 (40 CFR 260.10).

No Detectable Organic Emissions

No escape of organics to the atmosphere as determined by using the procedures specified in 40 CFR 265.1084(d) (40 CFR 265.1081).

Nonwastewaters

Wastes that do not meet the criteria for wastewaters (40 CFR 268.2). (See definition of wastewater.)

Notifier

The person under jurisdiction of the exporting country who has, or will have at the time the planned transfrontier movement commences, possession or other forms of legal control of the wastes and who proposes their transfrontier movement for the ultimate purpose of submitting them to recovery operations. When the United States (U.S.) is the exporting country, notifier is interpreted to mean a person domiciled in the United States (40 CFR 262.81).

OECD Country

Designated member countries of the Organization for Economic Coordination and Development (OECD) consisting of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States. Canada and Mexico are considered OECD member countries under the RCRA regulations only for the purpose of transit (40 CFR 262.58).

On-site

The same or geographically contiguous property which may be divided by a public or private right-of-way, provided the entrance and exit between the properties is at a crossroads intersection, and access is by crossing as opposed to going along the right-of-way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access is also considered onsite property (40 CFR 260.10)

Open Burning

The combustion of any material without the following characteristics:

1. Control of combustion air to maintain adequate temperature for efficient combustion,
2. Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion,
3. Control of emission of the gaseous combustion products (40 CFR 260.10).

Open-ended Valve or Line

Any valve, except pressure relief valves, having one side of the valve seat in contact with hazardous waste and one side open to the atmosphere, either directly or through open piping (40 CFR 264.1031)

Pile

Any non-containerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage that is not a containment building (40 CFR 260.10).

Point Source

Any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture (40 CFR 260.10).

Point of Waste Treatment

The point where a hazardous waste exits a waste management unit used to destroy, degrade, or remove organics in the hazardous waste (40 CFR 265.1081).

Pollution Prevention

The use of materials, processes, or practices that reduce or eliminate the creation of pollutants or waste at the source. It includes practices that reduce the use of hazardous materials, energy, water or other resources and practices that protect natural resources through conservation and more efficient use.

Primary Exporter

Any person who is required to originate the manifest for a shipment of hazardous waste in accordance with 40 CFR 262, Subpart B or an equivalent state provision, that specifies a treatment, storage, or disposal facility in a receiving country as the facility to which the hazardous waste will be sent and any intermediate arranging for the export (40 CFR 262.51).

Prohibited Wastes

A subset of restricted wastes (under the land disposal restriction (LDR) regulations) that have established treatment standards, are not subject to variances or waiver, and do not meet the respective treatment standard.

Publicly Owned Treatment Works (POTW)

Any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a state or municipality (as defined by section 502(4) of the CWA). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).

Qualified Groundwater Scientist

A scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certification, or completion of accredited university courses that enable the individual to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).

Receiving Country

A foreign country to which a hazardous waste is sent for the purpose of treatment, storage, or disposal (except short-term storage incidental to transportation) (40 CFR 262.51).

Representative Sample

A sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).

Restricted Wastes

The RCRA hazardous wastes that are subject to the LDR program. A waste is restricted if U.S. EPA has established a treatment standard for it, or if it has been specifically designated by Congress as ineligible for land disposal.

Runoff

Any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).

Run-on

Any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).

Sludge

Any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).

Small Quantity Generator

A generator who generates less than 1,000 kg (2,204.62 lb.) of hazardous waste but more than 100 kg (220.46 lb.) in a calendar month (40 CFR 260.10).

Soil

Unconsolidated earth material composing the superficial geologic strata (material overlying bedrock), consisting of clay, silt, sand, or gravel size particles as classified by the U.S. Natural Resources Conservation Service, or a mixture of such materials with liquids, sludges or solids which is inseparable by simple mechanical removal processes and is made up primarily of soil by volume based on visual inspection. Any deliberate mixing of prohibited hazardous waste with soil that changes its treatment classification (i.e., from waste to contaminated soil) is not allowed under the dilution prohibition in 40 CFR 268.3 (40 CFR 268.2)

Storage

The holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).

Sump

Any pit or reservoir that meets the definition of tank and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDF except that as used in the landfill, surface impoundment, and waste pile rules, sump means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system or leak detection system for subsequent removal from the system (40 CFR 260.10).

Transfer Facility

Any transportation-related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous wastes are kept during the normal course of transportation (40 CFR 260.10). (NOTE: Transfer facilities are regulated under 40 CFR 263.12.)

Transfrontier Movement

Any shipment of hazardous wastes destined for recovery operations from an area under the national jurisdiction of one OECD member country to an area under the national jurisdiction of another OECD country (40 CFR 262.81).

Transit Country

Any foreign country, other than a receiving country, through which a hazardous waste is transported (40 CFR 260.10).

Transport Vehicle

A motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).

Transporter

A person engaged in the off-site transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).

Treatability Study

A study in which a hazardous waste is subjected to a treatment process to determine:

1. Whether the waste is amenable to the treatment process,
2. What pretreatment (if any) is required,
3. The optimal process conditions needed to achieve the desired treatment,
4. The efficiency of a treatment process for a specific waste or wastes, or
5. The characteristics and volumes of residuals from a particular treatment process (40 CFR 260.10).

Also included in this definition for the purpose of the 40 CFR 261.4(e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A treatability study is not a means to commercially treat or dispose of hazardous waste.

Treatment

Any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize the waste, or so as to recover energy or material resources from the waste, or so as to render the waste nonhazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume (40 CFR 260.10).

Unsaturated Zone or Zone of Aeration

The zone between the land surface and the water table (40 CFR 260.10).

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United States

The 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the US Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands (40 CFR 260.10).

Uppermost Aquifer

The geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 260.10).

Used Oil

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 (40 CFR 260.10).

Volatile Organic (VO) Concentration

The fraction by weight of the volatile organic compounds in a hazardous waste expressed in terms of ppmw as determined by direct measurement or by knowledge of the waste (40 CFR 265.1081)

Waste Stabilization Process

Any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids (40 CFR 265.1081).

Wastewater Treatment Unit

A device that (1) is part of a wastewater treatment facility subject to regulation under section 402 or 307 of the CWA; and (2) receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3), or that generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge; and (3) meets the definition of tank or tank system (40 CFR 260.10).

Wastewaters

Wastes that contain less than one percent by weight total organic compounds and one percent by weight total suspended solids (40 CFR 268.2).

Zone of Engineering Control

An area under the control of the owner/operator that upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).

Typical Records to Review

- Notification of Hazardous Waste Activity (EPA ID No.);
- Hazardous waste manifests;
- Manifest exception reports;
- Biennial reports;
- Inspection logs;
- Delistings;
- Speculative accumulation records;
- Land disposal restriction certifications;
- Employee training documentation;
- Hazardous substance spill control and contingency plan;
- Notifications of hazardous waste oil fuel marketing or blending activity;
- Material Safety Data Sheets (MSDSs);
- Inventory records;
- Shipping papers;
- Hazardous Communication Plan;
- Chemical Hygiene Plan (labs); and
- Spill records.

Typical Physical Features to Inspect

- Hazardous waste generations sites (e.g., production and manufacturing areas);
- Waste storage areas;
- Satellite accumulation points;
- Vehicles used for transport;
- Container storage areas;
- Generation points;
- Shipping and receiving areas; and
- Shop activities.

List of Acronyms and Abbreviations

AST	Aboveground storage tank
BTU	British thermal unit
CAA	Clean Air Act
CAMU	Corrective action management unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund)
CESQG	Conditionally exempt small quantity generator
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
CSD	Contaminated soil and debris
CWA	Clean Water Act
DOT	Department of Transportation
EPA	Environmental Protection Agency
FR	Federal Register
ft.	Feet
gal.	Gallon
h	Hour
HOC	Halogenated organic compound
hp	Horsepower
HSWA	Hazardous and Solid Waste Amendments
HWM	Hazardous waste management
ID	Identification
kg	Kilogram
km	Kilometer
L	Liter
lb.	Pound
LDR	Land disposal restriction
LQG	Large quantity generator
OECD	Organization for Economic Coordination and Development
m	Meter
Mg	Megagram
MJ	Megajoule
mm	Millimeter
mo	Month
MP	Management practice
MSDS	Material Data Safety Sheet
MW	Megawatt
NOV	Notice of violation
NRC	National Response Center
PCB	Polychlorinated biphenyl
PL	Public Law
POTW	Publicly owned treatment works

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

ppm	Part per million
ppmw	Part per million by weight
qt.	Quart
RCRA	Resource Conservation and Recovery Act
scf	Standard cubic foot
scm	Standard cubic meter
SDWA	Safe Drinking Water Act
SPCC	Spill prevention, control, and countermeasure
SQG	Small quantity generator
TSCA	Toxic Substances Control Act
TSDf	Treatment, storage, and disposal facility
UIC	Underground injection control
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
USC	United States Code
UST	Underground storage tank
VO	Volatile organic
VOC	Volatile organic compound
yr	Year

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Checklist

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
ALL FACILITIES HW.1	
HW.1.1. The current status of any ongoing or unresolved Consent Orders, Compliance Agreements, Notices of Violation (NOV), or equivalent state enforcement actions pertaining to RCRA or corresponding state regulations should be examined.	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, Consent Orders, Compliance Agreements, NOVs, Interagency agreements or equivalent state enforcement actions. Determine and indicate, for those open items, what corrective action is planned and milestones established to correct problems.
HW.1.2. Facilities are required to comply with state and local regulations concerning hazardous waste management.	Determine state authorization status. In authorized states, compare state regulations to federal requirements outlined in this document and annotate this checklist accordingly. Verify that the facility is abiding by state and local hazardous waste requirements. Verify that the facility is operating according to hazardous waste permits issued by the state or local agencies where approved. (NOTE: Issues typically regulated by state and local agencies include: – additional manifesting requirements – more frequent reporting requirements – transportation – identification of special waste or waste categories – regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries – small and conditionally exempt small quantity generator requirements – RCRA permitting of oil/water separators – disposal requirements – construction and operation of storage and disposal facilities – satellite accumulation point requirements – container marking and labeling requirements.) Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.1.3. Facilities are required to comply with all applicable federal regulatory requirements not identified in this checklist.	Determine if any new hazardous waste regulations have been issued since the finalization of the guide. If so, annotate checklist to include new standards. Determine if the facility has hazardous waste activities or facilities that are federally regulated, but not addressed in this checklist. Verify that the facility is in compliance with all applicable and newly issued hazardous waste regulations.
HW.1.4. <i>Specific persons should be designated responsible for hazardous waste storage areas, and the precise nature of their responsibilities should be specified (MP).</i>	<i>Verify that specific individuals have been designated responsible for hazardous waste storage areas.</i> <i>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.</i> <i>Verify that required training for hazardous waste handling is in personnel file.</i>

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
ALL SIZES OF GENERATORS HW.10	
HW.10.1. Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 262.11, 261.3, 261.4(b), and 261.21 through 261.24) [Revised January 2001].	(NOTE: Determination of whether or not a waste is a hazardous waste can be done through one of the following: – knowledge of all the constituents of the waste (MSDSs) and whether it is listed in 40 CFR 261 – laboratory analysis – knowledge of materials and processes used.) (NOTE: Unidentified waste materials and spilled hazardous materials may have to be disposed of as hazardous waste depending on their constituents or characteristics.) (NOTE: Some batteries, pesticides, thermostats, and mercury lamps may be considered universal wastes instead of hazardous wastes and need to be handled according to the requirements in 40 CFR 273.) Discuss with staff how wastes generated on the facility were identified and classified. Determine if the facility followed U.S. EPA criteria for identifying the characteristics of hazardous waste and U.S. EPA's listed wastes in 40 CFR 261 (see Appendices A, B, C, and D of this document). Determine whether the facility generates, transports, treats, stores, or disposes of any hazardous waste and the quantity (see Appendices A, B, C, and D of this document for guidance, note that the listings reflected in these appendices are frequently revised in the Federal Register). (NOTE: When making quantity determinations, all hazardous waste generated must be included except hazardous waste that is: – exempt from regulation under 40 CFR 261.4(c) through 261.4(f), 261.6(a)(3), 261.7(a)(1), or 261.8 – managed immediately upon generation only in on-site elementary neutralization units, wastewater treatment units, or totally enclosed treatment facilities – recycled, without prior storage or accumulation, only in an on-site process subject to regulation under 40 CRR 261.6(c)(2) – used oil managed under 40 CFR 261.6(a)(4) and 40 CFR 279 – spent lead-acid batteries managed under the requirements of 40 CFR 266, Subpart G

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
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	– universal waste managed under 40 CFR 261.9 and 40 CFR 273.) (NOTE: The following are examples of solid wastes which are not considered hazardous wastes (40 CFR 261.3 and 261.4(b)): – household waste – solid wastes that are generated by any of the following and are returned to the soils as fertilizers: – growing and harvesting of agricultural crops – raising of animals, including animal manures – mining overburden returned to the mine site – fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels except for facilities that burn hazardous waste – drilling fluids, produced waters and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy – wastes that fail the test for the toxicity characteristic because chromium is present or are listed in Subpart D because of the presence of chromium, that do not fail the test for toxicity characteristics for any other constituent or are not listed due to the presence of any other constituent, and that do not fail the test for other characteristics (see 40 CFR 261.4(b)(6)(i) for a listing of types of industries generating this type of waste that receive exclusions) – solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock, and overburden) from the mining of uranium ore (NOTE: There is an exception to this for facilities that burn or process hazardous waste, see 40 CFR 266.112.) – cement kiln dust waste, except for facilities that burn or process hazardous waste – solid waste which consists of discarded arsenic-treated wood or wood products which fails the test for Toxicity Characteristics for hazardous waste codes D004 through D017 and which is not a hazardous waste for any other reason if the waste is generated by persons who utilize the arsenic-treated wood and wood products for those materials intended end use – petroleum contaminated media and debris that fail the test for Toxicity Characteristic of 40 CFR 261.24 (Hazardous Waste Codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR 280 – injected groundwater that is hazardous only because it exhibits the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) in 40 CFR 261.24 that is reinjected through an underground injection well pursuant to free phase hydrocarbon recovery operations undertaken at petroleum refineries, petroleum marketing terminals, petroleum bulk plants, petroleum pipelines, and petroleum transportation spill sites until January 25, 1993. This extension applies to recovery operations in existence, or for which contracts have been issued, on or before March 25, 1991. For groundwater returned through infiltration galleries from such operations at

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	petroleum refineries, marketing terminals, and bulk plants. New operations involving injection wells (beginning after March 25, 1991) will qualify for this compliance date extension (until January 25, 1993) only if: – operations are performed pursuant to a written state agreement that includes a provision to assess the groundwater and the need for further remediation once the free phase recovery is completed; and – a copy of the written agreement has been submitted to: Characteristics Section (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 – used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use – non-terne plated used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods: – puncturing the filter anti-drain back valve or the filter dome end and hot-draining – hot-draining and crushing – dismantling and hot-draining, or – any other equivalent hot-draining method that will remove used oil – used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products – leachate or gas condensate collected from landfills where certain solid wastes have been disposed, provided that: – the solid wastes disposed would meet one or more of the listing descriptions for Hazardous Waste Codes K169, K170, K171, and K172 if these wastes had been generated after February 8, 1999 – the solid wastes were disposed prior to the effective date of the listing – the leachate or gas condensate do not exhibit any characteristic of hazardous waste nor are derived from any other listed hazardous waste – discharge of the leachate or gas condensate, including leachate or gas condensate transferred from the landfill to a POTW by truck, rail, or dedicated pipe, is subject to regulation under sections 307(b) or 402 of the CWA. (NOTE: After February 13, 2001, leachate or gas condensate will no longer be exempt if it is stored or managed in a surface impoundment prior to discharge. There is one exception: if the surface impoundment is used to temporarily store leachate or gas condensate in response to an emergency situation (e.g., shutdown of wastewater treatment system), provided the impoundment has a double liner, and provided the leachate or gas condensate is removed from the impoundment and continues to be managed in compliance with 40 CFR 261.4(b) after the emergency ends.)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	Verify that wastes are tested for toxicity characteristics or are previously identified as toxic. Verify that all data used for determination, including quality assurance data, is maintained and kept available for reference or inspection.
HW.10.2. Facilities which claim that a particular material is not a solid waste or is conditionally exempt from regulation as a hazardous waste should be prepared to provide specific documentation in the event of an enforcement action (40 CFR 261.2(f)).	Determine if the facility has any wastes that are typically handled as hazardous wastes that it claims are exempt. Verify that for these wastes, the facility can demonstrate that there is a known market or distribution for the material (if relevant) and that they meet the terms of the exclusion or exemption. Verify that documentation is provided that indicates the material is not a waste or is exempt from regulation. (NOTE: One example of documentation is contracts showing that a second person uses the material as an ingredient in a production process.) Verify that if the facility is claiming to recycle material, the equipment for the recycling is actually at the facility and in working order.
HW.10.3. Areas where containers of hazardous waste are stored should have secondary containment (MP).	Verify that the areas where containers of hazardous waste are stored have secondary containment.
HW.10.4. Generators must not offer their waste to transporters or TSDFs that have not received an EPA identification number (40 CFR 262.12(c)).	Verify that all transporters of hazardous wastes and TSDFs used by the generator have an EPA identification number by examining facility records pertaining to these services. Examples of such records could include sales agreements or vendor contracts. Auditors could also contact the state regulatory agency or local U.S. EPA regional office to confirm that these vendors have the appropriate EPA identification number.

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQG) HW.20	
HW.20.1. Generators of no more than 100 kg/mo (220.46 lb/mo) of hazardous waste or 1 kg of acutely hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5) [Revised January 2001].	Verify that the following quantity and storage limitations are met: – no more than 100 kg (220.46 lb.) of hazardous waste is generated in a calendar month – total on-site accumulation does not exceed 1,000 kg (2,204.62 lb.) of hazardous waste – no more than 1 kg (2.2 lb.) of acute hazardous waste (see Appendix D) is generated in a calendar month – no more than a total of 100 kg (220.46 lb.) of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes in a calendar month is generated. Verify that wastes are either treated or disposed of in an on-site facility or delivered to an off-site TSDF, which is one of the following: – permitted under 40 CFR 270 – operating under interim status – authorized to manage hazardous waste by a state with an approved hazardous waste management program under 40 CFR 271 – permitted, licensed, or registered by a state to manage solid waste – a facility which does one of the following: – beneficially uses or reuses, or legitimately recycles or reclaims its waste – treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation – a universal waste handler or destination facility for universal waste if the waste is to be disposed of in universal waste regulated under 40 CFR 273. (NOTE: If a hazardous waste generator meets the requirements for being a CESQG, it is not required to meet any of the standards outlined in 40 CFR 262 through 266, (except 262.11), 268, and 270.) (NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of 40 CFR 279 if it is destined to be burned for energy recovery.) (NOTE: Quantities of hazardous and acutely hazardous waste greater than the threshold quantities listed above become subject to the standards for LQGs.)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	(NOTE: Even though a CESQG is not legally required to use a manifest or obtain a hazardous waste identification number, many hazardous waste haulers will not transport hazardous waste from a facility without a manifest or ID number.)
HW.20.2. <i>Environmental management at the facility may be enhanced if CESQG personnel who handle hazardous waste receive training in certain key areas of waste management (MP).</i>	<i>Verify that the facility personnel complete classroom instruction or on-the-job training as set forth below:</i> <i>Verify that the training program is directed by a person trained in hazardous waste management procedures and that the program includes instruction which teaches facility personnel hazardous waste management procedures relevant to positions in which they are employed.</i> <i>(NOTE: Although not specified by the regulations, examples of training topics for hazardous waste management procedures could include (but would not be limited to) the following:</i> <i>– waste turn in procedures</i> <i>– identification of hazardous wastes</i> <i>– container use, marking, labeling and on-site transportation</i> <i>– manifesting and off-site transportation</i> <i>– 90 day storage area management</i> <i>– personal health and safety and fire safety.)</i> <i>Verify that the training program includes contingency plan implementation and is designed to ensure that facility personnel are able to respond to emergencies including (where applicable):</i> <i>– key parameters for automatic waste feed cut-off systems</i> <i>– procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment</i> <i>– operation of communications and alarm systems</i> <i>– response to fire or explosion</i> <i>– response to groundwater contamination incidents</i> <i>– response to leaks or spills</i> <i>– shutdown of operations.</i> <i>Verify that new employee training is completed within six months of employment/ assignment.</i> <i>Verify that an annual review of initial training is provided.</i> <i>Verify that employees do not work unsupervised until training is completed.</i> <i>Verify specifically that waste storage area managers and hazardous waste handlers have been trained.</i>

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.20.3. <i>Training records should be maintained for all CESQG staff who manage hazardous waste (MP).</i>	Verify that training records include the following: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name. Determine if training records are retained for 3 yr after employment at the facility.
HW.20.4. Empty containers at CESQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	Verify that for containers or inner liners holding hazardous wastes: – wastes are removed that can be removed using practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating) and, – no more than 2.5 cm (1 in.) of residue remains, or – if the container is less than or equal to 110 gal. (416.40 L), no more than 3 percent by weight of total container capacity remains, or – when the container is greater than 110 gal. (416.40 L), no more than 0.3 percent by weight of the total container capacity remains. Verify that for containers that hold a compressed gas, the pressure in the container approaches atmosphere. Verify that for a container or inner liner that held an acute hazardous waste listed in Appendix D, one of the following is done: – it is triple rinsed – it is cleaned by another method identified through the literature or testing as achieving equivalent removal – the inner liner is removed.
HW.20.5. <i>Containers at CESQGs should be managed in accordance with specific management practices (MP).</i>	Verify the following by inspecting storage areas: – containers are not stored more than two high and have pallets between them – containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) – at least 3 ft. (0.91 m) of aisle space is provided between rows of containers.

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.20.6. Containers of hazardous waste should be kept in designated storage areas at CESQGs (MP).	Verify that all hazardous waste containers are identified and stored in appropriate areas. (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
SMALL QUANTITY GENERATORS (SQGs) HW.30 General	
HW.30.1. SQGs that generate, transport, or handle hazardous wastes must obtain an EPA identification number (40 CFR 262.12(a) and 262.12(b); 40 CFR 265.11).	Determine the facility's generator identification number by examining documentation from U.S. EPA. Verify that correct identification number is used on all appropriate documentation (i.e., manifests).
HW.30.2. Generators of more than 100 kg (220.46 lb.) but less than 1,000 kg (2,204.62 lb.) of hazardous waste per month may qualify as an SQG which can accumulate hazardous waste on-site for 180 days (or 270 days) without a permit if specific conditions are met (40 CFR 262.34(d)(1), 262.34(d)(4), 262.34(e) and 262.34(f)).	Verify that containers, storage, and records have been inspected. Verify that no more than 1,000 kg (2,204.62 lb.) of hazardous waste is generated in any calendar month. Verify that the on-site accumulation time does not exceed 180 days. (NOTE: For an SQG the accumulation start date begins when the first waste is poured/placed into the waste container, except at satellite accumulation points.) (NOTE: The 180 day time period is extended to 270 days if the waste must be transported more than 200 miles to a TSDF. This extension does not apply if a TSDF is available within 200 miles and the facility chooses to transport the waste to a more distant TSDF.) Verify that no more than 6,000 kg (13,227.73 lb.) is allowed to accumulate at the facility. Verify that containers are marked with the date that accumulation began and the words HAZARDOUS WASTE. Verify that the containers and the areas where containers are stored meet the requirements outlined in the subsections pertaining to SQG. (NOTE: Quantities of hazardous and acutely hazardous waste greater than the threshold quantities listed above become subject to the standards for LQGs.)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.30.3. An SQG must not offer its hazardous waste to transporters or to TSDFs that have not received an EPA identification number (40 CFR 262.12(c)).	Verify that all transporters of hazardous waste and TSDFs utilized by the facility have an EPA identification number by examining facility records pertaining to these services. Examples of such records could include vendor contracts or sales agreements. Auditors could also contact the state regulatory agency or the local U.S. EPA regional office to confirm that these vendors have the appropriate EPA identification number.
HW.30.4. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b) and 262.44).	Verify that signed copies of returned manifests are kept for three years from the date the waste was accepted by the initial transporter. Verify that exception reports were submitted to the regulatory agency when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter. Verify that exception reports are kept for at least three years. (NOTE: The requirement to prepare a manifest does not apply if: – the waste is reclaimed under contractual agreement and: – the type of waste and frequency of shipments are specified in the agreement; – the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer; and – the generator maintains a copy of the reclamation agreement for at least three years after termination of the agreement.) (NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the regulatory agency.)
HW.30.5. SQGs are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).	Verify that appropriate records are kept for at least three years from the date the waste was last sent to an on-site or off-site TSDF. (NOTE: Period of retention of records is extended automatically during the course of any unresolved enforcement action or as requested by the regulatory agency.)

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.30.6. SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).	Verify that the facility has at least one emergency coordinator who is either on the premises or on call. Verify that the following emergency information is posted next to the telephone: – name and telephone number of emergency coordinator – location of fire extinguishers and spill control materials – location of fire alarms (if present) – telephone number of fire department.

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
SMALL QUANTITY GENERATORS HW.40 Personnel Training	
HW.40.1. SQG personnel are required to be thoroughly familiar with proper waste handling and emergency procedures (40 CFR 262.34(d)(5)(iii)).	Verify that personnel are thoroughly familiar with waste handling and emergency procedures relevant to their responsibilities during normal facility operation and emergencies.
HW.40.2. Training records should be maintained for all SQG staff who manage hazardous waste (MP).	Verify that training records include the following: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name. Determine if training records are retained for three years after employment at the facility.

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
SMALL QUANTITY GENERATORS HW.50 Containers	
HW.50.1. Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	Verify that for containers or inner liners holding hazardous wastes: – wastes are removed that can be removed using practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating), and – no more than 2.5 cm (1 in.) of residue remains, or – if the container is less than or equal to 110 gal. (416.40 L), no more than 3 percent by weight of total container capacity remains, or – when the container is greater than 110 gal. (416.40 L), no more than 0.3 percent by weight of the total container capacity remains. Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere. Verify that for a container or inner liner that held an acute hazardous waste listed in Appendix D, one of the following is done: – it is triple rinsed – it is cleaned by another method identified through the literature or testing as achieving equivalent removal – the inner liner is removed.
HW.50.2. Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34 (d)(2) and 40 CFR 265.171).	Verify that containers are not leaking, bulging, rusting, damaged or dented. Verify that waste in leaking containers is transferred to a new container or managed in another appropriate manner when necessary.

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
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HW.50.3. Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 40 CFR 265.172).	Verify that containers are compatible with waste; for example, check that strong caustics and acids are not stored in metal drums.
HW.50.4. Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 40 CFR 265.173).	Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). Verify that handling and storage practices do not cause damage to the containers or cause them to leak.
HW.50.5. The handling of incompatible wastes or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 40 CFR 265.177).	Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: – generate extreme heat or pressure, fire, explosion, or violent reaction – produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health – produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions – damage the structural integrity of the device or facility – threaten human health by any other like means. (NOTE: Incompatible wastes as listed in Appendix E of this document should not be placed in the same drum.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall or other device.
HW.50.6. Containers of hazardous waste at SQGs should be managed in accordance with specific management practices (MP).	<i>Determine the following by inspecting containers and storage areas:</i> – <i>containers are not stored more than two high and have pallets between them</i> – <i>containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</i> – <i>at least 3 ft. (0.91 m) of aisle space is provided between rows of containers.</i>

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SMALL QUANTITY GENERATORS HW.60 Satellite Accumulation Points	
HW.60.1. All SQGs may accumulate as much as 55 gal. of hazardous waste or 1 qt. of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for on-site storage if specific standards are met (40 CFR 262.34(c)).	(NOTE: This type of storage area is often referred to as a satellite accumulation point.) Verify that the satellite accumulation point is at or near any point of generation where wastes initially accumulate and is under the control of the operator of the waste generating process. Verify that the containers are in good condition and are compatible with the waste stored in them and that the containers are kept closed except when waste is being added or removed. Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (NOTE: See ices A, B, C, and D for a guidance list of hazardous and acute wastes. Note that the listings reflected in these appendices are frequently revised in the Federal Register) Verify that shop managers are interviewed, in order to identify when waste is accumulated in excess of quantity limitations, and when such findings are made the following actions are taken: – the excess container is marked with the date the excess amount began accumulating – the waste is transferred to a storage area within three days where it will be stored for 180 days or less.

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SMALL QUANTITY GENERATORS HW.70 Container Storage Areas	
HW.70.1. Containers of hazardous waste at SQGs should be kept in storage areas designated in the management plan (MP).	Verify that all containers are identified and stored in appropriate areas. (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)
HW.70.2. SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or constituents which could threaten human health or the environment (40 CFR 262.34(d)(4) and 40 CFR 265.30 through 265.37).	Determine if the following required equipment is easily accessible and in working condition by inspecting the SQG storage areas (unless none of the hazards posed by the waste managed at the facility would require the particular kind of equipment): – internal communications or alarm system capable of providing immediate emergency instruction to facility personnel – a telephone or hand-held two way radio capable of contacting local and emergency responders – portable fire extinguishers and fire control equipment, including special extinguishing equipment (foam, inert gas, or dry chemicals) – spill control equipment – decontamination equipment – fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems. Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation. Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services, by reviewing with them the procedures employed by facility management. Verify that local hospitals are familiar with the site and types of injuries that could result in an emergency as appropriate for the type of waste and potential

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	need for such services by reviewing with them the procedures employed by facility management. (NOTE: Where state or local authorities decline to enter into arrangements, the facility must document this refusal in the operating record.)
HW.70.3. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.

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SMALL QUANTITY GENERATORS HW.80 Disposal of Restricted Waste	
HW.80.1. SQGs must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7(a)(1)).	Determine whether the generator determines if wastes have to be treated prior to disposal. Determine if the facility generates restricted wastes (see Appendix VII to 40 CFR Part 268) by reviewing test results or reviewing procedures employed by facility management where process knowledge was applied in making the waste determinations.
HW.80.2. When an SQG is managing a restricted waste, a written notice must be issued to the TSDF of the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2) through 268.7(a)(4), 268.7(a)(10)) [Revised January 2001] .	(NOTE: The notification requirement under 40 CFR 268.7 has changed to a one-time notification and certification if the composition of the wastes, the process generating the wastes, and the treatment facility receiving the wastes do not change (See FR Vol 62, No. 91, May 12, 1997, pg 26004).) Verify that, for waste or contaminated soil which does <u>not</u> meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – the waste is subject to the LDRs (NOTE: The notice must also include constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice.) – the applicable wastewater/nonwastewater category (see 40 CFR 268.2(d) and 268.2(f)) and subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanide) – waste analysis data (when available) – for hazardous debris, when treating with the alternative treatment technologies provided by 40 CFR 268.45: – the contaminants subject to treatment, as described in 40 CFR 268.45(b) – an indication that these contaminants are being treated to comply with 40 CFR 268.45 – for contaminated soil subject to LDRs as provided in 40 CFR 268.49(a), the constituents subject to treatment as described in 40 CFR 268.49(d), and the following statement: “This contaminated soil [does/does not] contain listed

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	hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by 40 CFR 268.49(c) or the universal treatment standards.” Verify that, for waste or contaminated soil <u>which meets</u> the treatment standard at the original point of generation, the notice includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – the waste is subject to the LDRs (NOTE: The notice must also include constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice.) – the applicable wastewater/nonwastewater category (see 40 CFR 268.2(d) and 268.2(f)) and subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanide) – waste analysis data – for contaminated soil subject to LDRs as provided in 40 CFR 268.49(a), the constituents subject to treatment as described in 40 CFR 268.49(d), and the following statement: “This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with] the soil treatment standards as provided by 40 CFR 268.49(c) or the universal treatment standards” – the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268 (the text of the required certification statement can be found in 40 CFR 268.7(a)(3)(i).) Verify that, for waste or contaminated soil that meets the treatment standard at the original point of generation, if the waste changes, the generator sends a new notice and certification to the receiving facility and placed a copy in their files. (NOTE: Generators of hazardous debris excluded from the definition of hazardous waste under 40 CFR 261.3(f) are not subject to the requirements for waste or contaminated soil which meets the treatment standard at the original point of generation.) Verify that, for restricted waste <u>subject to an exemption</u> from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – statement: this waste is not prohibited from land disposal – waste analysis data, when available – date the waste is subject to the prohibition – for hazardous debris, when treating with the alternative treatment technologies provided by 40 CFR 268.45: the contaminants subject to

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	treatment, as described in 40 CFR 268.45(b); and an indication that these contaminants are being treated to comply with 40 CFR 268.45. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an on-site copy of the notification and certification along with the tolling agreement for at least three years after the termination or expiration of the agreement.)
HW.80.3. SQGs that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(5) and 268.7(a)(10)).	Verify that the plan describes the procedures that the generator will follow in order to comply with treatment standards. (NOTE: SQGs treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.) Verify that the plan is kept on-site and: – the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated – the plan contains all information necessary to treat the wastes in accordance with regulatory requirements including the selected testing frequency – the plan must be kept in the facility's on-site files and made available to regulatory inspectors. (NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste subject to the agreement. The SQG will retain an on-site copy of the notification and certification along with the tolling agreement for at least three years after the termination or expiration of the agreement.)
HW.80.4. SQGs are required to keep specific documents pertaining to restricted wastes on-site (40 CFR 268.7(a)(4) through 268.7(a)(7) and 268.7(a)(10)).	Verify that if the facility is using generator knowledge to determine whether a waste or contaminated soil meets land disposal restriction requirements, the supporting data used in making this determination is retained on-site in the facility operating files. Verify that if the facility has determined whether a waste is restricted using appropriate test methods, the waste analysis data is retained on-site in the files. Verify that if the facility has determined that it is managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facility's files stating that the generated waste is excluded. Verify that a copy of all notices, certifications, waste analysis data and other documentation is kept for at least three years from the date that the waste was last

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	sent to on-site or off-site treatment, storage, or disposal. Verify that SQGs with tolling agreement retain the agreement and copies of notification and certification for at least three years after the agreement expires.
HW.80.5. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	Verify that land disposal restricted waste is not stored at the facility unless the SQG is storing the wastes in tanks, containers, or containment buildings on-site only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met. (NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.) Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site that meets the requirements of 40 CFR 761.65(b) (see Toxic Substances Control Act (TSCA)) and is removed from storage within one year of the date it was first placed into storage.

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LARGE QUANTITY GENERATORS (LQGs) HW.100 General	
HW.100.1. A generator that generates, transports, or handles hazardous wastes must obtain an EPA identification number (40 CFR 262.12(a) and 262.12(b)).	Determine the facility's generator identification number by examining documentation from U.S. EPA. Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).
HW.100.2. Generators may accumulate hazardous waste on-site for 90 days or less without a permit or interim status provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34(a)(3) and 262.34(b)).	Verify that each 90 day storage area is inspected and the storage manager is interviewed so as to verify the following: – the date upon which accumulation begins is clearly marked and visible for inspection – the recorded start date indicates no container or tank has been accumulating a hazardous waste longer than 90 days (unless granted a 30 day extension) – each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE. (NOTE: For a generator the accumulation start date begins when the first waste is poured/placed into the waste container, except at satellite accumulation points.) (NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.156, except for 265.111 and 265.114.) (NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension), is subject to all TSDF and permitting requirements.)
HW.100.3. Generators must not offer their waste to transporters or TSDFs that have not received an EPA identification number (40 CFR 262.12(c)).	Verify that all transporters of hazardous wastes and TSDFs used by the generator have an EPA identification number by examining facility records pertaining to these services. Examples of such records could include sales agreements or vendor contracts. Auditors could also contact the state regulatory agency or local U.S. EPA regional office to confirm that these vendors have the appropriate EPA identification number.

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HW.100.4. Generators who shipped hazardous waste off-site to a TSDF must submit a biennial report to the regulatory agency by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a)).	Verify that the biennial report (EPA Form 8700-13A) is complete and was submitted in a timely manner. Verify that copies are kept for three years. (NOTE: Reporting for exports of hazardous waste is covered under the import/export section of this protocol.) (NOTE: Periods of retention of records may be extended automatically during the course of any unresolved enforcement action or at the request of the regulatory agency.)
HW.100.5. Generators are required to use manifests, file manifest exception reports, and maintain records (40 CFR 262.20, 262.40(a), 262.40(b), 262.40(d), and 262.42(a)).	Verify that manifests are used when shipping the waste off-site. Verify that exception reports were filed with the regulatory agency when a copy of the manifest was not received within 45 days of the waste being accepted by the initial transporter. Verify that manifests and exception reports are kept for three years. (NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)
HW.100.6. Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).	Verify that the appropriate records are kept for three years from the date the waste was last sent to the on-site or off-site TSDF. (NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action or at the request of the regulatory agency.)
HW.100.7. Generator storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or constituents which could threaten human health or the environment (40 CFR 262.34(a)(4) and 40 CFR 265.30 through 265.37).	Determine if the following required equipment is easily accessible and in working condition at the storage area (unless none of the hazards posed by the waste managed at the facility would require the particular kind of equipment): – internal communications or alarm system capable of providing immediate emergency instruction to facility personnel – a telephone or hand-held two way radio capable of summoning emergency assistance – portable fire extinguishers and fire control equipment, including special extinguishing equipment (foam, inert gas, or dry chemicals) – spill control equipment – decontamination equipment – fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, or automatic sprinklers, or water spray systems.

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	Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the operation. Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations as appropriate for the type of waste and potential need for such services, by reviewing with them the procedures employed by facility management. Verify that local hospitals are familiar with the site and types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services by reviewing with them the procedures employed by facility management. (NOTE: Where state or local authorities decline to enter into arrangements, the facility must document this refusal in the operating record.)

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LARGE QUANTITY GENERATORS HW.110 Personnel Training	
HW.110.1. All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 262.34(a)(4); 40 CFR 265.16(a) through 265.16 (c)).	Verify that the facility personnel has completed classroom instruction or on-the-job training as set forth below. Verify that the training program is directed by a person trained in hazardous waste management procedures and that the program includes instruction which teaches facility personnel hazardous waste management procedures relevant to positions in which they are employed. (NOTE: Although not specified by the regulations, examples of training topics for hazardous waste management procedures could include (but would not be limited to) the following: – waste turn in procedures – identification of hazardous wastes – container use, marking, labeling and on-site transportation – manifesting and off-site transportation – 90 day storage area management – personal health and safety and fire safety.) Verify that the training program includes contingency plan implementation and is designed to ensure that facility personnel are able to respond to emergencies including (where applicable): – key parameters for automatic waste feed cut-off systems – procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment – operation of communications and alarm systems – response to fire or explosion – response to groundwater contamination incidents – response to leaks or spills – shutdown of operations. Verify that new employee training is completed within six months of employment/ assignment. Verify that an annual review of initial training is provided. Verify that employees do not work unsupervised until training is completed.

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	Verify specifically that waste storage area managers and hazardous waste handlers have been trained.
HW.110.2. Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 262.34(a)(4); 40 CFR 265.16(d) and 265.16(e)).	Verify that training records include the following by examination: – job title and description for each employee by name – written description of how much training each position will obtain – documentation of training received by name. Determine if training records are retained for three years for former employees. Determine if training records on current employees are maintained. (NOTE: Training records on current employees must be maintained until the closure of the facility.)

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LARGE QUANTITY GENERATORS HW.120 Contingency Plans and Emergency Coordinators	
HW.120.1. Generators must have a contingency plan (40 CFR 262.34(a)(4) and 40 CFR 265.50 through 265.54).	(NOTE: Generating activities may be addressed in the facility's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.) Verify that the contingency plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents. Verify that the plan includes the following: – a description of actions to be taken during an emergency – a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams as appropriate – names, addresses, and phone numbers of all persons qualified to act as emergency coordinator (if more than one name is listed, the plan must identify one person as the primary emergency coordinator with other persons listed in the order in which they will assume responsibility as an alternate) – a list of all emergency equipment at the facility and where this equipment is required, located, and what it looks like – an evacuation plan for facility personnel where there is a possibility evacuation would be needed. Verify that copies of the contingency plan and all revisions are maintained at the facility and also have been submitted to organizations which may be called upon to provide emergency services. Verify that the contingency plan is routinely reviewed and updated, especially when: – the applicable regulations are revised – the plan fails in an emergency – the facility changes (e.g., in its design, construction, operation, maintenance) in a way that materially increases the potential for fires, explosions, or releases of hazardous constituents or changes the response necessary in an emergency

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	– the list of emergency coordinators changes – the list of emergency equipment changes.
HW.120.2. Each generator must have an emergency coordinator on the facility premises or on call at all times (40 CFR 262.34(a)(4) and 40 CFR 265.55).	Verify that, at all times, there is at least one employee at the facility or on call with responsibility for coordinating all emergency response measures. Verify that the emergency coordinator is thoroughly familiar with the facility, including all operations and activities at the facility, the location of all records within the facility, the facility layout, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan.
HW.120.3. Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34(a)(4) and 40 CFR 265.56(a) through 265.56(i)).	Verify that the emergency coordinator is required to follow these emergency procedures: – immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties – identify the character, exact source, amount, and a real extent of any released materials – assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.) – take all reasonable measures necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include where applicable: – stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases – collect and contain the released waste – remove or isolate containers when necessary – monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate – provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material immediately after emergency – ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed – ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed – notify U.S. EPA, and appropriate state and local authorities that the facility is in compliance with 40 CFR 265.56(h) before operation resumes.

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HW.120.4. Generator operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 40 CFR 265.56(j)).	Determine if incidents have been recorded and corrective actions taken by reviewing facility operating records. Verify that written reports have been submitted to the regulatory agency within 15 days after the incident.

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LARGE QUANTITY GENERATORS HW.130 Containers	
HW.130.1. Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	Verify that for containers or inner liners holding hazardous wastes: – wastes are removed that can be removed using practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, and aspirating), and – no more than 2.5 cm (1 in.) of residue remains, or – if the container is less than or equal to 110 gal. (416.40 L), no more than 3 percent by weight of total container capacity remains, or – when the container is greater than 110 gal. (416.40 L), no more than 0.3 percent by weight of the total container capacity remains. Verify that for containers that held a compressed gas, the pressure in the container approaches atmosphere. Verify that for a container or inner liner that held an acute hazardous waste listed in Appendix D, one of the following is done: – it is triple rinsed – it is cleaned by another method identified through the literature or testing as achieving equivalent removal – the inner liner is removed. Verify that the rinse water has been tested.
HW.130.2. Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34(a)(1)(i) and 265.171).	Verify that containers are not leaking, bulging, rusting, damaged or dented. Verify that waste is transferred to a new container or managed in another appropriate manner when necessary

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HW.130.3. Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).	Verify that containers are compatible with waste. For example, check that strong caustics and acids are not stored in metal drums.
HW.130.4. Containers must be closed during storage and handled in a safe manner at generators (40 CFR 262.34(a)(1)(i) and 265.173).	Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). Verify that handling and storage practices do not cause damage to the containers or cause them to leak.
HW.130.5. The handling of incompatible wastes, or incompatible wastes and materials in containers at generators must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).	Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers unless it is done so that it does not: – generate extreme heat or pressure, fire, or explosion, or violent reaction – produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health – produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions – damage the structural integrity of the device or facility – by any other like means threaten human health or the environment. (NOTE: Incompatible wastes, as listed in Appendix E, should not be placed in the same drum.) Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device.
HW.130.6. Containers used to store hazardous waste at generators should be managed in accordance with specific management practices (MP).	Verify the following by inspecting container storage areas: – containers are not stored more than 2 high and have pallets between them – containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) – at least 3 ft. (0.91 m) of aisle space is provided between rows of containers.

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HW.130.7. Containers with design capacities greater than 0.1 m³ [~26 gal.] and less than or equal to 0.46 m³ [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(a) through 265.1087(b)(1)(i), and 265.1087(c)).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.) (NOTE: Standards for containers used in waste stabilization processes (40 CFR 265.1087(b)(2)) are in checklist item HW.HW.130.9.) Verify that, for containers with a design capacity greater than 0.1 m³ [~26 gal.] and less than or equal to 0.46 m³ [~122 gal.], air emissions are controlled according to the following Container Level 1 standards: – a container that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container that is equipped with a cover and closure devices that form a continuous barrier over the container openings so that when the cover and closure devices are secured in the closed position there are not visible holes, gaps or other open spaces into the interior of the container – an open-top container in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container so that no hazardous waste is exposed to the atmosphere. Verify that when a container using Level 1 standards, other than DOT approved containers, is used, it is equipped with covers and closure devices composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity for as long as it is in service. Verify that, whenever waste is in a container using Level 1 controls, covers and closure devices are installed and closure devices are secured and maintained in the closed position except as follows: – opening of a closure device or cover is allowed for adding waste or other material to the container as follows: – when the container is filled to the intended final level in one continuous operation, the closure device is secured in the closed position and the cover is installed at the conclusion of the filling operation – when discrete batches or quantities of material are added intermittently to the container over a period of time, the closure devices are secured in the closed position and covers installed upon either the container being filled to the intended final level, the completion of a batch loading after which no additional material will be added to the container within 15 minutes, the person performing the loading operation leaving the immediate vicinity of the container, or the

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	shutdown of the process generating the material being added to the container, whichever condition occurs first. – opening of a closure device or cover is allowed for removing the hazardous waste as follows: – in order to meet the requirements for an empty container – when discrete quantities or batches of material are removed from the container but the container is not empty, the closure devices will promptly be returned to the closed position and the covers installed upon completion of batch removal after which no additional material will be removed within 15 minutes or the person performing the unloading leaves the immediate vicinity, whichever condition occurs first – opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste – opening of a spring loaded, pressure vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining internal container pressure – opening of a safety device to avoid unsafe conditions.
HW.130.8. Containers with design capacities greater than 0.46 m³ [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1087(a) through 265.1087(b)(1)(ii), 265.1087(b)(1)(iii), 265.1087(c), and 265.1087(d)).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.) (NOTE: Standards for containers used in waste stabilization processes (40 CFR 265.1087(b)(2)) are in checklist item HW.HW.130.9.) Verify that, for containers with a design capacity greater than 0.46 m³ [~122 gal.] that are not in light material service, air emissions are controlled according to the following Container Level 1 standards: – a container that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container that is equipped with a cover and closure devices that form a continuous barrier over the container openings so that when the cover and closure devices are secured in the closed position there are not visible holes, gaps or other open spaces into the interior of the container – an open-top container in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container so that no hazardous waste is exposed to the atmosphere.

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	Verify that, for containers with a design capacity greater than 0.46 m³ [~122 gal.] that are in light material service, air emissions are controlled according to the following Container Level 2 standards: – a container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation – a container is used that operates with no detectable organic emissions – a container is used that has been demonstrated within the preceding 12 mo to be air tight. (NOTE: Level 2 standards apply only to containers that are in light material service. For the containers that are <u>not</u> in light material service, Level 1 standards apply. (See 40 CFR 265.1087(b)(ii) and (iii).) Verify that when a container using Level 1 standards, other than DOT approved containers, is used it is equipped with covers and closure devices composed of suitable materials to minimize exposure of the hazardous waste to the atmosphere and to maintain the equipment integrity for as long as it is in service. Verify that whenever waste is in a container using Level 1 or Level 2 controls, covers and closure devices are installed and closure devices are secured and maintained in a closed position except as follows: – opening of a closure device or cover is allowed for adding waste or other material to the container as follows: – when the container is filled to the intended final level in one continuous operation, the closure devices are secured in the closed position and the covers installed at the conclusion of the filling operation – when discrete batches or quantities of material are added intermittently to the container over a period of time, the closure devices are promptly secured in the closed position and covers installed upon either: – the container being filled to the intended final level – the completion of a batch loading after which no additional material will be added to the container within 15 minutes – the person performing the loading operation leaving the immediate vicinity of the container – the shutdown of the process generating the material being added to the container, whichever condition occurs first – opening of a closure device or cover is allowed for removing the hazardous waste as follows: – in order to meet the requirements for an empty container – when discreet quantities or batches of material are removed from the container but the container is not empty, the closure devices are promptly secured in the closed position and the covers installed either: – upon completion of batch removal after which no additional

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	material will be removed within 15 min –the person performing the unloading leaves the immediate vicinity, whichever condition occurs first – opening of a closure device or cover is allowed when access inside the container is needed to perform routine activities other than transfer of hazardous waste – opening of a spring loaded, pressure vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere and is allowed during normal operations for the purpose of maintaining internal container pressure – opening of a safety device to avoid unsafe conditions. Verify that the transfer of hazardous waste in or out of containers meeting Container Level 2 controls is done in a manner to minimize exposure of the hazardous waste to the atmosphere (i.e., a submerged fill pipe, a vapor balancing system, a vapor recovery system, a fitted opening in the top of the container through which the hazardous waste is filled and subsequently purge the transfer line before removing it).
HW.130.9. Containers with design capacities greater than 0.1 m³ [~26 gal.] used for the treatment of a hazardous waste by a waste stabilization process are required to meet specific design and operating standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(a) through 265.1087(b)(2), and 265.1087(e)(1) through 265.1087(e)(3)).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.) (NOTE: Safety devices may be installed and operated as necessary.) Verify that containers with design capacities greater than 0.1 m³ [~26 gal.] used for the treatment of a hazardous waste by a stabilization process meet the following Container Level 3 standards at those times during the waste stabilization process when the hazardous waste in the container is exposed to the atmosphere: – a container is vented directly through a closed-vent system to a control device – a container is vented inside an enclosure which is exhausted through a closed-vent system to a control device – the container closure is designed and operated in accordance with the criteria for a permanent total enclosure under 40 CFR 52.741 – the closed-vent system and control device is designed and operated in accordance with 265.1088 (see checklist item HW.130.12).

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HW.130.10. Facilities are required to have a written plan and schedule for inspection and monitoring requirements for containers and meet specific inspection requirements (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(c)(4), 265.1087(d)(4), and 265.1089).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.) Verify that the facility has a written plan and schedule for performing inspections and monitoring. Verify that the plan and schedule are being met. Verify that inspections of the containers and their covers and closure devices for containers using Container Level 1 or Level 2 controls are done as follows: – when a hazardous waste is already in the container when it is first accepted and the container is not emptied within 24 hours after it is accepted, it is visually inspected within 24 hours after acceptance for cracks, holes, gaps, or other open spaces – when a container is used for managing hazardous waste for 1 yr or more, it is visually inspected at least once every 12 mo for visible cracks, holes, gaps, or other open spaces when the cover and closure devices are secured in the closed position. Verify that when a defect is detected, the first efforts at repairs are within 24 hours after detection, and repair is completed as soon as possible but no later than 5 calendar days after detection. (NOTE: If repair cannot be completed within 5 calendar days, the hazardous waste must be removed from the container.)
HW.130.11. Facilities are required to meet documentation requirements for containers (40 CFR 262.34(a)(1)(i), 265.178, 265.1087(c)(5), 265.1090(a), and 265.1090(d) through 265.1090(i).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.) Verify that a copy is available of the procedure used to determine that containers with a capacity of 0.46 m³ [~122 gal.] or greater which do not meet DOT standards are not managing hazardous waste in light material service. Verify that if using Container Level 3 air emissions controls, the facility prepares and maintains records that: – include the most recent set of calculations and measurements performed by the owner/operator to verify that the enclosure meets the criteria of a

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	permanent total enclosure as specified in 40 CFR 52.741, Appendix B – The same records as required for closed-vent systems. Verify that if using a closed-vent system and control device, the following records are maintained: – certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests when the container is operating at capacity or the highest level reasonably expected to occur – design documents if design analysis is used, including certification that the equipment meets the applicable specification – a performance test plan if performance tests are used and all test results – description and date of each modification, as applicable – identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable – semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations: – a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-mo period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods. – a description of the planned routine maintenance that was performed for the control device during the previous 6-mo period, including the type of maintenance performed and the total number of hours during those 6-mo that the control device did not meet applicable requirements – records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications: – the occurrence and duration of each malfunction of the control device system – the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed-vent system to the control device while the control device is not properly functioning – actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation – records of the management of the carbon removed from a carbon adsorption system. Verify that, for exempted containers, the following records are prepared and maintained as applicable: – if exempted under the hazardous waste concentration conditions, information used for the waste determination in the facility operating log and/or the date, time, and location of each waste sample if analysis results

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	for samples are used – if exempted under incinerator use or process destruction use, the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated. Verify that covers designated as unsafe to monitor are listed in a log kept in the facility operating record with an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring is recorded. Verify that, for containers not using the air emissions controls specified in 40 CFR 265.1085 through 265.1088 (see checklist items HW.130.7 through HW.130.12), the following information is maintained: – a list of the individual organic peroxide compounds manufactured at the facility if it produces more than one functional family of organic peroxides or multiple organic peroxides within one functional family, and one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient temperatures – a description of how the hazardous waste containing the organic peroxide compounds identified in the above list are managed, including: – a facility identification number for the container or group of containers – the purpose and placement of this container or group of containers in the management train of this hazardous waste – the procedures used to ultimately dispose of the hazardous waste handled in the containers – explanations why managing these containers would be an undue safety hazard. Verify that all records, except design information records, are kept for at least 3 years. Verify that design information records are maintained in the operating record until the air emissions control equipment is replaced or otherwise no longer in service. (NOTE: See also the recordkeeping requirements for carbon adsorption units in checklist item HW.130.)
HW.130.12. Facilities are required to meet specific requirements for closed-vent systems and control devices used to achieve compliance (40 CFR 262.34(a)(1)(i), 265.178, and 265.1088).	(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m³ [~26 gal.] (40 CFR 265.1080(b)(2)) or to containers of any size at satellite accumulation points. See the definition of <i>Exempted Hazardous Waste Containers and Surface Impoundments</i> and <i>Exempted Hazardous Waste Management Units</i> as listed on page 8 and 9 of this document.)

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	Verify that closed-vent systems meet the following: – it routes the gases, vapors and fumes emitted from the hazardous waste in the waste management unit to a control device – it is designed and operated in accordance with 40 CFR 265.1033(j) (see checklist item HW.140.2) – if it includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, one of the following equipment requirements is met for each type of bypass device (NOTE: low leg drains, high point bleeds, analyzer vents, open-ended valve or lines, spring loaded pressure relief valves, and other fittings used for safety purposes are not considered bypass devices): – a flow indicator is installed, calibrated, maintained, and operated at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the atmosphere at a point upstream of the control device inlet – a seal or locking device is placed on the mechanism by which the bypass device position is controlled when the bypass valve is in the closed position so that the bypass device cannot be opened without breaking the seal or removing the lock. Verify that the seal or closure mechanism is visually inspected at least once every month. Verify that one of the following control devices are used: – a device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight – an enclosed combustion device designed and operated in accordance with 265.1033(c) (see checklist item HW.140.2) – a flare designed and operated in accordance with 40 CFR 265.1033(d) (see checklist item HW.140.2). Verify that, when a closed-vent system and control device is used, the following are met: – periods of planned routine maintenance of the control device during which the device does not meet specifications do not exceed 240 hours per year – control device system malfunctions are corrected as soon as practicable – it is operated such that gases, vapors, and/or fumes are not actively vented to the control device during periods of planned maintenance or control device system malfunction, except in cases where it is necessary to do so in order to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.

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	Verify that, if a carbon absorption system is used, the following requirements are met: – all activated carbon is replaced with fresh carbon on a regular basis as outlined in 40 CFR 265.1033(g) and 265.1033(h) (see checklist item HW.140.2) – all carbon removed from the devices is managed in a correct manner. Verify that, if a control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon absorption system is used, the requirements in 40 CFR 265.1033(i) are met (see checklist item HW.140.2). Verify that, for control devices, it is demonstrated by either a performance test or a design analysis that the device achieves compliance except for the following: – a flare – boiler or process heater with a design heat input capacity of 44 MW or greater – a boiler or process heater into which the vent stream is introduced with the primary fuel – a boiler or process heater burning hazardous waste for which the owner or operator has been issued a final permit under 40 CFR 270 and has designed and operates the unit in accordance with the requirements of 40 CFR 266, subpart H – a boiler or industrial furnace burning hazardous waste for the owner or operator has certified compliance with the interim status requirements of 40 CFR 266, subpart H. Verify that the readings from each control device are inspected at least once each operating day to check control device operation.

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LARGE QUANTITY GENERATORS HW.140 Emissions from Process Vents	
HW.140.1. Generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1030(b), 265.1030(e) and 265.1032).	(NOTE: This applies only if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container.) Verify that one of the following is met: – total organic emissions from the process vents do not exceed 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) – total organic emissions are reduced by use of a control device from all process vents by 95 weight percent. (NOTE: A process vent is not subject to these standards if the facility owner/operator certifies that all the regulated process vents at the facility are equipped with and operating air emission controls in accordance with the requirements of the Clean Air Act (CAA) 40 CFR Parts 60, 61, and 63.)
HW.140.2. When a generator uses a closed-vent system and control device to meet the standards for total organic emissions, the closed-vent system and control device must meet certain minimum requirements (40 CFR 262.34(a)(1)(i), 265.178, 265.1033(b) through 265.1033(k)).	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container.) Verify that control devices involving vapor recovery are designed and operated to

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	recover organic vapors vented to the air with an efficiency of 95 weight percent or greater, unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent. Verify that, if an enclosed combustion device is used (i.e., vapor incinerator, boiler, or process heater), it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppmv expressed as the sum of the actual compounds, not carbon equivalents, on a dry basis corrected to 3 percent oxygen, or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760 degrees Celsius [1400 degrees Fahrenheit]. Verify that, if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the boiler or process heater. Verify that, if flares are used: – they are designed and operated with no visible emissions except for periods not in excess of 5 minutes during any 2 consecutive hours – they are operated with a flame present at all times – they are used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air assisted – if nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater – if nonassisted or steam assisted, have an exit velocity less than 18.3 m/s (60 ft/s) except when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s). Verify that each monitor and control device is inspected on a routine basis. Verify that each required control device is installed, calibrated, monitored and inspected as follows: – a flow indicator is installed in the vent stream at the nearest feasible point to the control device inlet, but before being combined with other streams, and provides a record of vent stream flow from each affected process vent to the control device at least once every hour – a control device to continuously monitor control device operations as specified: – a temperature monitoring device equipped with a continuous recorder for a thermal vapor incinerator – a temperature monitoring device equipped with a continuous recorder for a catalytic vapor incinerator – a heat sensing monitor with a continuous recorder for flares

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	– a temperature monitoring device equipped with a continuous recorder to measure parameters that indicate good combustion operating practices are being used for a boiler or process heater having a design heat input capacity less than 44 MW – for a condenser, one of the following: – a monitoring device with a continuous recorder to measure the concentration level of the organic compound in the exhaust vent stream from the condenser – a temperature monitoring device equipped with a continuous recorder capable of monitoring temperature in the exhaust vent stream from the condenser with an accuracy of +/- 1 percent of the temperature being monitored in Celsius or in +/-0.5 °C, whichever is greater – for a carbon absorption system such as a fixed carbon bed absorber that regenerates the carbon bed directly in the control device, one of the following: – a monitoring device equipped with a continuous recorder to measure the concentration levels of the organic compounds in the exhaust vent stream from the carbon bed – a monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle. Verify that readings from monitoring devices are checked at least once a day. Verify that, if a carbon absorption system is being used that regenerates the carbon bed directly on-site, the existing carbon in the control device is replaced with fresh carbon at a regular, predetermined time interval. (NOTE: The predetermined time interval is based on the design analysis required under 40 CFR 265.1035(b)(4)(iii)(F).) Verify that if a carbon absorption system is being used that does not regenerate the carbon bed directly on-site in the control device, the existing carbon in the control device is replaced on a regular basis. (NOTE: When to replace the carbon is determined by one of the following procedures: – monitoring the concentration level of the organic compound in the exhaust vent stream from the carbon absorption system daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity, whichever is longer – replace the carbon at a regular predetermined time interval that is less than the design carbon replacement interval.)

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	Verify that closed-vent systems meet one of the following: – are designed and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as determined by the procedures in 40 CFR 265.1034(b) and by visual inspection – are designed to operate at a pressure below atmospheric pressure and are equipped with at least one pressure gauge or other pressure measurement device that can be read from a readily accessible location.
HW.140.3. Generators are required to maintain specific records pertaining to process vent emissions (40 CFR 262.34(a)(1)(i), 265.178, and 265.1035).	Verify that the following information is kept in the operating record: – an implementation schedule – up-to-date documentation of compliance with process vents and with closed-vent systems and control devices – the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device – documentation of compliance with 40 CFR 265.1033, including: – a list of all information, references and sources used in preparing the documentation – records, including the dates of required compliance tests – design analysis, specifications, drawing, schematics, and piping and instrumentation diagrams if engineering calculations are used – a statement signed and dated by the operator or owner certifying that the operating parameters used in the design analysis reasonably represent the conditions which exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected – a statement signed and dated by the owner or operator certifying that the control device is designed to operate at an efficiency of 95 percent or greater unless the total organic concentration limit is achieved at an efficiency of less than 95 weight percent, or the total organic emissions limits for affected process vents can be attained by a control device involving vapor recovery at an efficiency less than 95 weight percent – all performance test results if used to demonstrate compliance – design documentation – monitoring and inspection results for each closed-vent system and control device – notations of exceedance of control device parameter design value – explanation for each period of exceedance – for carbon absorption systems: – when the carbon is replaced in carbon absorption systems – date and time when a control device is monitored for carbon breakthrough – the date of each control device startup and shutdown.

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	Verify that records of monitoring operations and inspection information are kept for 3 years.
HW.140.4. Closed-vent systems are required to be monitored, inspected, and leaks repaired (40 CFR 262.34(a)(1)(i), 265.178, 265.1033(k) and 265.1033(n)).	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that closed-vent systems designed and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, are monitored as follows: – an initial leak detection monitoring of the closed-vent system using the procedures specified in 40 CFR 265.1034(b) on or before the date the system became subject to this section of the CFR – after initial leak detection monitoring: – visual inspection at least once a year for closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of hard piping or a bolted and gasketed ducting flange) – whenever a component is repaired or replaced, monitor according to 40 CFR 265.1034(b) – annually and at times required by the regulatory agency for all other parts of the system using the procedures specified in 40 CFR 265.1034(b). Verify that closed-vent systems designed to operate at no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background, are monitored as follows: – annual visual inspection to check for defects that could result in air pollutant emissions – initial inspection on or before the date the system becomes subject to this section of the CFR. (NOTE: For closed-vent systems designed to operate at no detectable emissions, as indicated by an instrument reading of less than 500 ppmv above background,

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	portions of the system designated as unsafe to monitor are exempt from the visual monitoring if: – the components are unsafe to monitor because monitoring personnel would be exposed to an immediate danger – a written plan that requires monitoring as practicable during safe to monitor periods is in place and followed.) Verify that detectable emissions, as indicated by visual inspection or by an instrument reading of greater than 500 ppmv above background, are controlled as soon as practicable but not later than 15 days after the emissions are detected. Verify that a first attempt at repair is made no later than 5 calendar days after the emission is detected. (NOTE: Delay of repair of a closed-vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown, or if it is determined that the emissions resulting from the immediate repair would be greater than the fugitive emissions likely to result from delay of repair.)
HW.140.5. Closed-vent systems and control devices used to comply with the provisions of 40 CFR 265.1030 through 265.1035 are required to be operated at all times when emissions may be vented to them (40 CFR 262.34(a)(1)(i), 265.178, and 265.1033(l)).	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that closed-vent systems and control devices are operated at all times when emissions may be vented to them.
HW.140.6. When carbon absorption systems are used, operators are required to manage all carbon that is a hazardous waste according to specific parameters (40 CFR 262.34(a)(1)(i), 265.178, and 265.1033(m)).	(NOTE: This applies to generators with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations, that manage hazardous wastes with organic concentrations of at least 10 ppmw, if the operations are conducted in one of the following: – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270

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	– a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container).) Verify that carbon removed from control devices that is a hazardous waste is managed in one of the following manners, regardless of the average VOC concentration of the carbon: – regenerated or reactivated in a thermal treatment unit that meets one of the following: – the unit has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart X – the unit is equipped with and operating air emission controls in accordance with applicable requirements – incinerated in a hazardous waste incinerator for which the operator either: – has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart O – has designed and operates the incinerator in accordance with the interim status required in 40 CFR 265, subpart O – burned in a boiler or industrial furnace for which the operator either: – has been issued a final permit under 40 CFR 270 implementing 40 CFR 266 – has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR 266, subpart H.

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LARGE QUANTITY GENERATORS HW.150 Air Emission Standards for Equipment Leaks	(NOTE: This section applies to equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight that are managed in one of the following (40 CFR 265.1050(b): – a unit that is subject to the permitting requirements of 40 CFR 270 – a unit (including a hazardous waste recycling unit) that is not exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a hazardous waste recycling unit that is not a 90-day tank or container) and that is located at a hazardous waste management facility that is otherwise subject to the permitting requirements of 40 CFR 270 – a unit that is exempt from permitting under the provisions of 40 CFR 262.34(a) (i.e., a 90-day tank or container) and is not a recycling unit under the provisions of 40 CFR 261.6.) (NOTE: This section does not apply to (40 CFR 265.1050(d) and 265.1050(e)): – equipment that is in vacuum service and is identified as such on the required list – equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year and is identified as such.)
HW.150.1. Generators with pumps in light liquid service, that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight, are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1052).	Verify that pumps in light liquid service are monitored monthly according to designated reference methods and inspected visually weekly. (NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.) Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days. (NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined here do not have to be monitored monthly or visually checked weekly.) Verify that pumps equipped with a dual mechanical seal system which do not have to be monitored monthly or visually checked weekly, meet the following design and operation requirements: – the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box, or equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device, or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emission to the atmosphere – the barrier fluid system has no hazardous waste with organic concentrations 10 percent or greater by weight – the barrier fluid system is equipped with a sensor that will detect failure if

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	the seal is broken – pumps are checked by visual inspection weekly – sensors are checked daily or equipped with an audible alarm that is checked monthly. (NOTE: Each owner or operator must determine, based on design considerations and operating experience, criteria that indicate failure of the seal system, the barrier fluid system, or both.) Verify that pumps designated for no detectable emissions meet the following: – they are operated with no detectable emissions, as indicated by an instrument reading of 500 ppm above background or less – they are tested for compliance as indicated by an instrument reading of 500 ppm above background or less initially upon designation, annually, and at other times as requested by the regulatory agency – no externally actuated shaft penetrates the pump housing. (NOTE: Any pump that is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device is exempt from all above requirements.)
HW.150.2. Generators with compressors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1053).	Verify that each compressor is equipped with a seal system which includes a barrier fluid system and prevents leakage of total organic emissions to the atmosphere except if: – it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device, and – it is designated for no detectable emissions as indicated by an instrument reading of less than 500 ppm above background, and – it is tested for compliance initially upon designation, annually, and at times as requested by the regulatory agency. Verify that the compressor seal systems meet one of the following: – it is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure – it is equipped with a barrier fluid system that is connected to a closed-vent system or a control device – it is equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere. Verify that the barrier fluid is not a hazardous waste with organic concentrations 10 percent or greater by weight.

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	Verify that each barrier system is equipped with a sensor which will detect failure of the seal system, barrier fluid system, or both. Verify that each sensor is checked daily or it is equipped with an audible alarm that is checked monthly. (NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.) (NOTE: Each owner or operator must determine, based on design considerations and operating experience, criteria that indicate failure of the seal system, the barrier fluid system, or both.) Verify that, when a leak is detected, the first attempt at repair is made within 5 calendar days and the repair is made within 15 calendar days.
HW.150.3. Generators with pressure relief devices in gas/vapor service that contain or contact hazardous waste with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1054).	Verify that, except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background. Verify that if there is a pressure release, the device is returned to a no detectable emission status within 5 calendar days and the device is monitored to ensure compliance. (NOTE: Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)
HW.150.4. Generators with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1055).	Verify that each sampling connection system is equipped with a closed-purge, closed loop system or closed-vent system. Verify that each system collects the sample purge for return to the processing or for routing to the appropriate treatment system. (NOTE: Gases displaced through filling of the sample container are not required to be collected or captured.) Verify that each closed-purge, closed-loop system or closed-vent system does one of the following: – returns the purged process fluid directly to the process line – collects and recycles the purged process fluid – is designed and operated to capture and transport all the purged process fluid to a waste management unit that is in compliance or a control device that is in compliance,

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	(NOTE: In-situ sampling systems are exempt from these requirements.)
HW.150.5. Generators with open-ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1056).	Verify that each open-ended valve or line is equipped with a cap, blind flange, plug or second valve. Verify that the cap, blind flange, plug, or second valve seals the open end at all times, except during operations requiring hazardous waste stream flow through the open-ended valve or line. Verify that each open-ended valve or line equipped with a second valve is operated so the valve on the hazardous waste stream end is closed before the second valve is closed. Verify that, when a double block and bleed system is being used, the bleed valve is shut or plugged except during operations that require venting the line between the block valves.
HW.150.6. Generators with valves in gas/vapor service or light liquid service, that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight, are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 265.178, 265.1057, and 265.1062).	Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks. (NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. If a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.) (NOTE: Valves that are designated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, do not have to be monitored monthly if: – the valve has no external actuating mechanism in contact with the hazardous waste stream – the valve is operated with emissions less than 500 ppm above background – the valve is tested initially upon designation, annually, and at the request of the regulatory agency.) (NOTE: Valves that are designated as unsafe to monitor are exempt from the requirement for monthly monitoring if: – the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger – a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe to monitor times.) (NOTE: The generator may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak; see checklist item HW.150.10.) (NOTE: Valves that are designated as difficult to monitor are exempt from the

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	requirement for monthly monitoring if: – the valve cannot be monitored without elevating the monitoring personnel more than 2 m above a support surface – the hazardous waste management unit within which the valve is located was in operation before 21 June 1990 – a written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.) (NOTE: The following are alternatives to the prescribed monitoring schedule which can be used until the percentage of valves leaking is greater than 2 percent: – after 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip one of the quarterly leak detection periods for the valves subject to 40 CFR 265.1057 – after 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2 percent, an owner or operator may begin to skip three of the quarterly leak detection periods for the valves subject to 40 CFR 265.1057.) Verify that the first attempt at repairing a leak is done within 5 calendar days after detection and leak repair is completed within 15 calendar days after detection. (NOTE: First attempts at repair include but are not limited to: – tightening of bonnet bolts – replacement of bonnet bolts – tightening of packing gland nuts – injection of lubricant into lubricated packaging.)
HW.150.7. Generators with pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific monitoring and repair standards (40 CFR 262.34(a)(1)(i), 265.178, and 265.1058).	Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors are monitored within 5 days if evidence of a potential leak is found by visual, olfactory, audible, or other detection method. (NOTE: Any connector that is inaccessible or is ceramic or ceramic-lined is exempt from the monitoring requirements.) (NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.) Verify that, when a leak is detected, the first attempt at repair occurs within 5 days and repair is done within 15 days after discovery. (NOTE: First attempts at repair include, but are not limited to: – tightening of bonnet bolts – replacement of bonnet bolts

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	– tightening of packing gland nuts – injection of lubricant into lubricated packaging.)
HW.150.8. Generators are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and to submit certain reports (40 CFR 262.34(a)(1)(i), 265.178, 265.1058(e) and 265.1064).	Verify that the following information is maintained in the generator's operating record: – equipment identification number and hazardous management unit identification – approximate locations – type of equipment – percent-by-weight total organics in the hazardous waste stream at the equipment – hazardous waste state at the equipment (gas, liquid, vapor) – method of compliance – implementation schedule if needed – a performance plan for control devices if needed – documentation of compliance – documentation of repair, including: – the instrument and operator identification numbers and the equipment identification number – the date evidence of a potential leak was found – the date the leak was detected and the date of each attempt to repair the leak – repair methods applied in each attempt – "Above 10,000" if the maximum instrument reading after each repair attempt is greater than 10,000 ppm – "Repair Delayed" and the reason for delay if the leak is not repaired within 15 calendar days after discovery – documentation supporting the delay of repair of a valve – signature of the owner or operator whose decision it was that the repair could not be effected without a hazardous waste management unit shutdown – the expected date of successful repair of the leak when it is not repaired within 15 calendar days – the date of the successful repair of the leak – design documentation and monitoring, operating, and inspection information for each closed-vent system control device required to comply with the provisions of 40 CFR 265.1060 – monitoring and inspection information indicating proper operation and maintenance of the control device for a control device other than a thermal vapor incinerator, catalytic vapor incinerator, flare, boiler, process heater, condenser, or carbon absorption system – the following information for all equipment subject to 40 CFR 265.1052 through 40 CFR 265.1060: – a list of identification numbers for equipment (except welded fittings)

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	– a list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions – a list of equipment identification numbers for pressure relief devices – the dates of required compliance tests, background levels, and maximum instrument reading measured during the compliance test – a list of identification numbers for equipment in vacuum service – identification either by list or location (area or group) of equipment that contains or contacts hazardous waste with an organic concentration of at least 10 percent by weight for less than 300 hours per calendar year. Verify that the following information is kept for all valves subject to 40 CFR 265.1057(g) and (h): – a list of identification numbers for valves listed as unsafe to monitor, an explanation for each valve stating why it is difficult to monitor, and the plan for monitoring each valve – a list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why it is difficult to monitor, and the plan for monitoring each valve – the following for all valves complying with 40 CFR 265.1062: – a schedule of monitoring – the percent of valves found leaking in each monitoring period. Verify that the following information is kept for use in determining exemptions: – an analysis determining the design capacity of the unit – a statement listing the hazardous waste influent to and effluent from each unit subject to 40 CFR 265.1052 through 265.1060 and an analysis determining whether these hazardous wastes are heavy liquids – an up-to-date analysis and the supporting information and data used to determine if equipment is subject to the requirements. (NOTE: Any connector that is inaccessible or is ceramic or ceramic lined is exempt from the recordkeeping requirements.)
HW.150.9. Each piece of equipment subject to the requirements in 40 CFR 265.1050 through 265.1064 is required to be marked so that it can be distinguished from other equipment (40 CFR 262.34(a)(1)(i), 265.178, and 265.1050(c)).	Verify that each piece of equipment subject to the requirements in 40 CFR 265.1050 through 265.1064 (see checklist items HW.150.1 through HW.150.10) is marked so that it can be distinguished from other equipment.

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HW.150.10. When a generator has elected to comply with alternative standards, specific actions are required (40 CFR 262.34(a)(1)(i) and 265.1061).	Determine if the owner/operator subject to 40 CFR 265.1057 (see checklist item HW.150.6) has elected to have all valves within a hazardous waste management unit comply with an alternative standard of allowing 2 percent of the valves to leak. Verify that the following actions have been taken if the owner/operator has decided to comply with the 2 percent alternative: – the regulatory agency has been notified of the choice to comply with the alternative standards – a performance test was conducted initially upon designation, annually, and at other times as required by the regulatory agency – if a valve leak is detected, first attempt at repair is within five calendar days and leak repair is completed within 15 days after detection. Verify that if the owner/operator has decided to no longer comply with the 2 percent rule, the regulatory agency has been notified.

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LARGE QUANTITY GENERATORS HW.160 Satellite Accumulation Points	
HW.160.1. Generators may accumulate as much as 55 gal. of hazardous waste or 1 qt. of acutely hazardous waste in containers at or near any point of initial generation without complying with the requirements for on-site storage if specific standards are met (40 CFR 262.34(c)).	(NOTE: This type of storage area is often referred to as a satellite accumulation point.) Verify that the satellite accumulation point is at or near the point of generation and is under the control of the operator of the waste generating process. Verify that the containers are in good condition and are compatible with the waste stored in them and the containers are kept closed except when waste is being added or removed. Verify that the containers are marked HAZARDOUS WASTE or other appropriate identification. (NOTE: See Appendices A, B, C, and D for a guidance list of hazardous and acutely hazardous wastes.) Verify by interviewing the shop managers that when waste is accumulated in excess of quantity limitations, the following actions are taken: – the excess container is marked with the date the excess amount began accumulating – the waste is transferred to a 90 day or permitted storage area within three days.

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LARGE QUANTITY GENERATORS HW.170 Container Storage Areas	
HW.170.1. At generators, containers of hazardous waste should be kept in designated storage areas (MP).	Verify that all containers are identified and stored in appropriate areas. <i>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</i>
HW.170.2. Containers holding ignitable or reactive waste must be located 15 m (50 ft.) from the property line of the facility (40 CFR 262.34(a)(1)(i) and 265.176).	Determine the distance from storage containers holding ignitable or reactive waste to the property line.
HW.170.3. Generator personnel must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).	Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.

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LARGE QUANTITY GENERATORS HW.190 Containment Buildings	(NOTE: According to the 'Background Information' published on page 37221 of the August 18, 1992, edition of the Federal Register, a hazardous waste containment building involves "the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit". This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)
HW.190.1. Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34(a)(1)(iv) and 265.1100).	Verify that the containment building meets the following: – it is a completely enclosed, self-supporting structure that is designed and constructed of man-made materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit – it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations – it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit – if the unit is used to manage liquids: – there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier – there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier – there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time – it has controls sufficient to prevent fugitive dust emissions – it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.
HW.190.2. Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(1), 265.1101(a)(2), 265.1101(a)(4), and 265.1101(b)).	Verify that containment buildings meet the following design standards: – it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes – the floor and containment walls, including any required secondary containment system, are designed and constructed of man-made materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit – it is designed to prevent failure due to pressure gradients, settlement, compression, or uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations – it has sufficient structural strength to prevent collapse or other failure

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	– all surfaces in contact with hazardous wastes are compatible with the wastes – it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel, wastes, and handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste. Verify that if the containment building is going to manage hazardous wastes with free liquids or treated with free liquids, the following design requirements are also met: – there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface) – there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier – the primary barrier is sloped to drain liquids to the associated collection system – liquids and wastes are collected and removed to minimized hydraulic head on the containment system at the earliest practicable time – there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time – the leak detection component of the secondary containment system meets the following: – it is constructed with a bottom slope of 1 percent or more – it is constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 in (30.5 cm) or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/sec or more – if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building – the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and by any equipment used. (NOTE: An exception to the structural strength requirement may be made for lightweight doors and windows based on the nature of the waste management operations if the following criteria are met: – the doors and windows provide an effective barrier against fugitive dust emissions – the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)

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	(NOTE: A containment building can serve as secondary containment systems for tanks within the building if it meets the requirements of 40 CFR 264.193(b), 264.193(c)(1) and (2), and 264.193(d).)
HW.190.3. Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).	Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail. Verify that the following operational procedures are done: – controls and practices are used to ensure the containment of the waste within the building – the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier – the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded – measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste – there is a designated area for the decontamination of equipment and collection of rinsate – any collected rinsate is managed as needed according to its constituents – measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions – particulate collection devices are maintained and operated according to sound air pollution control practices. Verify that data is gathered from monitoring equipment and leak detection equipment and the site is inspected at least once every seven days and the results recorded in the operating record. Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days. Verify that there is documentation that the waste does not remain for more than 90 days.

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HW.190.4. Containment buildings are required to be certified by a registered professional engineer (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(2)).	Verify by reviewing the documentation that the building has been certified.
HW.190.5. Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv) and 265.1101(c)(3)).	Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly. Verify that when a leak is discovered: – the discovery is recorded in the facility operating record – the portion of the containment building that is affected is removed from service – a cleanup and repair schedule is established – within seven days the regulatory agency is notified and within 14 working days written notice is provided to the regulatory agency – the regulatory agency is notified upon the completion of all repairs, and certification from a registered professional engineer is also submitted.
HW.190.6. Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).	Verify that each area is designed and operated according to the appropriate requirements. Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. Verify that a written description is maintained in the facilities operating log of operating procedures used to maintain the integrity of areas without secondary containment.
HW.190.7. When a containment building is closed, specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).	Determine if the facility has closed a containment building recently. Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs. Verify that if it is found that not all contaminated subsoils can be practicably removed or decontaminated, the site is closed and landfill post-closure requirements are implemented.

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LARGE QUANTITY GENERATORS HW.200 Disposal of Restricted Waste	
HW.200.1. Facilities that generate hazardous wastes must test their wastes or use process knowledge to determine if they are restricted from land disposal (40 CFR 268.7(a)(1)).	Determine whether the generator tests for restricted wastes. Determine if the facility generates restricted wastes (see Appendix VII of 40 CFR Part 268) by reviewing test results or reviewing procedures employed by facility management where process knowledge was applied in making the waste determination.
HW.200.2. When a generator is managing a waste or contaminated soil that does not meet treatment standards, a written notice must be issued to the TSDF stating the appropriate treatment standards and prohibition levels (40 CFR 268.7(a)(2), and 268.7(a)(3)) [Revised January 2001].	(NOTE: The notification requirement under 40 CFR 268.7 has changed to a one-time notification and certification if the composition of the wastes, the process generating the wastes, and the treatment facility receiving the wastes do not change (See FR Vol 62, No. 91, May 12, 1997, pg 26004).) Verify that, for waste or contaminated soil which does <u>not</u> meet the applicable treatment standards or exceeds the applicable prohibition levels, the notice is issued and includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – the waste is subject to the LDRs (NOTE: The notice must also include constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice.) – the applicable wastewater/nonwastewater category (see 40 CFR 268.2(d) and 268.2(f)) and subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanide) – waste analysis data (when available) – for hazardous debris, when treating with the alternative treatment technologies provided by 40 CFR 268.45: – the contaminants subject to treatment, as described in 40 CFR 268.45(b) – an indication that these contaminants are being treated to comply with 40 CFR 268.45 – for contaminated soil subject to LDRs as provided in 40 CFR 268.49(a), the constituents subject to treatment as described in 40 CFR 268.49(d), and the following statement: “This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous

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	waste and [is subject to/complies with] the soil treatment standards as provided by 40 CFR 268.49(c) or the universal treatment standards.” Verify that, for waste or contaminated soil <u>which meets</u> the treatment standard at the original point of generation, the notice includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – the waste is subject to the LDRs (NOTE: The notice must also include constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice.) – the applicable wastewater/nonwastewater category (see 40 CFR 268.2(d) and 268.2(f)) and subdivisions made within a waste code based on waste-specific criteria (such as D003 reactive cyanide) – waste analysis data – for contaminated soil subject to LDRs as provided in 40 CFR 268.49(a), the constituents subject to treatment as described in 40 CFR 268.49(d), and the following statement: “This contaminated soil [does/does not] contain listed hazardous waste and [does/does not] exhibit a characteristic of hazardous waste and [is subject to/complies with the soil treatment standards as provided by 40 CFR 268.49(c) or the universal treatment standards” – the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268 (the text of the required certification statement can be found in 40 CFR 268.7(a)(3)(i).) Verify that, for waste or contaminated soil that meets the treatment standard at the original point of generation, if the waste changes, the generator sends a new notice and certification to the receiving facility and placed a copy in their files. (NOTE: Generators of hazardous debris excluded from the definition of hazardous waste under 40 CFR 261.3(f) are not subject to the requirements for waste or contaminated soil which meets the treatment standard at the original point of generation.) Verify that, for restricted waste <u>subject to an exemption</u> from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: – U.S. EPA hazardous waste numbers and manifest number of first shipment – statement: this waste is not prohibited from land disposal – waste analysis data, when available – date the waste is subject to the prohibition – for hazardous debris, when treating with the alternative treatment technologies provided by 40 CFR 268.45: the contaminants subject to treatment, as described in 40 CFR 268.45(b); and an indication that these

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	contaminants are being treated to comply with 40 CFR 268.45.
HW.200.3. Generators that are managing prohibited wastes in tanks, containers, or containment buildings and treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(5) and 268.7(a)(10)).	Verify that the plan describes the procedures that the generator will carry out to comply with treatment standards. (NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.) Verify that the plan is kept on-site and: – the plan is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated – contains all information necessary to treat the waste in accordance with regulatory requirements including the selected testing frequency – the plan is kept in the on-site files and made available to regulatory inspectors.
HW.200.4. Generators are required to keep specific documents pertaining to restricted wastes on-site (40 CFR 268.7(a)(6) through 268.7(a)(8)).	Verify that if the facility is using generator knowledge to determine whether a waste or contaminated soil is restricted from land disposal, the supporting data used in making this determination is retained on-site in the generator's files. Verify that if the facility has determined whether a waste or contaminated soil is restricted using appropriate test methods, the waste analysis data is retained on-site. Verify that if the facility has determined that they are managing a restricted waste that is excluded from the definition of a hazardous waste or solid waste or exempt from RCRA Subtitle C, a one-time notice is placed in the facility's files stating that the generated waste is excluded. Verify that a copy of all notices, certifications, waste analysis data and other documentation is kept for at least three years from the date that the waste was last sent to an on-site or off-site TSDF.
HW.200.5. Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)).	Verify that a one-time notification is submitted to the regulatory agency including the following: – the name and address of the facility receiving the treated waste – a description of the hazardous debris as initially generated, including the applicable EPA hazardous waste codes, treatability groups, and underlying hazardous constituents – for excluded debris, the technology used to treat the debris. Verify that the notification is updated if the debris is shipped to a different facility.

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	Verify that for debris that is excluded, if a different type of debris is treated or if a different technology is used to treat the debris, the notification is updated.
HW.200.6. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	Verify that land disposal restricted waste is not stored at the facility unless the generator is storing the wastes in tanks, containers, or containment buildings on-site only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal and all appropriate standards for containers, tanks, and containment buildings are met. (NOTE: If the 90 day storage period is exceeded, the generator is required to be permitted as a TSDF.) (NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.) Verify that liquid hazardous wastes containing PCBs at concentrations greater than 50 ppm are stored at a site that meets the requirements of 40 CFR 761.65(b) (see the Toxic Substances Control Act (TSCA)) and is removed from storage within one year of the date it was first placed into storage.

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TRANSPORTATION OF HAZARDOUS WASTE HW.300	
HW.300.1. Transporters of hazardous waste that is required to be manifested must have an EPA identification number and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21 and 263.22(a)).	(NOTE: These requirements do not apply to the on-site transportation of hazardous waste.) Determine if the facility transports hazardous waste off-site by using their own vehicles or a contractor. Verify that the transporter has an EPA identification number. Verify that all waste accepted, transported, or offered for transport is accompanied by a manifest. Verify that prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility. Verify that the transporter retains a copy of the manifest after delivery. Verify that all wastes accepted by the transporter are delivered to the designated facility listed on the manifest, or the alternate designated facility if an emergency prevents delivery, or the next designated transporter or the place outside the United States designated by the generator. (NOTE: If the transporter cannot deliver the hazardous waste to the facilities or transporters designated on the manifest, the transporter must contact the generator for further directions and revise the manifest according to the generator's instructions.) Verify that manifests are kept on file for three years. (NOTE: Special issues involved in the transportation of hazardous waste by air, rail or water are not addressed in this guide.)

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HW.300.2. Before transporting hazardous waste or offering hazardous waste for transportation off-site in the United States, the facility must package and label the waste in accordance with DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).	Determine what pretransport procedures for hazardous waste are used. Verify that containers are properly constructed and exhibit no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport. Verify that there are no indications of drum failure by examining end-seams for minor weeping. Verify that labeling and marking on each container is compatible with the manifests. Verify that the following information is displayed on a random sample of containers of 110 gal. (416.40 L) or less in accordance with 49 CFR 172.304: – “HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.” – generator's name and address – Manifest Document Number. Verify that proper DOT placarding is available for the transporter.
HW.300.3. Transporters of waste off-site must take immediate notification and clean-up action if a discharge occurs during transport (40 CFR 263.30 and 263.31).	Verify that transport operators have instructions to notify local authorities and take clean-up action so that the discharge does not present a hazard. Verify that transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 49 CFR 171.16.
HW.300.4. <i>The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with good management practices to help prevent spills, releases, and accidents (MP).</i>	<i>Determine if procedures exist to manage movement of hazardous wastes throughout the facility.</i> <i>Determine if drivers are trained in spill control procedures.</i> <i>Determine if provisions have been made for securing wastes in vehicles during transport.</i>
HW.300.5. Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).	Determine if the facility has a transfer facility. Verify the following: – transfer facility storage is for 10 days or less – DOT packaging requirements are met – shipments are manifested and manifests accompany shipments

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	– storage is consistent with good management practices. (NOTE: Storage for more than 10 days will require a TSDF permit.) Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days (40 CFR 268.50(a)(3)).

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EXPORT/IMPORT OF HAZARDOUS WASTE HW.400 Exports of Hazardous Waste for Recovery Within the OECD Member Countries	
HW.400.1. A U.S. Notifier that exports amber list or red list hazardous waste (see 40 CFR 262.89 and 262.82) destined for recovery operations (see 40 CFR 262.81(k)) in an OECD member country (40 CFR 262.58(a)) must comply with notification requirements (40 CFR 262.83).	Determine whether the importing country is an Organization for Economic Coordination and Development (OECD) member country [Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States]. (NOTE: The following countries have become OECD member countries since U.S. EPA promulgated its OECD regulations in 1996: South Korea, Czech Republic, Poland, and Hungary. U.S. EPA plans to amend its regulations to reflect these new OECD countries. In the interim, U.S. EPA strongly recommends that U.S. exports to these new OECD countries comply with the applicable OECD regulations, since these countries would expect compliance with OECD requirements for shipments they receive from the U.S.) Determine whether the waste is destined for recovery operations, including resource recovery, recycling, reclamation, direct re-use or alternative uses. Verify that 45 days prior to shipment of hazardous waste, the facility has notified U.S. EPA (in writing) of the following: – serial number or other accepted identifier of the notification form – name, address, telephone and telefax numbers, and EPA ID number of the notifier – name, address, telephone and telefax numbers of any consignee (other than the owner or operator of the recovery facility) and whether the consignee will exchange or store the waste before delivery to the final recovery facility – Intended transporters and any agents – country of export and point of departure – countries of transit, relevant competent authority, and point of entry and departure – country of import, relevant competent authority, and point of entry – statement of whether the notification is for a single or multiple shipments and, for multiple shipments, period of validity requested – date foreseen for shipments to begin – designation of waste types from the appropriate list (amber or red and waste

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	list code), descriptions of each waste type, estimated total quantity of each, RCRA waste code, and United Nations number for each waste type – signed certification that states the following: – “I certify that the above information is complete and correct to the best of my knowledge. I also certify that legally-enforceable written contractual obligations have been entered into, and that any applicable insurance or other financial guarantees are or shall be in force covering the transfrontier movement.” (NOTE: The U.S. does not currently require financial assurance; however, U.S. exporters may be asked by other governments to provide and certify to such assurance as a condition of obtaining consent to a proposed movement.) (NOTE: If wastes with similar physical and chemical characteristics, the same United Nations classification, and the same RCRA waste codes are to be sent to the same recovery facility by the same notifier, the notifier may submit one notification of intent to export these wastes in multiple shipments during a period of up to one year.) (NOTE: For amber list wastes to be shipped to a recovery facility pre-approved by the competent authority of the receiving country, the notifier must provide the above information to U.S. EPA at least 10 days prior to shipment. Waste may be shipped as soon as the notification has been received by the competent authorities in the exporting, importing, and transit countries unless the notifier receives information indicating that any country objects to the shipment.) Verify that, for amber list wastes, either (1) no objection was lodged by any exporting, importing, or transit countries within 30 days after issuance of the Acknowledgment of Receipt of notification by the competent authority of the importing country or (2) the competent authorities of all importing and transit countries provided written consent within 30 days. Verify that, for red list wastes, written consent was received from the importing country and any transit countries prior to export.
HW.400.2. A U.S. notifier must execute a valid written contract or chain of contracts with the recovery facility that specifies the responsibilities of each (40 CFR 262.85).	Verify that contracts specify the name and EPA ID number, where available, of: – the generator of each type of waste – each person who will have physical custody of the waste – each person who will have legal control of the waste – the recovery facility. Verify that contracts specify: – which party will assume responsibility for alternate management of the wastes if it cannot be carried out as described in the notification of intent to

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	export – that the person with actual possession or physical control over the waste will immediately notify the notifier and the competent authorities of the exporting and importing countries and transit country if wastes are located in a country of transit – the person specified in the contract who will assume responsibility for the adequate management of the wastes including, if necessary, arranging for their return to the original country of export – notification prior to re-export to a third country – provisions for financial guarantees.
HW.400.3. A U.S. notifier must ensure that a tracking document accompanies each shipment of amber or red list wastes until it reaches the final recovery facility (40 CFR 262.84).	Verify that a copy of the tracking document is attached to the shipment. Verify that the tracking document includes all information contained in the notification and the following: – the date shipment commenced – name, address, telephone and telefax numbers of primary exporter, if different than the notifier – name and EPA ID number of all transporters – any special precautions to be taken by transporters – signed certification that states the following: – “I certify that the above information is complete and correct to the best of my knowledge. I also certify that legally-enforceable written contractual obligations have been entered into, and that any applicable insurance or other financial guarantees are or shall be in force covering the transfrontier movement, and that: – 1. All necessary consents have been received; OR – 2. The shipment is directed at a recovery facility within the OECD area and no objection has been received from any of the concerned countries within the 30 day tacit consent period; OR – 3. The shipment is directed at a recovery facility pre-authorized for that type of waste within the OECD area; such an authorization has not been revoked, and no objection has been received from any of the concerned countries.” – (NOTE: The notifier may delete sentences that are not applicable.) – appropriate signatures for each custody transfer.

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HW.400.4. A U.S. notifier must comply with special manifest requirements (40 CFR 262.84(c) and 262.54(a), (b), (c), (e), and (i)).	Verify that the tracking documents contain the following: – the name and address of the foreign consignee (and any alternate consignee) in place of the designated facility’s name, address, and EPA ID number – the point of departure from the United States indicated in the Special Handling Instructions and Additional Information section. Verify that a copy of the manifest is provided for delivery to the U.S. Customs official at the point of departure from the U.S.
HW.400.5. A primary exporter must file an annual report with U.S. EPA by March 1 of each year regarding hazardous waste exported for recovery during the previous year (40 CFR 262.87(a)).	Verify that an annual report has been submitted by March 1 of every year for hazardous waste exported for recovery during the previous calendar year. Determine whether annual reports contain the following information for all hazardous waste exported for recovery during the previous year by randomly checking several of them: – the EPA ID number, name, mailing and site address of the notifier filing the report – calendar year covered by the report – the name and address of each final recovery facility – for each final recovery facility and each waste exported: a description of the waste, the EPA hazardous waste number, the OECD waste type and code, the DOT hazard class, the EPA ID number for each transporter used, the total amount of waste shipped, and the number of shipments – under certain circumstances, the efforts used to reduce the volume and toxicity of the waste and the change achieved during the previous year in comparison to earlier years – certification signed by the primary exporter that states the following: – “I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.”
HW.400.6. A primary exporter must file an exception report with U.S. EPA under certain circumstances (40 CFR 262.87(b)).	Verify that an exception report is filed with U.S. EPA each time any of the following occurs: – the notifier does not receive a copy of the tracking document signed by the transporter stating point of departure from the U.S. within 45 days of acceptance by the initial transporter – within 90 days from the date the waste was accepted by the initial transporter, the notifier does not receive written confirmation from the recovery facility that the waste was received or

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	– the waste is returned to the U.S.
HW.400.7. A primary exporter must maintain records that relate to export activities (40 CFR 262.87(c)).	Verify that the following records are kept for the appropriate period of time: – each notification of intent to export and all written consents obtained (at least three years from the date the hazardous waste was accepted by the initial transporter) – each annual report (at least three years from the due date of the report) – any exception reports and each confirmation of delivery received from the recovery facility (at least three years from the date the initial waste was received from the recovery facility).

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EXPORT/IMPORT OF HAZARDOUS WASTE HW.420 Exports of Hazardous Waste (Except to the OECD Member Countries) for Recovery	
HW.420.1. A primary exporter of hazardous waste must comply with notification requirements (40 CFR 262.53(a) and 262.53(b)).	Determine if the facility imports/exports hazardous waste. Verify that 60 days prior to the initial shipment of hazardous waste to each country in each calendar year, the facility has notified the U.S. EPA (in writing) of the following: – name, mailing address, telephone number, and EPA identification number of the primary exporter – by consignee, for each hazardous waste type: – identification of the hazardous waste shipped by EPA identification number – DOT shipping name, hazard class, and importer for the waste – estimated frequency/rate at which such wastes(s) is to be exported – estimated total quantity (in units) – all points of entry to and departure from each foreign country the waste will pass through – a description of the approximate length of time the waste will remain in each country, and how it will be handled there – the mode of transportation used to transport the waste and type(s) of containers used – description of the treatment, storage, or disposal method to be used in the receiving country – name and address of the foreign consignee.
HW.420.2. The primary exporter must attach a copy of an U.S. EPA Acknowledgment of Consent (that confirms the consent of the foreign country to receive the waste) to the shipment of hazardous waste to a foreign country (40 CFR 262.52(c), 262.53(f) and 262.54(h)).	Verify that a copy of the U.S. EPA Acknowledgment of Consent is on file by checking the records. Verify that a copy of this document was attached to the shipment.

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HW.420.3. Primary exporters of hazardous waste must require confirmation of the delivery of the hazardous waste and a description of any significant discrepancies between the manifest and the shipment (40 CFR 262.54(f)).	Verify that the facility has been receiving confirmation of delivery. Determine if there are any notations of discrepancies.
HW.420.4. Primary exporters of hazardous waste are required to comply with general manifest requirements with certain modifications (40 CFR 262.54(a) through 262.54(e) and 262.54(i)).	Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20 through 262.23. Determine if the following modifications are made by reviewing the manifest copies: – the name and address of the foreign consignee (and any alternate consignee) is put in the place of the designated facility's name, address, and EPA number. – the point of departure from the United States is indicated in the Special Instructions and Additional Information sections. – this statement, "and conform to the terms of the attached U.S. EPA Acknowledgment of Consent," is added to the end of the first sentence of the certification in Item 16. Verify that a copy of the manifest is provided for delivery to the U.S. Customs official at the U.S. point of departure.
HW.420.5. Primary exporters of hazardous waste are required to follow specific procedures when a shipment cannot be delivered to the designated or alternate consignee (40 CFR 262.54(g)).	Verify that when a shipment cannot be delivered, the primary exporter does one of the following: – notifies the U.S. EPA of a change in the conditions of the original notification to allow shipment to a new consignee and obtains an U.S. EPA Acknowledgment of Consent prior to delivery, or – instructs the transporter to return the waste to the primary exporter in the United States or designates another facility within the United States. Verify that the facility instructs the transporter to revise the manifest to reflect changes made.
HW.420.6. Primary exporters of hazardous waste are required to file an exception report under certain conditions (40 CFR 262.55).	Verify that an exception report was filed if: – a signed copy of the manifest from the transporter containing the following information was not received within 45 days from the day it was accepted by the initial transporter: – date of departure of the waste from the United States – place of departure of the waste from the United States

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	– within 90 days from the date the waste was accepted by the initial transporter, the facility has not received a written confirmation from the foreign consignee stating that the hazardous waste was received – the waste is returned to the United States.
HW.420.7. The primary exporter must file an Annual Report with the regulatory agency by March 1 of each year regarding hazardous waste exported during the previous year (40 CFR 262.56).	Verify that an Annual Report has been submitted by March 1 of every calendar year. Verify that the Annual Reports contain the following information for all hazardous waste exported during the previous calendar year: – type, EPA hazardous waste number, DOT hazard class and name for each hazardous waste(s) exported – EPA identification number for each transporter (where applicable) – quantity of hazardous waste(s) exported – frequency (dates) of hazardous waste(s) exported – ultimate destination for all hazardous waste(s) exported – efforts used to reduce the volume and toxicity of the waste (and the changes achieved during the year in comparison to previous years) – a certification signed by the primary exporter that states: – "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."
HW.420.8. Primary exporters of hazardous wastes must maintain additional records that relate to their export activities (40 CFR 262.57).	Verify that the following are kept for at least three years: – a copy of each notification of intent to export – a copy of each U.S. EPA Acknowledgment of Consent – a copy of each confirmation of delivery (signed manifests) of the waste – annual reports. (NOTE: Periods of retention are automatically extended during the course of any unresolved enforcement action.)

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EXPORT/IMPORT OF HAZARDOUS WASTE HW.440 Imports of Hazardous Waste for Recovery Within the OECD Member Countries	
HW.440.1. A U.S. importer of amber list or red list hazardous waste (see 40 CFR 262.89 and 262.82) destined for recovery operations (see 40 CFR 262.81(k)) from an OECD member country (40 CFR 262.58(a)) must execute a valid written contract or chain of contracts with the recovery facility that specifies the responsibilities of each (40 CFR 262.85).	Determine whether the exporting country is an OECD member country [Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States]. (NOTE: The following countries have become OECD member countries since U.S. EPA promulgated its regulations in 1996: South Korea, Czech Republic, Poland, and Hungary. U.S. EPA plans to amend its regulations to reflect these new OECD countries. In the interim, U.S. EPA strongly recommends that exports to these new OECD countries comply with applicable OECD regulations, since these countries would expect compliance with OECD requirements for shipments they receive from the U.S.) Determine whether the waste is for recovery operations, including resource recovery, recycling, reclamation, direct re-use or alternative uses. Verify that contracts specify the name and EPA ID number, where available, of: – the generator of each type of waste – each person who will have physical custody of the waste – each person who will have legal control of the waste – the recovery facility. Verify that contracts specify: – which party will assume responsibility for alternate management of the wastes if it cannot be carried out as described in the notification of intent to export – that the person with actual possession or physical control over the waste will immediately notify the notifier and the competent authorities of the exporting and importing countries and transit country if wastes are located in a country of transit – that the person specified in the contract will assume responsibility for the adequate management of the wastes including, if necessary, arranging their return to the original country of export

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	– notification prior to re-export to a third country – provisions for financial guarantees.
HW.440.2. A U.S. importer must ensure that a tracking document accompanies each shipment of amber or red list wastes until it reaches the final recovery facility (40 CFR 262.84).	Verify that a copy of the tracking document was attached to the shipment. Verify that the tracking document included all information contained in the notification and the following: – the date shipment commenced – name, address, telephone and telefax numbers of primary exporter, if different than the notifier – name and EPA ID number of all transporters – identification of means of transport, including types of packaging – any special precautions to be taken by transporters – signed certification required by 40 CFR 262.84(b)(6) – appropriate signatures for each custody transfer.
HW.440.3. A consignee must comply with general manifest requirements with certain modifications (40 CFR 262.84(c) and 262.60).	Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20. Determine if the following modifications are made by reviewing the manifest copies: – the name and address of the foreign generator and the importer's name, address and EPA identification number are put in place of the generator's name, address and EPA identification number – the U.S. importer (or his agent) must sign and date the certification statement in place of the generator's signature and obtain the signature of the initial transporter.
HW.440.4. Each person in the U.S. that has physical custody of the waste until it arrives at the recovery facility must sign the tracking document (40 CFR 262.84(d)).	Verify that the U.S. transporter, consignee, and owner or operator of the recovery facility have signed the manifest.

COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
HW.440.5. An owner/operator of a U.S. recovery facility must send signed copies of the tracking document to the notifier, to U.S. EPA, and to the competent authorities of the exporting and transit countries within three days of receipt of imports (40 CFR 262.84(e)).	Verify that the facility sends signed copies of the tracking document to the notifier, to U.S. EPA, and to the competent authorities of the exporting and transit countries within the three days.
HW.440.6. A facility that has arranged to receive hazardous waste from a foreign source must notify U.S. EPA (40 CFR 264.12(a)(1) and 265.12(a)(1)).	Verify that the facility notifies the appropriate U.S. EPA Regional Administrator in writing at least four weeks prior to the date the waste is expected to arrive at the facility. (NOTE: Notice of subsequent shipments of the same waste from the same foreign source is not required.)

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
EXPORT/IMPORT OF HAZARDOUS WASTE HW.460 Imports of Hazardous Waste (Except from the OECD Member Countries) for Recovery	
HW.460.1. Any person who imports hazardous waste must comply with general manifest requirements with certain modifications (40 CFR 262.60).	Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20. Determine if the following modifications are made by reviewing the manifest copies: – the name and address of the foreign generator and the importer’s name, address and EPA identification number are put in place of the generator’s name, address and EPA identification number – the U.S. importer (or his agent) must sign and date the certification statement in place of the generator’s signature and obtain the signature of the initial transporter.
HW.460.2. A facility that has arranged to receive hazardous waste from a foreign source must notify U.S. EPA (40 CFR 264.12(a)(1) and 265.12(a)(1)).	Verify that the facility notifies the appropriate U.S. EPA Regional Administrator in writing at least four weeks prior to the date the waste is expected to arrive at the facility. (NOTE: Notice of subsequent shipments of the same waste from the same foreign source is not required.)

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COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
WASTE MINIMIZATION/ POLLUTION PREVENTION HW.500	
HW.500.1. <i>The generator should have in place a waste minimization program to reduce the volume and toxicity of hazardous wastes generated. The generator is required to sign the Generator's Certification statement on each manifest, attesting to its waste minimization program (MP).</i>	<i>Determine if the generator's waste minimization program includes practical methods for reducing the volume of hazardous wastes generated. Determine whether any or all of the following methods suggested by U.S. EPA are incorporated into the program:</i> <i>– the generator retains information that documents waste minimization activities.</i> <i>– the program includes:</i> <i>– provisions for top management assurance that waste minimization is a company-wide effort</i> <i>– characterization of waste generation and waste management costs</i> <i>– periodic waste minimization assessments</i> <i>– a cost allocation system</i> <i>– encourages technology transfer</i> <i>– program implementation and evaluation</i> <i>– waste minimization employee awareness plans</i> <i>– adequate funding</i> <i>– clearly delineated roles both within the company and among each facility generating waste.</i> <i>– conclude if facility actions are resulting in the reduction of hazardous wastes.</i> <i>(NOTE: Refer to Interim Final Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program, 58 FR 31114, May 28, 1993.)</i>

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**Protocol for Conducting Environmental Compliance Audits of Hazardous
Waste Generators under RCRA**

**Appendix A:
Hazardous Waste from Nonspecific Sources and from Specific Sources
(40 CFR 261.31 and 261.32)**

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Hazardous Waste from Nonspecific Sources and from Specific Sources

Industry and EPA hazardous waste No.	Table 1 Hazardous Waste From Nonspecific Sources (40 CFR 261.31)	Hazard Code
	Generic	
F001	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F003	The following spent non- halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non- halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)*
F004	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I,T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007	Spent cyanide plating bath solutions from electroplating operations.	(R, T)

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Industry and EPA hazardous waste No.	Table 1 Hazardous Waste From Nonspecific Sources (40 CFR 261.31)	Hazard Code
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R, T)
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(T)
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.).	(H)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5- trichlorophenol.).	(H)
F024	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in Sec. 261.31 or Sec. 261.32.).	(T)

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Industry and EPA hazardous waste No.	Table 1 Hazardous Waste From Nonspecific Sources (40 CFR 261.31)	Hazard Code
F025	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(T)
F026	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5- trichlorophenol as the sole component.).	(H)
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)
F032	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 40 CFR 261.35 or potentially cross-contaminated wastes that are otherwise currently regulated as hazardous wastes (i.e., F034 or F035), and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
F034	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
F035	Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.	(T)

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Industry and EPA hazardous waste No.	Table 1 Hazardous Waste From Nonspecific Sources (40 CFR 261.31)	Hazard Code
F037	Petroleum refinery primary oil/water/solids separation sludge--Any sludge generated from the gravitational separation of oil/water/ solids during the storage or treatment of process wastewaters and oil cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in oil/water/ solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in Sec. 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing. This listing does include residuals generated from processing or recycling oil-bearing hazardous secondary materials excluded under Sec. 261.4(a)(12)(i), if those residuals are to be disposed of.	(T)
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge-- Any sludge and/or float generated from the physical and/or chemical separation of oil/water/ solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in Sec. 261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(T)
F039	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.).	(T)

Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
	Wood Preservation	
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
	Inorganic Pigments	
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments.	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments.	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments.	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments(anhydrous and hydrated).	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments.	(T)
K008	Oven residue from the production of chrome oxide green pigments.	(T)
	Organic Chemicals	
K009	Distillation bottoms from the production of acetaldehyde from ethylene.	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene.	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.	(T)
K015	Still bottoms from the distillation of benzyl chloride.	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride.	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(T)
K018	Heavy ends from the fractionation column in ethyl chloride production.	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.	(T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
K022	Distillation bottom tars from the production of phenol/acetone from cumene.	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene.	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene.	(T)
K026	Stripping still tails from the production of methy ethyl pyridines.	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production.	(R, T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane.	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(T)
K083	Distillation bottoms from aniline production.	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes.	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(T)
K103	Process residues from aniline extraction from the production of aniline.	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production.	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(T)
K107	Column bottoms from product separation from the production of 1,1- dimethylhydrazine (UDMH) from carboxylic acid hydrazines.	(C,T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(I,T)
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)
K149	Distillation bottoms from the production of alpha-(or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups, (This waste does not include still bottoms from the distillation of benzyl chloride.).	(T)
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha-(or methyl-) chlorinated toluenes, ring- chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.	(T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.	(T)
K156	Organic waste (including heavy ends, still bottoms, light ends, spent solvents, filtrates, and decantates) from the production of carbamates and carbamoyl oximes (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.).	(T)
K157	Wastewaters (including scrubber waters, condenser waters, washwaters, and separation waters) from the production of carbamates and carbamoyl oximes. (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.).	(T)
K158	Bag house dusts and filter/separation solids from the production of carbamates and carbamoyl oximes. (This listing does not apply to wastes generated from the manufacture of 3-iodo-2-propynyl n-butylcarbamate.).	(T)
K159	Organics from the treatment of thiocarbamate wastes.	(T)
K161	Purification solids (including filtration, evaporation, and centrifugation solids), bag house dust and floor sweepings from the production of dithiocarbamate acids and their salts. (This listing does not include K125 or K126.).	(R,T)
K174	Wastewater treatment sludges from the production of ethylene dichloride or vinyl chloride monomer (including sludges that result from commingled ethylene dichloride or vinyl chloride monomer wastewater and other wastewater), unless the sludges meet the following conditions: (i) they are disposed of in a subtitle C or non- hazardous landfill licensed or permitted by the state or federal government; (ii) they are not otherwise placed on the land prior to final disposal; and (iii) the generator maintains documentation demonstrating that the waste was either disposed of in an on-site landfill or consigned to a transporter or disposal facility that provided a written commitment to dispose of the waste in an off-site landfill. Respondents in any action brought to enforce the requirements of subtitle C must, upon a showing by the government that the respondent managed wastewater treatment sludges from the production of vinyl chloride monomer or ethylene dichloride, demonstrate that they meet the terms of the exclusion set forth above. In doing so, they must provide appropriate documentation (e.g., contracts between the generator and the landfill owner/operator, invoices documenting delivery of waste to landfill, etc.) that the terms of the exclusion were met.	(T)
K175	Wastewater treatment sludges from the production of vinyl chloride monomer using mercuric chloride catalyst in an acetylene-based process.	(T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
	Inorganic Chemicals	
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(T)
	Pesticides	
K031	By-product salts generated in the production of MSMA and cacodylic acid.	(T)
K032	Wastewater treatment sludge from the production of chlordane.	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.	(T)
K035	Wastewater treatment sludges generated in the production of creosote.	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton.	(T)
K037	Wastewater treatment sludges from the production of disulfoton.	(T)
K038	Wastewater from the washing and stripping of phorate production.	(T)
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	(T)
K040	Wastewater treatment sludge from the production of phorate.	(T)
K041	Wastewater treatment sludge from the production of toxaphene.	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5- T.	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D.	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.	(T)
K098	Untreated process wastewater from the production of toxaphene.	(T)
K099	Untreated wastewater from the production of 2,4-D.	(T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenedisithiocarbamic acid and its salt.	(T)
K124	Reactor vent scrubber water from the production of ethylenedisithiocarbamic acid and its salts.	(C, T)
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenedisithiocarbamic acid and its salts.	(T)
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenedisithiocarbamic acid and its salts.	(T)
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide.	(C, T)
K132	Spent absorbent and wastewater separator solids from the production of methyl bromide.	(T)
	Explosives	
K044	Wastewater treatment sludges from the manufacturing and processing of explosives.	(R)
K045	Spent carbon from the treatment of wastewater containing explosives.	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(T)
K047	Pink/red water from TNT operations.	(R)
	Petroleum Refining	
K048	Dissolved air flotation (DAF) float from the petroleum refining industry.	(T)
K049	Slop oil emulsion solids from the petroleum refining industry.	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry.	(T)
K051	API separator sludge from the petroleum refining industry.	(T)
K052	Tank bottoms (leaded) from the petroleum refining industry.	(T)
K169	Crude oil storage tank sediment from petroleum refining operations.	(T)
K170	Clarified slurry oil tank sediment and/or in-line filter/separation solids from petroleum refining operations.	(T)
K171	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
K172	Spent Hydrotreating catalyst from petroleum refining operations, including guard beds used to desulfurize feeds to other catalytic reactors (this listing does not include inert support media).	(I,T)
	Iron and Steel	
K061	Emission control dust/ sludge from the primary production of steel in electric furnaces.	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).	(C,T)
	Primary Copper (No Entries)	
	Primary Lead (No Entries)	
	Primary Zinc (No Entries)	
	Primary Aluminum (No Entries)	
K088	Spent pot liners from primary aluminum reduction.	(T)
	Ferroalloys (No Entries)	
	Secondary lead	
K069	Emission control dust/ sludge from secondary lead smelting. (Note: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register.	(T)
K100	Waste leaching solution from acid leaching of emission control dust/ sludge from secondary lead smelting.	(T)
	Veterinary _Pharmaceuticals	
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)

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Industry and EPA hazardous waste No.	Table 2 Hazardous Waste From Specific Sources (40 CFR 261.32, Revised January 2001)	Hazard Code
	Ink Formulation	
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.	(T)
	Coking	
K060	Ammonia still lime sludge from coking operations.	(T)
K087	Decanter tank tar sludge from coking operations.	(T)
K141	Process residues from the recovery of coal tar, including, but not limited to, collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludges from coking operations).	(T)
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by- products produced from coal.	(T)
K143	Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.	(T)
K144	Wastewater sump residues from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.	(T)
K145	Residues from naphthalene collection and recovery operations from the recovery of coke by-products produced from coal.	(T)
K147	Tar storage tank residues from coal tar refining.	(T)
K148	Residues from coal tar distillation, including but not limited to, still bottoms.	(T)

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Waste Generators under RCRA**

**Appendix B:
Commercial Chemical Products or Manufacturing Chemical
Intermediates Identified as Toxic Wastes
(40 CFR 261.33(f))**

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Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes (40 CFR 261.33(f))

[Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), R (Reactivity), I (Ignitability) and C (Corrosivity). Absence of a letter indicates that the compound is only listed for toxicity.]

Hazardous Waste No.	Chemical Abstracts Number	Substance
U394	30558-43-1	A2213.
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	¹ 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid ethyl ester (I)
U144	301-04-2	Acetic acid, lead(2+) salt
U214	563-68-8	Acetic acid, thallium(1+) salt
see F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine
U015	115-02-6	Azaserine
U010	50-07-7	Azirino[2,3<ls>thn>eq>3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8- [[aminocarbonyl]oxy]methyl]- 1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl- , [1aS-(1aalpha, 8beta,8aalpha,8balpha)]-
U280	101-27-9	Barban
U278	22781-23-3	Bendiocarb
U364	22961-82-6	Bendiocarb phenol
U271	17804-35-2	Benomyl
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz[c]acridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1- dimethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4,4-carbonimidoylbis[N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U158	101-14-4	Benzenamine, 4,4-methylenebis[2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1,1-(2,2-dichloroethylidene)bis[4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene, 1,1-(2,2,2-trichloroethylidene)bis[4- methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-
U021	92-87-5	Benzidine
U202	¹ 81-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U278	22781-23-3	1,3-Benzodioxol-4-ol, 2,2-dimethyl-, methyl carbamate.
U364	22961-82-6	1,3-Benzodioxol-4-ol, 2,2-dimethyl-
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U367	1563-38-8	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rs]pentaphene
U248	¹ 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[a]pyrene

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (I)
U159	78-93-3	2-Butanone (I,T)
U160	1338-23-4	2-Butanone, peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (I,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-,7-[[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a- pyrrolizin-1-tetrahydro-1H-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U031	71-36-3	n-Butyl alcohol (I)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U372	10605-21-7	Carbamic acid, 1H-benzimidazol-2-yl, methyl ester.
U271	17804-35-2	Carbamic acid, [1-[(butylamino)carbonyl]-1H- benzimidazol-2-yl]-, methyl ester
U280	101-27-9	Carbamic acid, (3-chlorophenyl)-, 4-chloro-2-butynyl ester.
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U373	122-42-9	Carbamic acid, phenyl-, 1-methylethyl ester
U409	23564-05-8	Carbamic acid, [1,2-phenylenebis (iminocarbonothioyl)]bis-, dimethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U389	2303-17-5	Carbamothioic acid, bis(1-methylethyl)- , S-(2,3,3-trichloro-2-propenyl) ester
U387	52888-80-9	Carbamothioic acid, dipropyl-, S(phenylmethyl) ester
U114	¹ 111-54-6	Carbamodithioic acid, 1,2-ethanediybis-, salts & esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
U279	63-25-2	Carbaryl
U372	10605-21-7	Carbendazim
U367	1563-38-8	Carbofuran phenol
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester(I,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H ₂ CrO ₄ , calcium salt
U050	218-01-9	Chrysene
U051		Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (I)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (I)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, 1alpha,2alpha,3beta,4alpha,5alpha,6(beta)-
U057	108-94-1	Cyclohexanone (I)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	¹ 94-75-7	2,4-D, salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (I,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U395	5952-26-1	Diethylene glycol, dicarbamate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha,alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbamoyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U404	121-44-8	Ethanamine, N,N-diethyl-
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis-(I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,2-trichloro-
U410	59669-26-0	Ethanimidothioic acid, N,N'-[thiobis [(methylimino) carbonyloxy]]bis-, dimethyl ester
U394	30558-43-1	Ethanimidothioic acid, 2-(dimethylamino)-N-hydroxy-2-oxo-, methyl ester
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U395	5952-26-1	Ethanol, 2,2'-oxybis-, dicarbamate
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	¹ 111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro-(I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[[(methylnitrosoamino)-carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H ₂ S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl-(R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I, T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I, T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I, T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis[5-amino-4-hydroxy]-, tetrasodium salt
U279	63-25-2	1-Naphthalenol, methylcarbamate
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
	2	123-63-7 Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See F027	87-86-5	Pentachlorophenol
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U411	114-26-1	Phenol, 2-(1-methylethoxy)-, methylcarbamate
U170	100-02-7	Phenol, 4-nitro-
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Phenol, 2,3,4,6-tetrachloro-
See F027	95-95-4	Phenol, 2,4,5-trichloro-
See F027	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U083	78-87-5	Propane, 1,2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate(3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propenamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U373	122-42-9	Propham
U411	114-26-1	Propoxur
U387	52888-80-9	Prosulfocarb
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-86-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl) amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U202	¹ 81-07-2	Saccharin, & salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS ₂ (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
See F027	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2,3,4,6-Tetrachlorophenol
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium(I) chloride
U216	7791-12-0	Thallium chloride TlCl
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U410	59669-26-0	Thiodicarb
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide [(H ₂ N)C(S)] ₂ S ₂ , tetramethyl-
U409	23564-05-8	Thiophanate-methyl
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U389	2303-17-5	Triallate
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2,4,5-Trichlorophenol
See F027	88-06-2	2,4,6-Trichlorophenol
U404	121-44-8	Triethylamine
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-

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Hazardous Waste No.	Chemical Abstracts Number	Substance
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	¹ 81-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-
U249	1314-84-7	Zinc phosphide Zn ₃ P ₂ , when present at concentrations of 10% or less

¹ CAS Number given for parent compound only.

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**Protocol for Conducting Environmental Compliance Audits of Hazardous
Waste Generators under RCRA**

**Appendix C
Toxicity Characteristics Constituents and Regulatory Levels
(40 CFR 261.24)**

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**Toxicity Characteristics Constituents and Regulatory Levels
(40 CFR 261.24)**

U.S. EPA HW No.	Constituent	CAS No	Regulatory level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0
D023	o-Cresol	95-48-7	200.0 ¹
D024	m-Cresol	108-39-4	200.0 ¹
D025	p-Cresol	106-44-5	200.0 ¹
D026	Cresol		200.0 ¹
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	0.13 ²
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13 ²
D033	Hexachlorobutadiene	87-68-3	0.50
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0 ²
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

¹ If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

² Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.

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**Protocol for Conducting Environmental Compliance Audits of Hazardous
Waste Generators under RCRA**

**Appendix D
Commercial Chemical Products or Manufacturing Chemical
Intermediates Identified as Acute Hazardous Waste
(40 CFR 261.33(a) through 261.33(e))**

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Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))

(Comment: For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.)

Hazardous Waste No.	Chemical Abstracts Number	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P203	1646-88-4	Aldicarb sulfone
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H ₃ AsO ₄
P012	1327-53-3	Arsenic oxide As ₂ O ₃
P011	1303-28-2	Arsenic oxide As ₂ O ₅
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	122-09-8	Benzenethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P127	1563-66-2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-, methylcarbamate
P188	57-64-7	Benzoic acid, 2-hydroxy-, compd. With (3aS-cis)-1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethylpyrrolo[2,3-b]indol-5-yl methylcarbamate ester (1:1)
P001	¹ 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%.
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium powder
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine

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Hazardous Waste No.	Chemical Abstracts Number	Substance
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[methylamino]carbonyl oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide $\text{Ca}(\text{CN})_2$
P189	55285-14-8	Carbamic acid, [(dibutylamino)-thio]methyl-, 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
P191	644-64-4	Carbamic acid, dimethyl-, 1-[(dimethyl-amino)carbonyl]-5-methyl-1H-pyrazol-3-yl ester
P192	119-38-0	Carbamic acid, dimethyl-, 3-methyl-1-(1-methylethyl)-1H-pyrazol-5-yl ester
P190	1129-41-5	Carbamic acid, methyl-, 3-methylphenyl ester
P127	1563-66-2	Carbofuran
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P189	55285-14-8	Carbosulfan
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide $\text{Cu}(\text{CN})$
P202	64-00-6	m-Cumenyl methylcarbamate
P030		Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride
P033	506-77-4	Cyanogen chloride $(\text{CN})\text{Cl}$
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8 abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa-chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b] oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6a alpha,7beta, 7aalpha)-
P051	¹ 72-20-8	2,7:3,6-Dimethanonaphth [2,3-b] oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6 abeta,7beta, 7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P191	644-64-4	Dimetilan
P047	¹ 534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramidate, octamethyl-

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Hazardous Waste No.	Chemical Abstracts Number	Substance
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P185	26419-73-8	1,3-Dithiolane-2-carboxaldehyde, 2,4-dimethyl-, O- [(methylamino)-carbonyl]oxime
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P194	23135-22-0	Ethanimidothioc acid, 2-(dimethylamino)-N-[[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
P066	16752-77-5	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-,methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-19-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P198	23422-53-9	Formetanate hydrochloride
P197	17702-57-7	Formparanate
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P192	119-38-0	Isolan
P202	64-00-6	3-Isopropylphenyl N-methylcarbamate
P007	2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
P196	15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-
P196	15339-36-3	Manganese dimethyldithiocarbamate
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis[chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P198	23422-53-9	Methanimidamide, N,N-dimethyl-N'-[3-[[[(methylamino)-carbonyl]oxy]phenyl]-, monohydrochloride
P197	17702-57-7	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-[[[(methylamino)carbonyl]oxy]phenyl]-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10- hexachloro-1,5,5a,6,9,9a-hexahydro-,3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro-3a,4,7,7a-tetrahydro-

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Hazardous Waste No.	Chemical Abstracts Number	Substance
P199	2032-65-7	Methiocarb
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methylactonitrile
P071	298-00-0	Methyl parathion
P190	1129-41-5	Metolcarb
P128	315-8-4	Mexacarbate
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(CO) ₄ , (T-4)-
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cynaide Ni(CN) ₂
P075	¹ 54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO ₂
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide OsO ₄ , (T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P194	23135-22-0	Oxamyl
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	¹ 534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt(R)
P128	315-18-4	Phenol, 4-(dimethylamino)-3,5-dimethyl-, methylcarbamate (ester)
P199	2032-65-7	Phenol, (3,5-dimethyl-4-(methylthio)-, methylcarbamate
P202	64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate
P201	2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O- dimethyl

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Hazardous Waste No.	Chemical Abstracts Number	Substance
		ester
P071	298-00-0	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P204	57-47-6	Physostigmine
P188	57-64-7	Physostigmine salicylate
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide K(CN)
P099	506-61-6	Potassium silver cyanide
P201	2631-37-0	Promecarb
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P203	1646-88-4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino)carbonyl] oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	¹ 54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P204	57-47-6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-,methylcarbamate (ester), (3aS-cis)-
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide Ag(CN)
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide Na(CN)
P108	¹ 57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	¹ 57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide Tl ₂ O ₃
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-6	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Hazardous Waste No.	Chemical Abstracts Number	Substance
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P185	26419-73-8	Tirpate.
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide V ₂ O ₅
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	¹ 81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P205	137-30-4	Zinc, bis(dimethylcarbamodithioato- S,S')-
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide Zn(CN) ₂
P122	1314-84-7	Zinc phosphide Zn ₃ P ₂ , when present at concentrations greater than 10% (R,T)
P205	137-30-4	Ziram.

¹ CAS Number given for parent compound only.

**Protocol for Conducting Environmental Compliance Audits of Hazardous
Waste Generators under RCRA**

**Appendix E
Hazardous Waste Storage Incompatibility Chart**

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Hazardous Waste Storage Incompatibility Chart

Substances in bold have detailed example lists on the next page.

If the material contains:	It may not be stored with any of the following:
Acid (pH below 2.0)	Caustics (pH above 12.5) Reactive Metals Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons Reactive Organic Compounds and Solvents Spent Cyanide and Sulfide Solutions Oxidizers
Caustic (pH above 12.5)	Acid (pH below 2.0) Reactive Metals Alcohol Water Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons Reactive Organic Compounds and Solvents
Reactive Metals	Caustics Acids Alcohol Aldehydes Halogenated, Nitrated, or Unsaturated Hydrocarbons Reactive Organic Compounds and Solvents Oxidizers
Reactive Organic Compounds and Solvents	Caustics Acids Reactive Metals
Spent Cyanide and Sulfide Solutions	Acids
Oxidizers	Acetic or Other Organic Acids Concentrated Mineral Acids Reactive Metals Reactive Organic Compounds and Solvents Ignitable [Flammable/Combustible] Wastes*

* "Ignitable" in this context refers to substances with a flashpoint below 140× °F, and includes:

Combustible substances, with a flashpoint below 140× °F

Flammable substances, with a flashpoint below 100× °F.

Some Deadly Combinations

Acids + Oil or Grease = Fire Flammable Liquids + Hydrogen Peroxide = Fire/Explosion
 Acids + Caustics = Heat/Spattering Aluminum Powder + Ammonium Nitrate = Explosion
 Caustics + Epoxies = Extreme Heats Sodium Cyanide + Sulfuric Acid = Lethal Hydrogen Cyanide
 Chlorine Gas + Acetylene = Explosion Ammonia + Bleach = Noxious Fumes

In general: **Reactives** must be segregated from **Ignitables**

Acids must be segregated from **Caustics**

Corrosives should be segregated from **Flammables**

Oxidizers should be segregated from **EVERYTHING**

Many Corrosives are "Water Reactive"

Most **Organic Reactives** must be segregated from **Inorganic Reactives** (metals)

Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA

Ignitables (Flammables/Combustibles)	Corrosives	
	Acids	Caustics
Carburetor Cleaners Engine Cleaners Epoxy, Resins, Adhesives, and Rubber Cements Finishes Fuels Lacquers Paints Paint Thinners Paint Wastes Pesticides that contain Solvents (such as Methyl Alcohol, Ethyl Alcohol, Isopropyl Alcohol, Toluene, Xylene). Petroleum Solvents (Drycleaning Fluid) Solvents: Acetone Benzene Carbon Tetrachloride (Carbon Tet) Ethanol (Ethyl Alcohol) Ethyl Benzene Isopropanol (Isopropyl Alcohol) Kerosene (Fuel Oil #1) Methanol (Wood Alcohol) Methyl Ethyl Ketone (MEK) Petroleum Distillates Tetrahydrofuran (THF) Toluene (Methacide, Methylbenzene, Methylbenzol, Phenylmethane, Toluol, Antisal 1A) White Spirits (White Spirits, Mineral Spirits, Naptha) Xylene (Xylol) Stains Stripping Agents Varsol Waste Fuels Waste Ink Wax Removers Wood Cleaners	Battery Acids Degreasers and Engine Cleaners Etching Fluids Hydrobromic Acid Hydrochloric Acid (Muriatic Acid) Nitric Acid (<40%) (Aquafortis) Phosphoric Acid Rust Removers Sulfuric Acid (Oil of Vitriol)	Acetylene Sludge Alkaline Battery Acids Alkaline Cleaners Alkaline Degreasers Alkaline Etching Fluids Lime and Water Lime Wastewater Potassium Hydroxide (Caustic Potash) Rust Removers Sodium Hydroxide (Caustic Soda, Soda Lye)
	Reactive Metals	Reactive Organic Compounds and Solutions
	Lithium (Batteries) Aluminum Beryllium Calcium Magnesium Sodium Zinc Powder	Alcohols Aldehydes Chromic Acids (from chrome plating, copper stripping and aluminum anodizing) Cyanides (from electroplating operations) Hypochlorides (from water treatment plants, swimming pools, sanitizing operations) Organic Peroxides (including Hydrogen Peroxide) Perchlorates Permanganates Sulfides
	Oxidizers	
	Chlorine Gas Nitric Acid (>40%), aka Red Fuming Nitric Nitrates (Sodium Nitrate, Ammonium Nitrate) Perchlorates Perchloric Acid Peroxides Calcium Hypochlorite (>60%)	

**Protocol for Conducting Environmental Compliance Audits of
Hazardous Waste Generators under RCRA**

**Appendix F
User Satisfaction Questionnaire and Comment Form**

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User Satisfaction Survey
(OMB Approval No. 1860.01)
Expires 9/30/2001

We would like to know if this Audit Protocol provides you with useful information. This information will be used by EPA to measure the success of this tool in providing compliance assistance and to determine future applications and needs for regulatory checklists and auditing materials.

1. Please indicate which Protocol(s) this survey applies to:

Title: _____

EPA Document Number: _____

2. Overall, did you find the Protocol helpful for conducting audits:

Yes ____ No ____

If not, what areas of the document are difficult to understand?

3. How would you rate the usefulness of the Protocol(s) for conducting compliance audits on a scale of 1-5?

1 = not useful or effective, 3 = somewhat useful/effective, 5 = very useful/effective

Low		Medium		High	
1	2	3	4	5	Introduction Section
1	2	3	4	5	Key Compliance Requirements
1	2	3	4	5	Key Terms and Definitions
1	2	3	4	5	Checklist

4. What actions do you intend to take as a result of using the protocol and/or conducting the audit? Please check all that apply.

- ☐ Contact a regulatory agency
☐ Contact a compliance assistance provider (e.g., trade association, state agency, EPA)
☐ Contact a vendor
☐ Disclose violations discovered during the audit under EPA's audit Policy
☐ Disclose violations discovered under EPA's Small Business Policy
☐ Obtain a permit or certification
☐ Change the handling of a waste, emission or pollutant
☐ Change a process or practice
☐ Purchase new process equipment
☐ Install emission control equipment (e.g., scrubbers, wastewater treatment)
☐ Install waste treatment system (control technique)
☐ Implement or improve pollution prevention practices (e.g., source reduction, recycling)
☐ Improve organizational auditing program
☐ Institute an Environmental Management System
☐ Improve the existing Environmental Management System (e.g., improve training, clarify standard operating procedures, etc.)
☐ Other _____

5. What, if any, environmental improvements will result from the actions to be taken (check all that apply)?

- ☐ reduced emissions
- ☐ waste reduction
- ☐ reduced risk to human health and the environment due to better management practices
- ☐ reduced quantity and toxicity of raw materials
- ☐ water conservation
- ☐ energy conservation
- ☐ conserved raw materials
- ☐ conservation of habitat or other environmental stewardship practice: _____
- ☐ other: _____
- ☐ no environmental improvements are likely to result from the use of this document

6. How did you hear about this document?

- ☐ trade association
- ☐ state technical assistance provider
- ☐ EPA internet homepage or website
- ☐ document catalog
- ☐ co-worker or business associate
- ☐ EPA, state, or local regulator
- ☐ other (please specify) _____

7. In order to understand your response, we would like to know what function you perform with respect to environmental compliance and the size of your organization.

- | | | |
|---|---|---|
| ☐ <u>Company Personnel</u> | ☐ <u>Trade Association</u> | ☐ <u>Compliance Assistance</u> |
| ☐ Environmental Auditor | ☐ National | ☐ <u>Provider</u> |
| ☐ Corporate Level | ☐ Regional | ☐ EPA |
| ☐ Plant-level | ☐ Local | ☐ State |
| ☐ Legal | ☐ Manager | ☐ State Small Business |
| ☐ Environmental Manager | ☐ Information Specialist | ☐ Assistance |
| ☐ Operator - (e.g., | | ☐ Local |
| ☐ Pollution Control | | ☐ Other _____ |
| ☐ Equipment | | _____ |
| ☐ Other: _____ | | |
| _____ | | |

- | | |
|--|---|
| ☐ <u>Regulatory Personnel</u> | ☐ <u>Vendor/Consultant</u> |
| ☐ State | ☐ Environmental Auditor |
| ☐ Local | ☐ Environmental |
| ☐ EPA | ☐ Engineer/Scientist |
| | ☐ Attorney |

8. How many employees are located at your facility (including full-time contractors?)

☐ 0 - 9 ☐ 10 - 49 ☐ 50 - 100 ☐ 101-500 ☐ More than 500

Optional (Please Print)

Name: _____ Address: _____

Title: _____ City: _____ State: _____

Zip code: _____

Organization Name: _____

Phone: () _____ E-mail: _____

Please return all pages (1 thru 3) of this survey by folding pages 1 and 2 into page 3 and using the preprinted, pre-stamped address on the reverse side of page 3. If you have accessed this document electronically from one of EPA's web sites, simply e-mail this questionnaire to: satterfield.richard@epa.gov.

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