



# **Protocol for Conducting Environmental Compliance Audits of Treatment, Storage and Disposal Facilities under the Resource Conservation and Recovery Act**



**EPA Office of Compliance**

### Notice

This document has been developed to assist in conducting environmental audits. The use of this document should be restricted to environmental audits only. For example, areas such as safety, transportation, occupational health, and fire protection are mentioned solely for clarification purposes. It is a summary of environmental regulations under RCRA but it is not a substitute for a comprehensive knowledge of the regulations themselves. Any variation between applicable regulations and the summaries contained in this guidance document are unintentional, and, in the case of such variations, the requirements of the regulations govern.

This document is intended solely as guidance to explain performance objectives for environmental auditors. Following the steps set forth in this guidance generally should result in compliance with those aspects of the regulations that it covers. The U.S. Environmental Protection Agency (EPA) does not make any guarantee or assume any liability with respect to the use of any information or recommendations contained in this document. Regulated entities requiring additional information or advice should consult a qualified professional.

This guidance does not constitute rulemaking by the EPA and may not be relied on to create a substantive or procedural right or benefit enforceable, at law or in equity, by any person. EPA may take action at variance with this guidance and its internal procedures.

### Acknowledgements

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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. Recently, EPA has begun combining traditional enforcement activities with more innovative compliance approaches. In its Strategic Plan, the Agency recognizes the need to assist the regulated community by providing compliance assistance and guidance that will promote improved compliance and overall environmental performance (see Exhibit 1). EPA encourages regulated entities to recognize compliance as the floor, rather than the ceiling, of environmental performance by internalizing and implementing sound environmental practices. As part of that effort, EPA is 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.

Over the years, EPA has encouraged regulated entities to initiate environmental audit programs that support and document compliance with environmental regulations. EPA has developed this audit protocol to provide regulated entities with specific guidance in periodically evaluating their compliance with federal environmental requirements.

#### Exhibit 1 - EPA's Credible Deterrent Goal

Within its Strategic Plan, EPA has established a goal to ensure full compliance with the laws intended to protect human health and the environment. Within the framework of this goal, EPA's objectives are as follows:

- Identify and reduce significant non-compliance in high priority program areas, while maintaining a strong enforcement presence in all regulatory program areas,
- Promote the regulated communities' voluntary compliance with environmental requirements through compliance incentives and assistance programs.

### EPA's Policy on Environmental Audits

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.

**Exhibit 2 – EPA’s 1995 Audit Policy**

Under the final Audit/Self Policing Policy, EPA will not seek gravity-based penalties and will not recommend criminal prosecutions for companies that meet the requirements of the policy. Gravity-based penalties represent the “seriousness” or punitive portion of penalties over and above the portion representing the economic gain from non-compliance. The policy requires companies:

- to promptly disclose and correct violations,
- to prevent recurrence of the violation, and
- to remedy environmental harm.

The policy excludes:

- repeated violations,
- violations that result in serious actual harm, and
- violations that may present an imminent and substantial endangerment.

Corporations remain criminally liable for violations resulting from conscious disregard of their legal duties, and individuals remain liable for criminal wrongdoing. EPA retains discretion to recover the economic benefit gained as a result of noncompliance, so that companies will not be able to obtain an economic advantage over their competitors by delaying investment in compliance. Where violations are discovered by means other than environmental audits or due diligence efforts, but are promptly disclosed and expeditiously corrected, EPA will reduce gravity-based penalties by 75% provided that all of the other conditions of the policy are met.

As a result of EPA’s new audit policy, through March 1998, 247 companies have disclosed environmental violations at more than 760 facilities and EPA has reduced or waived penalties for 89 companies and 433 facilities.

The final Audit/Self-Policing Policy was published in the Federal Register on December 22, 1995 (60 FR 66706). It took effect on January 22, 1996. For further information, contact the Audit Policy Docket at (202) 260-7548 or call (202) 564-4187.

In 1995, EPA published "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations" which both reaffirmed and expanded its 1986 audit policy. The 1995 audit policy offers major incentives for entities to discover, disclose and correct environmental violations. Under the 1995 policy, EPA will not seek gravity-based penalties or recommend criminal charges be brought for violations that are discovered through an “environmental audit” (as defined in the 1986 audit policy) or a management system reflecting “due diligence” and that are promptly disclosed and corrected, provided that other important safeguards are met (see Exhibit 2). These safeguards protect health and the environment by precluding policy relief for violations that cause serious environmental harm or may have presented imminent and substantial endangerment, for example.

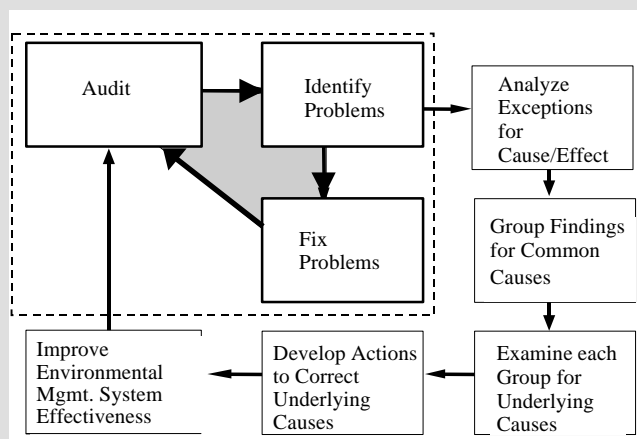
### Purpose of the Protocols for Conducting Environmental Compliance Audits

This protocol, which is part of a set containing other area or statutory specific audit protocols, is a tool to assist you in conducting environmental audits, which should inform you whether your facility is in compliance with federal regulations. EPA has developed these audit protocols to assist and encourage businesses and organizations to perform environmental audits and disclose violations in accordance with EPA's audit policy. The audit protocols are intended to promote consistency among regulated entities when conducting environmental audits and to ensure that audits are conducted in a thorough and comprehensive manner.

Each protocol provides guidance on key requirements, defines regulatory terms, and gives an overview of the federal laws affecting a particular environmental management area. It also includes a checklist containing detailed procedures for conducting a review of facility conditions. In order to use these documents effectively, you should be familiar with basic environmental auditing practices and the relevant environmental regulations under Title 40 of the Code of Federal Regulations (CFR). The audit protocols are not intended to be exclusive or limiting with respect to procedures that may be followed. EPA recognizes that other audit approaches and techniques may be effective in identifying and evaluating a facility's environmental status and in formulating recommendations to correct observed deficiencies.

These protocols can be used as a basis to implement, upgrade, or benchmark environmental management activities. The protocols are a management tool for measuring and improving environmental performance by correcting deficiencies uncovered by the audit (see Exhibit 3). This process is perhaps 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 those breakdowns in management oversight, information exchange, and evaluation that allow environmental problems to recur. Thus, while an organization may have developed an excellent record of dealing with a symptom, such as spill response, the underlying problem or "root cause" has not been addressed. Furthermore, identifying the root cause of an audit finding can mean identifying not only the failures that require correction but also the successes. 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.

**Exhibit 3 - Corrective Action Model**



### How to Use This Protocol

To conduct effective compliance audits, the auditor or audit team needs to possess sound working knowledge of the operations and processes to be reviewed, the relevant regulations that apply to a given facility, and of acceptable auditing practices. The audit protocol should be used as a planning tool to assist the auditor in understanding the requirements for conducting a comprehensive audit. This document will provide the user with a generic audit approach to regulatory issues that may require closer examination. Once the general issues are identified through the use of this protocol, the auditor should perform a more detailed investigation to determine the specific area of noncompliance to be corrected. The auditor should review federal, state and local environmental requirements and annotate the protocol, as required, to include other applicable requirements not included in the protocol.

The auditor also should determine which regulatory agency has authority for implementing an environmental program so that the proper set of regulations is consulted. State programs that implement federally mandated programs may contain more stringent requirements. This protocol should not be used as a substitute for the applicable regulations.

The collective set of the audit protocols developed by EPA is 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. Each protocol is not intended to be an exhaustive set of procedures; rather it is 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 provide an effective means of identifying and assessing facility environmental status and in developing corrective actions.

Each protocol contains the following information:

- List of acronyms and abbreviations used in the document,
- Applicability - provides guidance on the major activities and operations included in the protocol and a brief description of how the protocol is applied,
- Review of federal legislation - identifies key issues associated with the subject protocol area,
- State and local regulations - identifies typical issues normally addressed in state and local regulations but does not present individual state/local requirements,
- Key compliance requirements - summarizes the overall thrust of the regulations for that particular protocol,
- Key compliance definitions - defines important terms,
- Typical records to review - highlights documents, permits and other pertinent paperwork that should be reviewed by an auditor and reconciled against regulatory requirements,
- Typical physical features to inspect - highlights pollution control equipment, manufacturing and process equipment and other areas that should be visited and evaluated during an audit,
- Index for checklist users - outlines different areas of the checklist that may pertain to the facility being audited,
- Checklist - matches the regulatory requirements with the tasks that should be accomplished by the auditor, and
- Appendices - supporting information for the checklist (e.g., regulatory deadlines, lists of contaminants, wastes, and required testing procedures). Note: information contained in the appendices is dated and should be verified with a current version of the applicable federal regulations.

The checklist delineates 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. Good management practices are distinguished from regulatory requirements in the checklist by the acronym (MP) and are printed in italics. The regulatory citation is given in parentheses after the requirement. 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.

EPA is presently in the process of developing a series of audit protocol application guides to serve as companion documents to the set of protocols. The application guides will provide the auditor with a matrix that identifies and cross-references certain site-specific activities or unit operations with particular environmental aspects of that activity. For example, managing hazardous waste containers is a site-specific activity with environmental concerns, such as possible releases to air, and water, that may require additional review through auditing. By using the application guide the user can identify facility specific practices that require more in-depth review. In addition, the application guides will also direct the user to specific protocols and sections (e.g., checklist items) of the protocol to determine areas that are regulated and require auditing.

### List of Acronyms and Abbreviations

Btu	British thermal unit
CAA	Clean Air Act
CAMU	Corrective action management unit
CCW	Constituent concentrations in wastes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund)
CESQG	Conditionally exempt small quantity generator
CFR	Code of Federal Regulations
cm	Centimeter
CO	Carbon monoxide
CQA	Construction quality assurance
CWA	Clean Water Act
DOT	Department of Transportation
DRE	Destruction and removal efficiency
dscm	Dry standard cubic meter
EPA	Environmental Protection Agency
FR	Federal Register
ft.	Feet/Foot
g	Gram
gal.	Gallon
h	Hour
ha	Hectare
HCl	Hydrogen chloride
HOC	Halogenated organic compound
hr.	Hour
HSWA	Hazardous and Solid Waste Amendments
in.	Inch
kg	Kilogram
km	Kilometer
L	Liter
lb.	Pound
LQG	Large quantity generator
m	Meter
meq	Milliequivalent
mg	Milligram
Mg	Megagram
mi.	Mile



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

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MJ	Megajoule
mm	Millimeter
MP	Management practice
NOV	Notice of violation
NRC	National Response Center
OB/OD	Open burning/open detonation
PCB	Polychlorinated biphenyls
PL	Public Law
POHC	Principal organic hazardous constituent
POTW	Publicly owned treatment works
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
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
TOC	Total organic carbon
TSD	Treatment, storage, and disposal
TSDF	Treatment, storage, and disposal facility
TSS	Total suspended solids
TU	Temporary unit
UIC	Underground injection control
U.S.	United States
USC	United States Code
UST	Underground storage tank
VO	Volatile organic
VOC	Volatile organic compound
yr.	Year

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## Section II Audit Protocol

### Applicability

This protocol applies to facilities that store, treat, or dispose of hazardous waste. Not all checklist items will be applicable to a particular facility. Guidance is provided on the checklists to direct the auditor to the regulations concerning 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 local regulations in order to perform a comprehensive audit.

### Review of Federal Legislation

#### 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 Environmental Protection Agency (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.

RCRA also governs the management of used oil. Regulations promulgated under RCRA (40 CFR 279) establish management standards for used oil generators, collection center aggregation points, transporters, transporter facilities, used oil processors, rerefineries, used oil burners who burn off-specification used oil for energy recovery, used oil fuel marketers, and for use and disposal of oil used as a dust suppressant.

The 1984 Hazardous and Solid Wastes Amendments (HSWA) greatly expanded the requirements and coverage of RCRA. A significant provision of HSWA is the prohibition on the land disposal of hazardous waste. The land disposal restrictions (LDRs) promulgated by 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 EPA in a separate protocol titled *Protocol for Conducting Environmental Compliance Audits of Underground and Above Ground Storage Tanks* and is expected to be available in 1999.

After assessing air emissions at TSDFs, the EPA ascertained that volatile organic chemicals (VOCs) adversely affect human health and the environment. In response, EPA promulgated three subparts of RCRA rules designed to control VOCs. In 1990, 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 and Local Regulations

RCRA encourages states to develop their own parallel regulatory programs for hazardous waste management. This includes the enacting of statutory authority and operating hazardous waste regulatory programs. Many states have met the requirements established by 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 EPA regulations by reference or have promulgated regulations that are identical to the 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 and tailor this checklist accordingly.

### Key Compliance Requirements

#### Financial Responsibility

Owners/operators of hazardous and solid waste landfills have financial assurance responsibilities as defined in Subpart H of 40 CFR Parts 258, 264, and 265. A written estimate of costs for closure, post-closure care, liability and sudden and non-sudden occurrences is required. These estimates are to be updated annually; some states may require a more frequent update.

#### Permitted TSDF Requirements

The operation of a TSDF is subject to regulation and permitting under federal and state regulations. These regulations are both administrative as well as technical in nature. The administrative standards require that various plans be developed to ensure that emergencies can be dealt with, waste received is properly identified, and operating personnel are adequately trained to operate the TSDF and respond to emergencies. These administrative standards also include requirements that the TSDF be inspected routinely, records of operations be compiled and maintained, and reports of both routine and contingency operations be made to the applicable regulatory agency. The administrative standards also require that a plan for ceasing operations and closing the TSDF be developed, kept on-hand, and updated frequently.

The technical standards which are applicable to TSDFs fall into two classes: general standards which apply to all TSDFs, and specific standards which apply to various types of facilities (e.g., container storage areas, tanks, containment buildings, surface impoundments, waste piles, land treatment facilities, incinerators, landfills, thermal treatment facilities, and chemical, physical, biological treatment facilities).

Administrative and technical standards are applied to a particular facility through a RCRA permit issued to a facility. New TSDFs requiring a permit must submit a two part permit application. Part A is a short, standard form that collects general information about the facility, while Part B of the application is much more extensive and requires the facility to supply detailed and highly technical information. This submission must be made at

least 180 days prior to the date on which physical construction is expected to start. Once issued, RCRA permits are valid up to 10 years.

TSDFs fall into two categories: interim status facilities and permitted facilities. Interim status regulations (40 CFR Part 265) apply to facilities that are eligible to operate under a Part A permit while their Part B permit application is being reviewed. Any facility that is in existence on the effective date of the statutory or regulatory amendments that render the facility subject to permitting requirements is eligible for interim status, provided that the facility notifies EPA of hazardous waste activity and complies with application requirements under 40 CFR Part 270.10. Interim status standards are “good housekeeping” types of requirements that must be addressed until a permit is issued. TSDF permit standards (40 CFR Part 264) are facility-specific requirements that are incorporated into a TSDF permit.

### **TSDF Requirements - Subpart CC**

Subpart CC applies to tanks, surface impoundments, containers, and certain miscellaneous units that:

- are not expressly exempted from the rule;
- are subject to permit standards (40 CFR 264), interim status standards (40 CFR 265), or less-than 90-day LQG standards (40 CFR 262.34 (a)(1)(i) or (ii) for tanks and containers); and
- manage hazardous waste that have an average volatile organic concentration at the point of waste origination equal to or greater than 500 parts per million by weight (ppmw).

### **Transport Requirements**

Containers of hazardous waste shipped offsite must be labeled to identify the waste and its hazard class.

Shipments from the facility to an off-site TSDF must also be accompanied by manifests and are subject to the full transportation requirements as stipulated in Department of Transportation (DOT) hazardous materials transportation regulations.

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 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 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).

### **Active Life**

The period from the initial receipt of hazardous waste at the facility until the regulatory agency receives certification of final closure (40 CFR 260.10).

### **Active Portion**

That portion of a facility where treatment, storage, or disposal operations are being or have been conducted and which is not a closed portion (40 CFR 260.10).

### **Acute Hazardous Waste**

Any waste listed under 40 CFR 261.31 through 261.33(c) with a hazard code of H. These include 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).

### **Aquifer**

A geologic formation, 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).

### **Boiler**

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

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

### **Certification**

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

### **Characteristics of Hazardous Waste**

The characteristics of ignitability, corrosivity, reactivity, and toxicity, which identify a waste as hazardous waste (40 CFR 261.20 through 261.24).

### **Closed Portion**

The portion of a facility that has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).

### **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 264.1103 and 40 CFR 265.1100 through 265.1103 (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).

### **Corrective Action Management Unit (CAMU)**

An area within a facility that is designated by the regulatory agency under 40 CFR 264 Subpart S, for the purpose of implementing corrective action requirements under 264.101 and RCRA section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility (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).

### **Designated Facility**

A hazardous waste TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit, interim status, or be regulated under specific recycling requirements (40 CFR 260.10).

### **Detonation**

An explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 km/s at sea level) (40 CFR 265.382).

### **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).

### **Do-it-Yourselfer Used Oil Collection Center**

Any site or facility that accepts/aggregates and stores used oil collected only from household do-it-yourselfers.

### **Elementary Neutralization Unit**

A device used for neutralizing only those hazardous wastes that exhibit corrosivity (as defined in 40 CFR 261.22) or are listed in Subpart D of 40 CFR 261 only because of corrosivity and that meets the definition of tank, tank system container, transport vehicle, or vessel in 40 CFR 261.10 (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 EPA to each hazardous waste listed in Part 261, Subpart D and to each characteristic identified in Part 261, Subpart C (40 CFR 260.10).

### **EPA Identification Number**

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

### **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).

### **Existing Portion**

The land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed prior to the issuance of a permit (40 CFR 260.10).

### **External Floating Roof**

A pontoon or double-deck type floating roof that rests on the surface of a hazardous waste being managed in a tank that has no fixed roof (40 CFR 265.1081).

### **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).

### **Final Closure**

The closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR Parts 264 and 265 are no longer conducted at the facility unless subject to the provisions of §262.34 (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 material managed in the unit (40 CFR 265.1081).

### **Floating Membrane Cover**

A cover consisting of a synthetic flexible membrane material that rests upon and is supported by the hazardous waste being managed in a surface impoundment (40 CFR 265.1081).



### **Floating Roof**

A cover consisting of a double deck, pontoon single deck, or internal floating cover which rests upon and is supported by the material being contained, and is equipped with a continuous seal (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).

### **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 A (40 CFR 268.2).

### **Hazardous Debris**

Debris that contains a hazardous waste or that exhibits a characteristic of hazardous waste (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 include 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°C, the total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20°C 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 a material for which both of the following conditions apply:

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

### **Incinerator**

An enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace (40 CFR 260.10).

### **Incompatible Waste**

A hazardous waste that is unsuitable for:

- 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
- 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).

### **Industrial Furnace**

Any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns, phosphate kilns, coke ovens, blast furnaces, smelting, melting and refining furnaces, titanium dioxide chloride process oxidation reactors, methane reforming furnaces, pulping liquor recovery furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, halogen acid furnaces, and other devices designated by the administrator (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**

Includes, but is not limited to, any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome 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 land treatment facility, a surface impoundment, an underground injection well, a salt bed formation, an underground mine, or a cave (40 CFR 260.10).

### **Landfill Cell**

A discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes. Examples include trenches and pits (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).

### **Liner**

A continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, which restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (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 EPA 12-digit 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).

### **Miscellaneous Unit**

A hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR 146, containment building, or unit eligible for a research development and demonstration permit under 40 CFR 270.65 (40 CFR 260.10)

### **Movement**

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

### **New Hazardous Waste Management Facility**

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

### **No Detectable 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 wastewaters).

### **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 is the exporting country, notifier is interpreted to mean a person domiciled in the U.S. (40 CFR 262.81).

### **OECD Country**

Designated member countries of the Organization for Economic Cooperation 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).

### **Onsite**

On the same or geographically continuous property which may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way (40 CFR 260.10).

### **Open Burning**

Combustion of any material without the following characteristics (40 CFR 260.10):

- Control of combustion air to maintain adequate temperature for efficient combustion,
- Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion,
- Control of emission of the gaseous combustion products.

### **Partial Closure**

The closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems) while other units of the same facility continue to operate (40 CFR 260.10).

### **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 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).

### **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, or 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).

### **Pollution Prevention**

The term includes equipment or technology modifications; process or procedure modifications; reformulation or redesign of products; substitution of raw materials; and improvements in housekeeping, maintenance, training or inventory control as defined in the Pollution Prevention Act.

### **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).

### **Pump Operating Level**

A liquid level proposed by the owner or operator and approved by the regulatory agency based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).

### **Qualified Groundwater Scientist**

A scientist or engineer who has received a baccalaureate or postgraduate 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 that individual to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).

### **RCRA Permit Programs**

RCRA regulations under 40 CFR 258.50-258.58 outline the requirements of a groundwater monitoring and corrective action program. RCRA regulations under 40 CFR 264 and 265 require that any facility that treats,

stores or disposes of hazardous waste must apply to the state for an operating permit. If the state has not yet given final approval or denial of the permit application, then the facility is considered an “interim status” facility, and the temporary permit issued by the state is called a “Part A permit.” If a final permit, called a “Part B permit” has been issued, then the facility is considered a Treatment, Storage, and Disposal Facility (TSDF). The facility RCRA permit, whether it is Part A or B, will have requirements in it for groundwater monitoring and those requirements tend to differ from state to state.

In the federal regulations, there are basic requirements for both interim status facilities and TSDFs including the development and maintenance of a groundwater monitoring program. The programs generally have different levels of requirements depending on the potential level of groundwater contamination at the facility, and proximity to sensitive receptors.

### **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).

### **Regional Administrator**

The Regional Administrator for the EPA Region in which the facility is located, or his designee.

### **Replacement Unit**

A landfill, surface impoundment or waste pile unit (40 CFR 260.10) from which all or substantially all of the waste is removed, and that is subsequently reused to treat, store, or dispose of hazardous waste. This does not apply to a unit from which waste is removed during closure, if the subsequent reuse solely involves the disposal of waste from that unit and other closing units or corrective action areas at the facility, in accordance with an approved closure plan or EPA or state approved corrective action.

### **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).

### **Re-Refining Distillation Bottoms**

The heavy fraction produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedstock.

### **Restricted Wastes**

The RCRA hazardous wastes that are subject to the LDR program. A waste is restricted if 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 from any part of a facility (40 CFR 260.10).

### **Run-on**

Any rainwater, leachate, or other liquid that drains 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).

### **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 TSDFs. 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).

### **Surface Impoundment**

A facility or part of a facility that is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials designed to hold an accumulation of liquid wastes or wastes containing free liquids and which is not an injection well (40 CFR 260.10).

### **Thermal Treatment**

The treatment of hazardous waste in a device that uses elevated temperature as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste (40 CFR 260.10).

### **Totally Enclosed Treatment Facility**

A facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment. An example is a pipe in which waste acid is neutralized (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).

### **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 offsite 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 (40 CFR 260.10):

- Whether the waste is amenable to the treatment process,
- What pretreatment (if any) is required,
- The optimal process conditions needed to achieve the desired treatment,

- The efficiency of a treatment process for a specific waste or wastes, or
- The characteristics and volumes of residuals from a particular treatment process.

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 such waste, or so as to recover energy or material resources from the waste, or so as to render such 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).

### **Treatment Zone**

A soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized (40 CFR 260.10).

### **Underground Injection**

The subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension (40 CFR 260.10).

### **Unsaturated Zone or Zone of Aeration**

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

### **United States**

The 50 states, the District of Columbia, the Commonwealth of Puerto Rico, the U.S. 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).

### **Volatile Organic 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(b) 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 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

- Hazardous substance spill control and contingency plan;
- Land disposal restriction certifications;
- Emergency plan documents;
- Placarding of hazardous waste and hazardous materials;
- Location map of TSDF;
- Employee training documentation;
- Spill records;
- Permits, if issued, otherwise Part A Application;
- Unmanifested waste reports;
- TSDF audit reports (inspection log);
- Waste analysis plan(s);
- Operating record;
- Groundwater monitoring records and annual reports (where required);
- Biennial reports, closure/post-closure plans, closure/post-closure notices (where applicable); and
- Other documents as required by the permit

If the TSDF is also a generator, refer to the protocol for hazardous waste generators for applicable requirements.

### **Typical Physical Features to Inspect**

- Disposal sites;
- Incinerators;
- Vehicles used for transport;
- Container storage areas and containment buildings;
- Surface impoundments;
- Marshaling facilities;
- Fuel burners;
- Site security measures (e.g., door locks, fencing, etc.);
- Posted signs;
- Communication equipment; and
- Bulk storage tank areas.

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## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

### Checklist

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<b>All Facilities</b>	
DF.1. The current status of any ongoing or unresolved Consent Orders, Compliance Agreements, Notices of Violation (NOVs), or equivalent state enforcement actions should be examined.	<p>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.</p> <p>For those open items, indicate what corrective action is planned and milestones established to correct problems.</p>
DF.2. Facilities are required to comply with all applicable federal regulatory requirements not contained in this checklist.	<p>Determine if any new regulations have been issued since the finalization of the guide. If so, annotate checklist to include new standards.</p> <p>Determine if the facility has activities or facilities which are federally regulated, but not addressed in this checklist.</p> <p>Verify that the facility is in compliance with all applicable and newly issued regulations.</p>
DF.3. Facilities are required to comply with state and local regulations concerning hazardous waste management.	<p>Verify that the facility is abiding by state and local hazardous waste requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies where approved.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> <li>- Additional manifesting requirements</li> <li>- More frequent reporting requirements</li> <li>- Transportation</li> <li>- Identification of special waste or waste categories</li> <li>- Regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries</li> <li>- Small and very small quantity generator requirements</li> <li>- RCRA permitting of oil/water separators</li> <li>- Disposal requirements</li> <li>- Construction and operation of storage and disposal facilities</li> <li>- Satellite accumulation point requirements</li> <li>- Container marking and labeling requirements.)</li> </ul> <p>Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.</p>
DF.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>	<p><i>Verify that specific individuals have been designated responsible for hazardous waste storage areas.</i></p> <p><i>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.</i></p> <p><i>Verify that required hazardous waste handling training is in personnel file.</i></p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<b>Transportation of Hazardous Waste</b>	
DF.5. 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)).	<p>(NOTE: These requirements do not apply to the onsite transportation of hazardous waste. Nor do they apply to CESQGs.)</p> <p>Determine if the facility transports hazardous waste offsite using their own vehicles or a contractor.</p> <p>Verify that the transporter has an EPA identification number.</p> <p>Verify that all waste accepted, transported, or offered for transport is accompanied by a manifest.</p> <p>Verify that prior to transport, the transporter signs and dates the manifest and returns a copy to the generator prior to leaving the facility.</p> <p>Verify that the transporter retains a copy of the manifest after delivery.</p> <p>Verify that manifests are kept on file for three years.</p> <p>(NOTE: Special issues involved in the transportation of hazardous waste by air, rail or water are not addressed in this guide.)</p>
DF.6. Before transporting hazardous waste or offering hazardous waste for transportation offsite 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).	<p>Determine what pretransport procedures for hazardous waste are used.</p> <p>Inspect a sample of containers awaiting transport to verify that containers are properly constructed and contain no leaks, corrosion, or bulges.</p> <p>Examine end-seams for minor weeping that indicates drum failure.</p> <p>Verify that labeling and marking on each container is compatible with the manifests.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- "HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency."</li> <li>- Generator's name and address</li> <li>- Manifest Document Number ____.</li> </ul> <p>Verify that proper DOT placarding is available for the transporter.</p>
DF.7. Transporters of waste offsite must take immediate notification and clean-up action if a discharge occurs during transport (40 CFR 263.30 and 263.31).	<p>Verify that transport operators have instructions to notify local authorities and take clean-up action so that the discharge does not present a hazard.</p> <p>Verify that transporters give notice to the NRC and report in writing as required by 49 CFR 171.15 and 49 CFR 171.16.</p>
DF.8. <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>	<p><i>Determine if procedures exist to manage movement of hazardous wastes throughout the facility.</i></p> <p><i>Determine if drivers are trained in spill control procedures.</i></p> <p><i>Determine if provisions have been made for securing wastes in vehicles during transport.</i></p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.9. 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).	<p>Determine if the facility has a transfer facility.</p> <p>Verify the following:</p> <ul style="list-style-type: none"> <li>- Transfer facility storage is for 10 days or less</li> <li>- DOT packaging requirements are met</li> <li>- Shipments are manifested and manifests accompany shipments</li> <li>- Storage is consistent with good management practices.</li> </ul> <p>(NOTE: Storage for more than 10 days will require a TSDF permit.)</p>
<b>All Treatment, Storage and Disposal Facilities (TSDFs)</b>	
<i>General</i>	
DF.10. All permitted TSDFs are required to meet the hazardous waste management requirements outlined in their permit (40 CFR 270.10 and 270.30 through 270.33).	<p>Determine if the facility is operating as a permitted disposal facility.</p> <p>Verify that the TSDF is not treating, storing, or disposing of waste other than those listed in their permit or for interim status facilities, their permit application.</p> <p>Verify that the TSDF is meeting the requirements outlined in the permit for the following:</p> <ul style="list-style-type: none"> <li>- Reporting and recordkeeping</li> <li>- Compliance schedules</li> <li>- Allowable wastes</li> <li>- Allowable activities</li> <li>- Corrective action, if applicable.</li> </ul>
DF.11. All TSDFs which have Interim Status are required to meet the hazardous waste management requirements of 40 CFR 265 and apply for a Part B permit (40 CFR 270.71 and 279.73(g)).	<p>Determine if the TSDF is an Interim Status disposal facility.</p> <p>Verify that the TSDF is only treating, storing, or disposing of wastes listed in their Part A application.</p> <p>Verify that the TSDF is meeting all the requirements for Interim Status TSDFs outlined in 40 CFR 265.</p> <p>Verify that the TSDF has submitted a Part B permit application.</p>
DF.12. All TSDFs that store, treat, transport, handle, or dispose of hazardous wastes must obtain an EPA identification number (40 CFR 264.11 and 265.11).	<p>Examine documentation from EPA for the facility's TSDF identification number.</p> <p>Verify that the correct identification number is used on all appropriate documentation (i.e., manifests).</p>
DF.13. TSDFs must control entry to the active portion of the facility (40 CFR 264.14 and 265.14).	<p>Verify that the following items are in place at the TSDF, unless the TSDF can demonstrate that physical contact with the waste, structures, and equipment within the active portion of the TSDF will not injure unknowing or unauthorized person or livestock, and that disturbance of the waste or equipment will not cause a RCRA violation:</p> <ul style="list-style-type: none"> <li>- A 24-hour surveillance system (e.g., television monitors, surveillance by guards), or a fence or natural barrier with controlled entry (an attendant, television monitors, locked entrances, or controlled roadway access), and</li> <li>- Signs with the words "Danger-Unauthorized Personnel Keep Out" posted at each entrance and other locations as appropriate and signs are legible from 25 ft. (7.62 m).</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.14. All TSDFs must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste or hazardous constituents (40 CFR 264.30 through 264.37 and 265.30 through 265.37).	<p>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):</p> <ul style="list-style-type: none"> <li>- Internal communications or alarm system capable of providing immediate emergency instruction to facility personnel</li> <li>- A telephone or hand-held two way radio, capable of summoning emergency assistance</li> <li>- Portable fire extinguishers and fire control equipment, including special extinguishing equipment (foam, inert gas, or dry chemicals)</li> <li>- Spill control equipment</li> <li>- Decontamination equipment</li> <li>- 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.</li> </ul> <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency.</p> <p>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.</p> <p>Review procedures employed by facility management to familiarize police, fire departments, and emergency response teams 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.</p> <p>Review procedures employed by facility management to familiarize the hospital with the site and the types of injuries that could result in an emergency as appropriate for the type of waste and potential need for such services.</p> <p>(NOTE: Where state or local authorities decline to enter into arrangements, the facility must document this refusal in the operating record.)</p>
DF.15. All TSDFs must take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes (40 CFR 264.17(a) and 265.17(a)).	<p>Verify from the operating record and/or observation that the following safe management practices are used:</p> <ul style="list-style-type: none"> <li>- Wastes are separated and protected from sources of ignition or reaction</li> <li>- Smoking and open flame is confined to specially designated locations when ignitable or reactive wastes is handled</li> <li>- No Smoking signs are used when necessary.</li> </ul>
DF.16. TSDFs that treat, store or dispose of ignitable, reactive, or incompatible wastes must meet specific prevention standards (40 CFR 264.17(b) and 265.13(b)).	<p>Verify from the operating record and/or observation that during treatment, storage, or disposal of ignitable or reactive wastes, or during mixing of incompatible wastes and other materials, precautions are taken to prevent the following reactions:</p> <ul style="list-style-type: none"> <li>- Generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- Production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment</li> <li>- Production of uncontrolled flammable fumes or gases sufficient to pose a risk of fire or explosions</li> <li>- Damage the structural integrity of the device or facility</li> <li>- Threats to human health or the environment through other like means.</li> </ul>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.17. A detailed chemical and physical analysis of a representative sample, as specified in the TSDF's waste analysis plan, of the hazardous waste must be obtained prior to treatment, storage or disposal (40 CFR 264.13(a) and 265.13(a)).	<p>Verify that a detailed physical and chemical analysis is done of a representative sample of the wastes prior to treatment, storage, or disposal.</p> <p>(NOTE: Prior studies or published information may be included as a part of the analysis.)</p> <p>Verify that the analysis is repeated as necessary to ensure that it is accurate and up to date, specifically when the process or operation generating the waste has changed.</p> <p>Verify that for off-site facilities, the TSDF ensures that the waste matches the identity of the waste designated on the manifest.</p>
DF.18. Each TSDF must have an emergency coordinator on the TSDF premises or on call at all times (40 CFR 264.55 and 265.55).	<p>Verify that, at all times, there is at least one employee at the TSDF or on call with responsibility for coordinating all emergency response measures.</p> <p>Verify that the emergency coordinator is thoroughly familiar with the TSDF, 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.</p>
DF.19. TSDF emergency coordinators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 264.56(a) through 264.56(i) and 265.56(a) through 265.56(i)).	<p>Verify that the emergency coordinator is required to follow these emergency procedures:</p> <ul style="list-style-type: none"> <li>- Immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties</li> <li>- Identify the character, exact source, amount, and a real extent of any released materials</li> <li>- 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.)</li> <li>- 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: <ul style="list-style-type: none"> <li>-- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases</li> <li>-- collect and contain the released waste</li> <li>-- remove or isolate containers when necessary</li> </ul> </li> <li>- Monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate</li> <li>- Provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material immediately after emergency</li> <li>- Ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed</li> <li>- Ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed</li> <li>- Notify EPA, and appropriate state and local authorities that the facility is in compliance with 40 CFR 265.56(h) before operation resumes.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Personnel Training</i>	
DF.20. All TSDF personnel who handle hazardous waste must meet certain training requirements (40 CFR 264.16(a) through 264.16(c) and 265.16(a) through 265.16(c)).	<p>Ensure that the facility personnel complete classroom instruction or on-the-job training as set forth below:</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Waste turn in procedures</li> <li>- Identification of hazardous wastes</li> <li>- Container use, marking, labeling and on-site transportation</li> <li>- Manifesting and off-site transportation</li> <li>- 90 day storage area management</li> <li>- Personal health and safety and fire safety</li> </ul> <p>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):</p> <ul style="list-style-type: none"> <li>- Key parameters for automatic waste feed cut-off systems</li> <li>- Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment</li> <li>- Operation of communications and alarm systems</li> <li>- Response to fire or explosion</li> <li>- Response to groundwater contamination incidents</li> <li>- Response to leaks or spills</li> <li>- Shutdown of operations.</li> </ul> <p>Verify that new employee training is completed within six months of employment/ assignment.</p> <p>Verify that an annual review of initial training is provided.</p> <p>Verify that employees do not work unsupervised until training is completed.</p> <p>Verify specifically that waste storage area managers and hazardous waste handlers have been trained.</p>
DF.21. Training records must be maintained for all TSDF staff who manage hazardous waste (40 CFR 264.16(d), 264.16(e), 265.16(d) and 265.16(e)).	<p>Verify through examination that training records include the following:</p> <ul style="list-style-type: none"> <li>- Job title and description for each employee by name</li> <li>- Written description of how much training each position will obtain</li> <li>- Documentation of training received by name.</li> </ul> <p>Determine if training records are retained for three years for former employees.</p> <p>Determine if training records on current employees are maintained. (NOTE: Training records on current employees must be maintained until the closure of the facility).</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Containers</i>	
DF.22. Empty containers at TSDFs previously holding hazardous wastes must meet the regulatory definition of empty before they are exempted from hazardous waste requirements (40 CFR 261.7).	<p>Verify that for containers or inner liners holding hazardous wastes:</p> <ul style="list-style-type: none"> <li>- Wastes are removed that can be removed using practices commonly employed to remove materials from that type of container (e.g., pouring, pumping, aspirating)</li> <li>- No more than 2.5 cm (1 in.) of residue remains, or</li> <li>- 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</li> <li>- 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.</li> </ul> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmospheric.</p> <p>Verify that for a container or inner liner that held an acute hazardous waste listed in Appendix C, one of the following is done:</p> <ul style="list-style-type: none"> <li>- It is triple rinsed</li> <li>- It is cleaned by another method identified through the literature or testing as achieving equivalent removal</li> <li>- The inner liner is removed.</li> </ul>
DF.23. Containers used to store hazardous waste at TSDFs must be in good condition and not leaking (40 CFR 264.171 and 265.171).	<p>Verify that containers are not leaking, bulging, rusting, damaged or dented.</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary.</p>
DF.24. Containers used at TSDFs must be made of or lined with materials compatible with the waste stored in them (40 CFR 264.172 and 265.172).	Verify that containers are compatible with waste, in particular, check that strong caustics and acids are not stored in metal drums.
DF.25. Containers at TSDFs must be closed during storage and handled in a safe manner (40 CFR 264.173 and 265.173).	<p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs and look for open funnels).</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak.</p>
DF.26. The handling of incompatible wastes, or incompatible wastes and materials in containers at TSDFs must comply with safe management practices (40 CFR 264.17(b), 264.177, 265.17(b) and 265.177).	<p>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:</p> <ul style="list-style-type: none"> <li>- Generate extreme heat or pressure, fire, or explosion, or violent reaction</li> <li>- Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health</li> <li>- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions</li> <li>- Damage the structural integrity of the device or TSDF or by any other like means threaten human health.</li> </ul> <p>(NOTE: Incompatible wastes as listed in Appendix D should not be placed in the same containers.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material.</p> <p>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.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.27. Containers of hazardous waste at TSDFs should be managed in accordance with specific management practices (MP).	<p>Verify the following by inspecting the container storage areas:</p> <ul style="list-style-type: none"> <li>- Containers are not stored more than two high and have pallets between them</li> <li>- Containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system)</li> <li>- At least 3 ft. (0.91 m) of aisle space is provided between rows of containers.</li> </ul>
DF.28. Containers with design capacities greater than 0.1 m <sup>3</sup> [~26 gal.] and less than or equal to 0.46 m <sup>3</sup> [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 265.1086(a) through 265.1086(b)(1)(i), 265.1087(a) through 265.1087(b)(1)(i) and 265.1087(c)).	<p>(NOTE: The requirements of 40 CFR 264.1086 and 265.1087 do not apply to containers in which all the hazardous waste entering the container meets one of the following (40 CFR 265.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the regulatory agency for the waste in 268.42(a) or an equivalent method approved by the regulatory agency pursuant to 268.42(b).)</li> </ul> <p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 264.1080(b)(2) and 265.1080(b)(2)).)</p> <p>(NOTE: Standards for containers used in waste stabilization processes (40 CFR 264.1086(b)(2) and 265.1087(b)(2)) are in checklist item DF.30.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.28. (continued)	<p>Verify that, for containers with a design capacity greater than 0.1 m<sup>3</sup> [~26 gal.] and less than or equal to 0.46 m<sup>3</sup> [~122 gal.], air emissions are controlled according to the following Container Level 1 standards:</p> <ul style="list-style-type: none"> <li>- A container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation</li> <li>- A container is used 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</li> <li>- An open-top container is used 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.</li> </ul> <p>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, to the extent practical, of the hazardous waste to the atmosphere and to maintain the equipment integrity throughout the intended service life.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Opening of a closure device or cover is allowed for adding waste or other material to the container as follows: <ul style="list-style-type: none"> <li>-- 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</li> <li>-- 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: <ul style="list-style-type: none"> <li>--- the container being filled to the intended final level</li> <li>--- the completion of a batch loading after which no additional material will be added to the container within 15 minutes</li> <li>--- the person performing the loading operation leaving the immediate vicinity of the container, or</li> <li>--- the shutdown of the process generating the material being added to the container, whichever condition occurs first.</li> </ul> </li> </ul> </li> <li>- Opening of a closure device or cover is allowed for removing the hazardous waste as follows: <ul style="list-style-type: none"> <li>-- in order to meet the requirements for an empty container</li> <li>-- 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 either: <ul style="list-style-type: none"> <li>--- completion of batch removal after which no additional material will be removed within 15 minutes or</li> <li>--- the person performing the unloading leaves the immediate vicinity, whichever condition occurs first</li> </ul> </li> </ul> </li> <li>- 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</li> <li>- 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</li> <li>- Opening of a safety device to avoid unsafe conditions.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.29. Containers with design capacities greater than 0.46 m <sup>3</sup> [~122 gal.] into which hazardous waste is placed are required to meet specific design and operating standards (40 CFR 264.1086(a), 264.1087(b)(1)(ii) through 264.1086(b)(1)(iii), 264.1086(c)(1) through 264.1086(c)(3), 264.1086(d), 265.1087(a), 265.1087(b)(1)(ii) through 265.1087(b)(1)(iii), 265.1087(c)(1) through 265.1087(c)(3), and 265.1087(d)).	<p>(NOTE: The requirements of 40 CFR 264.1086 and 265.1087 do not apply to containers in which all the hazardous waste entering the container meets one of the following (40CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the regulatory agency for the waste in 268.42(a) or an equivalent method approved by the regulatory agency pursuant to 268.42(b).)</li> </ul> <p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 265.1080(b)(2) and 265.1080(b)(2)).)</p> <p>(NOTE: Standards for containers used in waste stabilization processes (40 CFR 265.1087(b)(2)) are in checklist item DF.30.)</p> <p>Verify that, for containers with a design capacity greater than 0.46 m<sup>3</sup> [~122 gal.] that are not in light material service, air emissions are controlled according to the following Container Level 1 standards:</p> <ul style="list-style-type: none"> <li>- A container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation</li> <li>- A container is used 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</li> <li>- An open-top container is used 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.</li> </ul> <p>Verify that, for containers with a design capacity greater than 0.46 m<sup>3</sup> [~122 gal.] that are in light material service, air emissions are controlled according to the following Container Level 2 standards:</p> <ul style="list-style-type: none"> <li>- A container is used that meets applicable U.S. DOT regulations on the packaging of hazardous materials for transportation</li> <li>- A container is used that operates with no detectable organic emissions</li> <li>- A container is used that has been demonstrated within the preceding 12 months to be vapor tight.</li> </ul> <p>(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).)</p> <p>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.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.29. (continued)	<p>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:</p> <ul style="list-style-type: none"> <li>- Opening of a closure device or cover is allowed for adding waste or other material to the container as follows: <ul style="list-style-type: none"> <li>-- 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</li> <li>-- 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: <ul style="list-style-type: none"> <li>--- the container being filled to the intended final level</li> <li>--- the completion of a batch loading after which no additional material will be added to the container within 15 minutes</li> <li>--- the person performing the loading operation leaving the immediate vicinity of the container</li> <li>--- the shutdown of the process generating the material being added to the container, whichever condition occurs first</li> </ul> </li> </ul> </li> <li>- Opening of a closure device or cover is allowed for removing the hazardous waste as follows: <ul style="list-style-type: none"> <li>-- in order to meet the requirements for an empty container</li> <li>-- when discrete 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 upon either: <ul style="list-style-type: none"> <li>--- completion of batch removal after which no additional material will be removed within 15 minutes</li> <li>--- the person performing the unloading leaves the immediate vicinity, whichever condition occurs first</li> </ul> </li> </ul> </li> <li>- 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</li> <li>- 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</li> <li>- Opening of a safety device to avoid unsafe conditions.</li> </ul> <p>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).</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.30. Containers with design capacities greater than 0.1 m <sup>3</sup> [~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 264.1086(a), 264.1086(b)(2), 264.1086(e)(1) through 264.1086(e)(3), 265.1087(a), 265.1087(b)(2), and 265.1087(e)(1) through 265.1087(e)(3)).	<p>(NOTE: The requirements of 40 CFR 264.1086 and 265.1087 do not apply to containers in which all the hazardous waste entering the container meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmv</li> <li>- The organic content of the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the regulatory agency for the waste in 268.42(a) or an equivalent method approved by the regulatory agency pursuant to 268.42(b).)</li> </ul> <p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 264.1080(b)(2) and 265.1080(b)(2)).)</p> <p>(NOTE: Safety devices may be installed and operated as necessary.)</p> <p>Verify that containers with design capacities greater than 0.1 m<sup>3</sup> [~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:</p> <ul style="list-style-type: none"> <li>- A container is used that is vented directly through a closed-vent system to a control device</li> <li>- A container is used that is vented inside an enclosure which is exhausted through a closed-vent system to a control device</li> <li>- The container closure is designed and operated in accordance with the criteria for a permanent total enclosure under 40 CFR 52.741</li> <li>- The closed-vent system and control device is designed and operated in accordance with 264.1087 and 265.1088 (see checklist item DF.33).</li> </ul>
DF.31. Facilities are required to have a written plan and schedule for inspection and monitoring requirements for containers and meet specific inspection requirements (40 CFR 264.15, 264.1086(c)(4), 264.1086(d)(4), 264.1088(b), 265.1087(c)(4), 265.1087(d)(4), and 265.1089).	<p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 264.1086(b)(2) and 265.1080(b)(2)).)</p> <p>Verify that the facility has a written plan and schedule for performing inspections and monitoring.</p> <p>Verify that the plan and schedule are being met.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- 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, the container and its cover are visually inspected on the date of acceptance for cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position</li> <li>- When a container is used for managing hazardous waste for 1 year or more, it is visually inspected at least once every 12 months for visible cracks, holes, gaps, or other open spaces when the cover and closure devices are secured in the closed position.</li> </ul> <p>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.</p> <p>(NOTE: If repair cannot be completed within 5 calendar days, the hazardous waste must be removed from the container.)</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.32. Facilities are required to meet documentation requirements for containers (40 CFR 264.1086(c)(5), 264.1089(a), 264.1089(d) through 264.1089(i), 265.1087(c)(5), 265.1090(a), and 265.1090(d) through 265.1090(i)).	<p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 264.1080(b)(2) and 265.1080(b)(2)).)</p> <p>Verify that a copy is available of the procedure used to determine that containers with a capacity of 0.46 m<sup>3</sup> [~122 gal.] or greater which do not meet DOT standards are not managing hazardous waste in light material service.</p> <p>Verify that if using Container Level 3 air emissions controls, the facility prepares and maintains records that include:</p> <ul style="list-style-type: none"> <li>- The most recent set of calculations and measurements performed by the owner/operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in 40 CFR 52.741, Appendix B</li> <li>- All the records required for closed-vent systems.</li> </ul> <p>Verify that, if using a closed-vent system and control device, the following records are maintained:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- Design documents if design analysis is used, including certification that the equipment meets the applicable specification</li> <li>- A performance test plan if performance tests are used and all test results</li> <li>- Description and date of each modification, as applicable</li> <li>- Identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.32. (continued)	<ul style="list-style-type: none"> <li>- Semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations:               <ul style="list-style-type: none"> <li>-- a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-month period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods.</li> <li>-- a description of the planned routine maintenance that was performed for the control device during the previous 6-month period, including the type of maintenance performed and the total number of hours during those 6-months that the control device did not meet applicable requirements</li> </ul> </li> <li>- Records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications:               <ul style="list-style-type: none"> <li>-- the occurrence and duration of each malfunction of the control device system</li> <li>-- 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</li> <li>-- actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation</li> </ul> </li> <li>- Records of the management of the carbon removed from a carbon adsorption system.</li> </ul> <p>Verify that, for exempted containers, the following records are prepared and maintained as applicable:</p> <ul style="list-style-type: none"> <li>- 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 for samples are used</li> <li>- 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.</li> </ul> <p>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.</p> <p>Verify that, for containers not using the air emissions controls specified in 40 CFR 265.1085 through 265.1088 (see checklist items DF.28 through DF.33), the following information is maintained:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- A description of how the hazardous waste containing the organic peroxide compounds identified in the above list is managed, including:               <ul style="list-style-type: none"> <li>-- a facility identification number for the container or group of containers</li> <li>-- the purpose and placement of this container or group of containers in the management train of this hazardous waste</li> <li>-- the procedures used to ultimately dispose of the hazardous waste handled in the containers</li> </ul> </li> <li>- An explanation why managing these containers would be an undue safety hazard.</li> </ul>
DF.32. (continued)	<p>Verify that all records, except design information records, are kept for at least 3 years.</p> <p>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.</p>

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.33. Facilities are required to meet specific requirements for closed-vent systems and control devices used to achieve compliance (40 CFR 264.1087 and 265.1088).	<p>(NOTE: The requirements of 40 CFR 264.1087 and 265.1088 do not apply to containers in which all the hazardous waste entering the container meets one of the following (40 CFR 265.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste entering the waste management unit has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the regulatory agency for the waste in 268.42(a) or an equivalent method approved by the regulatory agency pursuant to 268.42(b).)</li> </ul> <p>(NOTE: These requirements do not apply to a container that has a design capacity less than or equal to 0.1 m<sup>3</sup> [~26 gal.] (40 CFR 264.1080(b)(2) and 265.1080(b)(2)).)</p> <p>Verify that closed-vent systems meet the following:</p> <ul style="list-style-type: none"> <li>- It routes the gases, vapors and fumes emitted from the hazardous waste in the waste management unit to a control device</li> <li>- It is designed and operated in accordance with 40 CFR 264.1033(j) or 265.1033(j)</li> <li>- 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):             <ul style="list-style-type: none"> <li>-- 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</li> <li>-- 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.</li> </ul> </li> </ul> <p>Verify that the seal or closure mechanism is visually inspected at least once every month.</p> <p>Verify that one of the following control devices is used:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- An enclosed combustion device designed and operated in accordance with 264.1033(c) and 265.1033(c)</li> <li>- A flare designed and operated in accordance with 40 CFR 264.1033(d) and 265.1033(d).</li> </ul>

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.33. (continued)	<p>Verify that, when a closed-vent system and control device is used, the following are met:</p> <ul style="list-style-type: none"> <li>- Periods of planned routine maintenance of the control device during which the device does not meet specifications do not exceed 240 hours per year</li> <li>- Control device system malfunctions are corrected as soon as practicable</li> <li>- 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.</li> </ul> <p>Verify that, if a carbon adsorption system is used, the following requirements are met:</p> <ul style="list-style-type: none"> <li>- All activated carbon is replaced with fresh carbon on a regular basis as outlined in 40 CFR 264.1033(g), 264.1033(h), 265.1033(g) and 265.1033(h)</li> <li>- All carbon that is a hazardous waste and that is removed from the control device is managed according to 264.1033(n) or 265.1033(m) regardless of the average volatile organic concentration.</li> </ul> <p>Verify that, if a control device other than a thermal vapor incinerators, flare, boiler, process heater, condenser, or carbon adsorption system is used, the requirements in 40 CFR 264.1033(i) and 265.1033(i) are met.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- A flare</li> <li>- A boiler or process heater with a design input capacity of 44 MW or greater</li> <li>- A boiler or process heater into which the vent stream is introduced with the primary fuel</li> <li>- 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</li> <li>- A boiler or industrial furnace burning hazardous waste for which the owner or operator has certified compliance with the interim status requirements of 40 CFR 265, subpart H.</li> </ul> <p>Verify that the readings from each control device are inspected at least once each operating day to check control device operation.</p>
<i>Container Storage Areas</i>	
DF.34. Containers at TSDFs should be kept in storage areas designated in the management plan and identified by signs (MP).	<p>Verify that all containers are identified and stored in appropriate areas.</p> <p>(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.)</p>
DF.35. Containers holding ignitable or reactive waste must be located 15 meters (50 feet) from the property line of a TSDF (40 CFR 264.176 and 265.176).	<p>Determine the distance from any storage containers to the property line.</p> <p>(NOTE: This restriction does not apply to SQGs).</p>
DF.36. TSDF personnel must conduct weekly inspections of container storage areas (40 CFR 264.174 and 265.174).	<p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Containment Buildings</i>	
(NOTE: According to the 'Background Information' published on page 37221 of the 18 August 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.)	
DF.37. TSDFs with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 264.1100 and 265.1100).	<p>Verify that the containment building meets the following:</p> <ul style="list-style-type: none"> <li>- It is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit</li> <li>- 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</li> <li>- 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</li> <li>- If the unit is used to manage liquids: <ul style="list-style-type: none"> <li>-- there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier</li> <li>-- there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier</li> <li>-- 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</li> </ul> </li> <li>- It has controls sufficient to prevent fugitive dust emissions</li> <li>- It is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment.</li> </ul>
DF.38. Containment buildings are required to be designed according to specific standards (40 CFR 264.1101(a)(1) through 264.1101(a)(2), 264.1101(a)(4), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).	<p>Verify that containment buildings meet the following design standards:</p> <ul style="list-style-type: none"> <li>- It is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes</li> <li>- 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</li> <li>- 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</li> <li>- It has sufficient structural strength to prevent collapse or other failure</li> <li>- All surfaces in contact with hazardous wastes are compatible with the wastes</li> <li>- 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.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.38. Continued	<p>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:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- There is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier</li> <li>- The primary barrier is sloped to drain liquids to the associated collection system</li> <li>- Liquids and wastes are collected and removed to minimize hydraulic head on the containment system at the earliest practicable time</li> <li>- 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</li> <li>- The leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> <li>-- it is constructed with a bottom slope of one percent or more</li> <li>-- it is constructed of granular drainage materials with a hydraulic conductivity of <math>1 \times 10^{-2}</math> cm/s 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 <math>3 \times 10^{-5}</math> m<sup>2</sup>/s or more</li> </ul> </li> <li>- 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</li> <li>- 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.</li> </ul> <p>(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:</p> <ul style="list-style-type: none"> <li>- The doors and windows provide an effective barrier against fugitive dust emissions</li> <li>- The unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.)</li> </ul> <p>(NOTE: A containment building can serve as secondary containment systems for tanks within the building if:</p> <ul style="list-style-type: none"> <li>- It meets the requirements of 264.193(d) (see protocol for storage tank management)</li> <li>- It meets the requirements of 264.193(b) and 264.193(c)(1) and (2) (see protocol for storage tank management.)</li> </ul>

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Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.39. Containment buildings are required to be operated according to specific standards (40 CFR 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).	<p>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.</p> <p>Verify that the following operational procedures are done:</p> <ul style="list-style-type: none"> <li>- Controls and practices are used to ensure the containment of the waste within the building</li> <li>- 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</li> <li>- The level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded</li> <li>- 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</li> <li>- There is a designated area for the decontamination of equipment and collection of rinsate</li> <li>- Any collected rinsate is managed as needed according to its constituents</li> <li>- Measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions</li> <li>- Particulate collection devices are maintained and operated according to sound air pollution control practices.</li> </ul> <p>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.</p>
DF.40. Containment buildings are required to be certified by a registered professional engineer (40 CFR 264.1101(c) (2) and 265.1101(c)(2)).	Verify that the building has been certified.
DF.41. Leaks in containment buildings must be repaired and reported (40 CFR 264.1101(c)(3) and 265.1101(c)(3)).	<p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly.</p> <p>Verify that when a leak is discovered:</p> <ul style="list-style-type: none"> <li>- The discovery is recorded in the TSDF operating record</li> <li>- The portion of the containment building that is affected is removed from service</li> <li>- A cleanup and repair schedule is established</li> <li>- Within seven days the regulatory agency is notified and within 14 working days written notice is provided to the regulatory agency</li> <li>- The regulatory agency is notified upon the completion of all repairs and certification from a registered professional engineer is also submitted.</li> </ul>
DF.42. Containment buildings that contain both areas with and without secondary containment must meet specific requirements (40 CFR 264.1101(d) and 265.1101(d)).	<p>Verify that each area is designed and operated according to the appropriate requirements.</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment.</p> <p>Verify that a written description is maintained in the TSDF operating log of operating procedures used to maintain the integrity of areas without secondary containment.</p>

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DF.43. When a containment building is closed specific requirements must be met (40 CFR 264.1102 and 265.1102).	<p>Determine if the TSDF has closed a containment building recently.</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, structures, and equipment contaminated with waste and leachate were removed or decontaminated.</p> <p>Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs as outlined in the subsections pertaining to all TSDFs titled Documentation Requirements and Closure.</p> <p>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.</p>
<i>Restricted Wastes</i>	
DF.44. TSDFs must not dispose of the wastes listed in Appendix E on land unless specific parameters are met (40 CFR 268.1, 268.4, and Appendix VII).	<p>Verify that the wastes listed in Appendix E are not land disposed after the indicated dates in the appendix unless:</p> <ul style="list-style-type: none"> <li>- The TSDF was granted an extension</li> <li>- The waste is hazardous only because it exhibits a hazardous characteristic, and is otherwise prohibited from land disposal, but is not prohibited from land disposal if the waste: <ul style="list-style-type: none"> <li>-- is disposed of into a nonhazardous or hazardous injection well</li> <li>-- does not exhibit any prohibited characteristic of a hazardous waste at the point of injection</li> </ul> </li> <li>- Disposal is done in a surface impoundment and treatment of the wastes occurs at the impoundment</li> <li>- Sampling, testing, and removal procedures and design requirements outlined in 40 CFR 268.4 are followed</li> <li>- The waste is treated.</li> </ul> <p>(NOTE: The following are exempted from all of the requirements concerning restricted wastes found in 40 CFR 268:</p> <ul style="list-style-type: none"> <li>- Waste generated by a SQG of less than 100 kg (220.46 lb.) of hazardous waste or less than 1 kg of acute hazardous waste per month</li> <li>- Waste pesticides that a farmer disposes of</li> <li>- Wastes identified or listed as hazardous after 8 November 1984 for which EPA has not promulgated land disposal prohibitions or treatment standards</li> <li>- De minimis losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001) or corrosive (D002) and that contain underlying hazardous constituents</li> <li>- Laboratory wastes displaying the characteristic of ignitability (D001), or corrosivity (D002), that are commingled with other plant wastewaters under designated circumstances</li> <li>- Laboratory wastes that are ignitable and corrosive containing underlying hazardous constituents from laboratory operations that are mixed with other plant wastewaters at TSDFs whose ultimate discharge is subject to CWA regulations if the annualized flow of laboratory wastewater into the facility's headwork does not exceed one percent or the laboratory wastes combined annualized sewage concentration does not exceed one ppm in the facility's headwork.)</li> </ul> <p>(NOTE: As of May 8, 1993, debris that is contaminated with the wastes listed in Appendix E and debris that is contaminated with any characteristic waste for which there are treatment standards are prohibited from land disposal.)</p>



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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.45. Wastes that are restricted from land disposal or the residual from the treatment of a waste restricted from land disposal shall not be diluted as a substitute for adequate treatment (40 CFR 268.3(a) and 268.3(b)).	Verify that restricted wastes or the residual from the treatment of restricted wastes are not diluted unless they are hazardous only because they exhibit a characteristic in a treatment system which treats wastes that are then discharged into a water of the United States by permit or which treats wastes for the purpose of pre-treatment or unless the waste is a D003 reactive cyanide wastewater or nonwastewater.
DF.46. A restricted waste may be land disposed only if the constituent concentrations in the waste or waste treatment residue meet applicable treatment standards, or if the waste is treated using a specified treatment technology or equivalent treatment method (40 CFR 268.40 through 268.43).	<p>Verify that for restricted wastes identified in Appendix F that are land disposed, the associated constituent concentrations in the extract of the waste or waste treatment residual do not exceed the values shown in Appendix F.</p> <p>Verify that for restricted wastes listed in Appendix G that are land disposed, the waste is treated using the treatment technology specified in Appendix G or an equivalent treatment method approved by the regulatory agency.</p> <p>Verify that for restricted wastes identified in Appendix H that are land disposed, the associated constituent concentrations in the waste or waste treatment residue do not exceed the values shown in Appendix H.</p> <p>(NOTE: As used in Appendices G and H, the term wastewater has the following meaning: wastes that contain less than 1 percent by weight total organic carbon (TOC) and less than 1 percent by weight total suspended solids (TSS), with the following exceptions:</p> <ul style="list-style-type: none"> <li>- F001, F002, F003, F004, F005 wastewaters are solvent-water mixtures that contain less than 1 percent by weight TOC or less than 1 percent by weight total F001, F002, F003, F004, F005 solvent constituents listed in Appendix F</li> <li>- K011, K013, K014 wastewaters contain less than 5 percent by weight TOC and less than 1 percent by weight TSS, as generated</li> <li>- K103 and K104 wastewaters contain less than 4 percent by weight TOC and less than 1 percent by weight TSS</li> <li>- Waste analysis plan compliance.)</li> </ul>

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.47. Treatment facilities are required to follow specific procedures for restricted wastes (40 CFR 268.7(b)).	<p>Verify that treatment facilities are testing their waste according to the procedures outlined in their waste analysis plan.</p> <p>Verify that the generating facility sends a one-time notification with the first hazardous waste shipment going to a treatment or disposal facility. A copy of this notification would also be placed in the treatment facility's files. This one-time notification requirement also applies to lab packs.</p> <p>A new notification is needed if there is a change in the waste, process, or receiving facility. This change should affect the determination of which treatment standards apply.</p> <p>The notification shall include the following information:</p> <ul style="list-style-type: none"> <li>- EPA hazardous waste number</li> <li>- The waste is subject to the LDRs and the constituents of concern for F001-F005 and F039 and underlying hazardous constituents (for wastes that are not managed in a CWA or CWA-equivalent facility), unless the waste will be treated and monitored for all constituents (NOTE: If all wastes will be treated and monitored, there is no need to put them on the LDR notice.)</li> <li>- Determination of applicable wastewater/nonwastewater category and subdivisions made within a waste code based on waste-specific criteria</li> <li>- The manifest number associated with the shipment of waste</li> <li>- Waste analysis data, when available</li> <li>- Certification statement.</li> </ul> <p>Verify that the treatment facility submits a certification of waste or treatment residue of a restricted waste to the land disposal facility stating that the waste has been treated in compliance with applicable standards.</p> <p>(NOTE: If waste or treatment residues will be further managed at a different treatment or storage facility, the TSDF sending the waste or treatment residue offsite must comply with notice and certification requirements.)</p> <p>(NOTE: Where the wastes are recyclable materials used in a manner constituting disposal, the treatment facility is not required to notify the receiving facility.)</p>
DF.48. Land disposal facilities for restricted wastes are required to maintain copies of notices and certifications and test the waste except when disposing of waste that is recycled material used in a manner constituting disposal (40 CFR 268.7(c)).	<p>Verify that copies of the certifications and notification are kept on hand.</p> <p>Verify that the facility is testing waste as specified in the facilities waste analysis plan.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.49. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).	<p>Verify that land disposal restricted waste is not stored at the TSDF unless the TSDF is storing the wastes in tanks, containers, or containment buildings in order to accumulate the necessary quantities for proper recovery, treatment or disposal and:</p> <ul style="list-style-type: none"> <li>- Each container is marked to identify contents and the date accumulation began</li> <li>- Each tank is clearly marked with a description of the contents, the quantity of each hazardous waste received, and the start date of accumulation or a record of such information is maintained.</li> </ul> <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days.</p> <p>(NOTE: A TSDF may store the land disposal restricted wastes for up to one year if they can prove that the reason for storage is to accumulate such quantities of hazardous waste as are necessary to facilitate proper treatment and disposal.)</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>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 Substance Control Act (TSCA)) and is removed from storage within one year of the date it was first placed into storage.</p>
<i>Emissions from Process Vents</i>	
DF.50. TSDFs 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 264.1030(b), 264.1030(e), 264.1032, 265.1030(b), 265.1030(d) and 265.1032).	<p>(NOTE: This applies only if the operation are conducted in one of the following:</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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 storage tank or container) and that is located at a hazardous waste management unit facility that is otherwise subject to the permitting requirements of 40 CFR 270</li> <li>- 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.)</li> </ul> <p>Verify that one of the following is met:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- Total organic emissions are reduced by use of a control device from all process vents by 95 weight percent.</li> </ul> <p>(NOTE: These requirements do not apply to the process vents at a facility where the owner/operator certifies all of the process vents that would otherwise have to meet these requirements are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable regulation under 40 CFR part 60, part 61, or part 63. The documentation of compliance with these other regulations must be kept with, or made readily available with, the facility operating record.)</p>

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.51. When a TSDF 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 264.1030(b), 264.1030(e), 264.1033(a) through 264.1033(h), 264.1033(j), 264.1033(k), 265.1030(b), 265.1030(d) and 265.1033(a) through 265.1033(j)).	<p>(NOTE: This applies to TSDFs 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:</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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</li> <li>- 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.)</li> </ul> <p>(NOTE: These requirements do not apply to the process vents at a facility where the owner/operator certifies all of the process vents that would otherwise have to meet these requirements are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable regulation under 40 CFR part 60, part 61, or part 63. The documentation of compliance with these other regulations must be kept with, or made readily available with, the facility operating record.)</p> <p>Verify that control devices involving vapor recovery are designed and operated to recovery the organic vapors vented to the air with an efficiency of 95 weight percent or greater unless the total organic emission limit(s) can be attained at an efficiency of less than 95 weight percent.</p> <p>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°C [1400°F].</p> <p>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.</p> <p>Verify that if flares are used:</p> <ul style="list-style-type: none"> <li>- They are designed and operated with no visible emissions except for periods not in excess of five minutes during any two consecutive hours</li> <li>- They are operated with a flame present at all times</li> <li>- 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</li> <li>- If nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater</li> <li>- If nonassisted or steam-assisted, they 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).</li> </ul> <p>Verify that each monitor and control device is inspected on a routine basis.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.51. (continued)	<p>Verify that each required control device is installed, calibrated, monitored and inspected as follows:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- A device to continuously monitor control device operations as specified: <ul style="list-style-type: none"> <li>-- a temperature monitoring device equipped with a continuous recorder for a thermal vapor incinerator</li> <li>-- a temperature monitoring device equipped with a continuous recorder for a catalytic vapor incinerator</li> <li>-- a heat sensing monitor with a continuous recorder for flares</li> <li>-- a temperature monitoring device equipped with a continuous recorder to measure a parameter that indicates good combustion operating practices are being used for a boiler or process heater having a design heat input capacity less than 44 MW</li> <li>-- for a condenser, one of the following: <ul style="list-style-type: none"> <li>--- a monitoring device with a continuous recorder to measure the concentration level of the organic compound in the exhaust vent stream from the condenser</li> <li>--- a temperature monitoring device equipped with a continuous recorder capable of monitoring temperature in the exhaust vent stream from the condenser exit with an accuracy of <math>\pm 1</math> percent of the temperature being monitored in Celsius or in <math>\pm 0.5</math> Celsius, whichever is greater</li> </ul> </li> <li>-- for a carbon adsorption system such as a fixed bed carbon adsorber that regenerates the carbon bed directly in the control device, one of the following: <ul style="list-style-type: none"> <li>--- 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</li> <li>--- 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.</li> </ul> </li> </ul> </li> </ul> <p>Verify that readings from monitoring devices are checked at least once a day.</p> <p>Verify that if a carbon adsorption system is being used that regenerates the carbon bed directly onsite, the existing carbon in the control device is replaced with fresh carbon at regular, predetermined time intervals.</p> <p>(NOTE: The predetermined time interval is based on the design analysis required under 40 CFR 265.1035(b)(4)(iii)(F).)</p> <p>Verify that if a carbon adsorption system is being used that does not regenerate the carbon bed directly onsite, the existing carbon in the control device is replaced on a regular basis.</p> <p>(NOTE: When to replace the carbon is determined by one of the following procedures:</p> <ul style="list-style-type: none"> <li>- Monitoring the concentration level of the organic compound in the exhaust vent stream from the carbon adsorption 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</li> <li>- Replace the carbon at a regular predetermined time interval that is less than the design carbon replacement interval.)</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.51. (continued)	<p>Verify that closed-vent systems meet one of the following:</p> <ul style="list-style-type: none"> <li>- 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 264.1035(b) and 265.1034(b) and by visual inspection</li> <li>- 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.</li> </ul>
DF.52. TSDFs are required to maintain specific records pertaining to process vent emissions (40 CFR 264.1035 and 265.1035).	<p>Verify that the following information is kept in the operating record:</p> <ul style="list-style-type: none"> <li>- An implementation schedule, if appropriate</li> <li>- Up-to-date documentation of compliance with process vents and with closed-vent systems</li> <li>- The test performance plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device</li> <li>- Documentation of compliance with 40 CFR 265.1033, including: <ul style="list-style-type: none"> <li>-- a list of all information references and sources used in preparing the documentation</li> <li>-- records, including the dates of required compliance tests</li> <li>-- design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams if engineering calculations are used</li> </ul> </li> <li>- 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</li> <li>- 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</li> <li>- All performance test results if used to demonstrate compliance</li> <li>- Design documentation</li> <li>- Monitoring and inspection results</li> <li>- Notations of exceedance</li> <li>- Explanation for each period of exceedance</li> <li>- For carbon adsorption systems: <ul style="list-style-type: none"> <li>-- when the carbon is replaced in carbon adsorption systems</li> <li>-- date and time when a control device is monitored for carbon breakthrough</li> </ul> </li> <li>- The date of each control device startup and shutdown.</li> </ul> <p>Verify that records of monitoring operations and inspection information are kept for three years.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.53. Closed-vent systems are required to be monitored, inspected, and leaks repaired (40 CFR 264.1030(b), 264.1030(e), 264.1033(l), 264.1033(o), 265.1030(b), 265.1030(d), 265.1033(k), and 265.1033(n)).	<p>(NOTE: This applies to TSDFs 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:</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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</li> <li>- 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.)</li> </ul> <p>(NOTE: These requirements do not apply to the process vents at a facility where the owner/operator certifies all of the process vents that would otherwise have to meet these requirements are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable regulation under 40 CFR part 60, part 61, or part 63. The documentation of compliance with these other regulations must be kept with, or made readily available with, the facility operating record.)</p> <p>Verify that closed-vent systems designed and operated with no detectable emissions (i.e., one at a pressure below atmospheric pressure) as indicated by an instrument reading of less than 500 ppm above background are monitored as follows:</p> <ul style="list-style-type: none"> <li>- An initial leak detection monitoring of the closed-vent system using the procedures outlined in 40 CFR 264.1034(b) or 265.1034(b) on or before the date the system becomes subject to this section of the CFR</li> <li>- 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)</li> <li>- Annual 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).</li> </ul> <p>Verify that closed-vent systems designed to operate at no detectable emissions are monitored as follows:</p> <ul style="list-style-type: none"> <li>- Annual visual inspection to check for defects that could result in air pollutant emissions</li> <li>- Initial inspection on or before the date the system becomes subject to this section of the CFR.</li> </ul> <p>(NOTE: For closed-vent systems designed to operate at no detectable emissions, portions of the system designated as unsafe to monitor are exempt from the visual monitoring if:</p> <ul style="list-style-type: none"> <li>- The components are unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- A written plan that requires monitoring as practicable during safe to monitor periods is in place and followed.)</li> </ul> <p>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 emission is detected.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.53. (continued)	<p>Verify that a first attempt at repair is made no later than 5 calendar days after the emission is detected.</p> <p>(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.)</p>
DF.54. Closed-vent systems and control devices used to comply with the provisions of 40 CFR 264.1030 through 264.1035 and 265.1030 through 265.1035 are required to be operated at all times when emissions may be vented to them (40 CFR 264.1030(b), 264.1030(e), 264.1033(m), 265.1030(b), 265.1030(d), and 265.1033(l)).	<p>(NOTE: This applies to TSDFs 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:</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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</li> <li>- 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.)</li> </ul> <p>Verify that closed-vent systems and control devices are operated at all times when emissions may be vented to them.</p> <p>(NOTE: These requirements do not apply to the process vents at a facility where the owner/operator certifies all of the process vents that would otherwise have to meet these requirements are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable regulation under 40 CFR part 60, part 61, or part 63. The documentation of compliance with these other regulations must be kept with, or made readily available with, the facility operating record.)</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.55. When carbon adsorption systems are used, operators are required to manage all carbon that is a hazardous waste according to specific parameters (40 CFR 264.1030(b), 264.1030(e), 264.1033(n), 265.1030(b), 265.1030(d), and 265.1033(m)).	<p>(NOTE: This applies to TSDFs 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:</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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</li> <li>- 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.)</li> </ul> <p>(NOTE: These requirements do not apply to the process vents at a facility where the owner/operator certifies all of the process vents that would otherwise have to meet these requirements are equipped with and operating air emission controls in accordance with the process vent requirements of an applicable regulation under 40 CFR part 60, part 61, or part 63. The documentation of compliance with these other regulations must be kept with, or made readily available with, the facility operating record.)</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Regenerated or reactivated in a thermal treatment unit that meets one of the following: <ul style="list-style-type: none"> <li>-- the unit has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart X</li> <li>-- the unit is equipped with and operating air emission controls in accordance with applicable requirements</li> </ul> </li> <li>- Incinerated in a hazardous waste incinerator for which the operator either: <ul style="list-style-type: none"> <li>-- has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart O</li> <li>-- has designed and operates the incinerator in accordance with the interim status required in 40 CFR 265, subpart O</li> </ul> </li> <li>- Burned in a boiler or industrial furnace for which the operator either: <ul style="list-style-type: none"> <li>-- has been issued a final permit under 40 CFR 270 implementing 40 CFR 266</li> <li>-- has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR 266, subpart H.</li> </ul> </li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Air Emission Standards for Equipment Leaks</i>	
<p>(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 264.1050(b) and 265.1050(b)):</p> <ul style="list-style-type: none"> <li>- A unit that is subject to the permitting requirements of 40 CFR 270</li> <li>- 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</li> <li>- 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.)</li> </ul> <p>(NOTE: This section does not apply to the following (40 CFR 264.1050(e), 264.1050(f), 265.1050(d), and 265.1050(e)):</p> <ul style="list-style-type: none"> <li>- Equipment that is in vacuum service and is identified as such on the required list</li> <li>- 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.</li> </ul>	
DF.56. TSDFs 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 264.1052 and 265.1052).	<p>Verify that pumps in light liquid service are monitored monthly according to designated reference methods and visually inspected weekly.</p> <p>(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.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within five calendar days and repair is completed within 15 calendar days.</p> <p>Verify that, if the TSDF has chosen not to monitor monthly or visually check weekly, pumps equipped with a dual mechanical seal system meet the following design and operation requirements:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- The barrier fluid system must not be a hazardous waste with organic concentrations 10 percent or greater by weight</li> <li>- The barrier fluid system is equipped with a sensor that will detect failure if the seal is broken</li> <li>- Pumps are checked by visual inspection weekly</li> <li>- Sensors are checked daily or equipped with an audible alarm that is checked monthly.</li> </ul> <p>Verify that, if the TSDF has chosen not to monitor monthly or visually check weekly, pumps designated for no detectable emissions as indicated by an instrument reading of 500 ppm above background or less meet the following:</p> <ul style="list-style-type: none"> <li>- They are operated with no detectable emissions</li> <li>- They are tested for compliance initially upon designation, annually, and at other times as requested by the regulatory agency</li> <li>- No externally actuated shaft penetrates the pump housing.</li> </ul> <p>(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 these requirements.)</p>
DF.56. (continued)	Verify that the owner/operator has determined, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.57. TSDFs 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 264.1053 and 265.1053).	<p>Verify that each compressor is equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere except if:</p> <ul style="list-style-type: none"> <li>- It is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device</li> <li>- It is designated for no detectable emission and: <ul style="list-style-type: none"> <li>-- it operates at an instrument reading of less than 500 ppm above background</li> <li>-- it is tested for compliance initially upon designation, annually, and at times as requested by the regulatory agency.</li> </ul> </li> </ul> <p>Verify that compressor seal systems meet one of the following:</p> <ul style="list-style-type: none"> <li>- It is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure</li> <li>- It is equipped with a barrier fluid system that is connected to a closed-vent system to a control device</li> <li>- It is equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere.</li> </ul> <p>Verify that the barrier fluid is not a hazardous waste with organic concentrations 10 percent or greater by weight.</p> <p>Verify that each barrier fluid system is equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.</p> <p>Verify that each sensor is checked daily or is equipped with an audible alarm that is checked monthly.</p> <p>(NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within five calendar days and the repair is made within 15 calendar days.</p>
DF.58. TSDFs with pressure relief devices in gas/vapor 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 264.1054 and 265.1054).	<p>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.</p> <p>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.</p> <p>(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.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.59. TSDFs 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 264.1055 and 265.1055).	<p>Verify that each sampling connection system is equipped with a closed purge, closed loop system or closed-vent system.</p> <p>Verify that each system collects the sample purge for return to the processing or for routing to the appropriate treatment system.</p> <p>(NOTE: Gases displaced through filling of the sample container are not required to be collected or captured.)</p> <p>Verify that each closed purge, closed loop system or closed-vent system does one of the following:</p> <ul style="list-style-type: none"> <li>- Returns the purged process fluid directly to the process line</li> <li>- Collects and recycles the purged process fluid</li> <li>- 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.</li> </ul> <p>(NOTE: In-situ sampling systems are exempt from these requirements.)</p>
DF.60. TSDFs 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 operation standards (40 CFR 264.1056 and 265.1056).	<p>Verify that each open-ended valve or line is equipped with a cap, blind flange, plug, or a second valve.</p> <p>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.</p> <p>Verify that each open-ended valve or line equipped with a second valve is operated so that the valve on the hazardous waste stream end is closed before the second valve is closed.</p> <p>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.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.61. TSDFs 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 264.1057, 264.1061, 265.1057, and 265.1061).	<p>Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for two consecutive months, monitoring may be cut back to quarterly until a leak is detected.)</p> <p>(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:</p> <ul style="list-style-type: none"> <li>- The valve has no external actuating mechanism in contact with the hazardous waste stream</li> <li>- The valve is operated with emission less than 500 ppm above background</li> <li>- The valve is tested initially upon designation, annually, and at the request of the regulatory agency.)</li> </ul> <p>(NOTE: Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if:</p> <ul style="list-style-type: none"> <li>- The valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- A written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe-to-monitor times.)</li> </ul> <p>(NOTE: Valves that are designated as difficult-to-monitor are exempt from monthly monitoring requirements if:</p> <ul style="list-style-type: none"> <li>- The valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface</li> <li>- The hazardous waste management unit within which the valve is located was in operation before June 21, 1990</li> <li>- A written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.)</li> </ul> <p>(NOTE: The TSDF 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.)</p> <p>(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:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- 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 3 of the quarterly leak detection periods.</li> </ul> <p>Verify that, when a leak is detected, the first attempt at repair is made within five calendar days after detection, and leak repair is completed within 15 calendar days after detection.</p> <p>(NOTE: First attempts at repair include, but are not limited to:</p> <ul style="list-style-type: none"> <li>- Tightening of bonnet bolts</li> <li>- Replacement of bonnet bolts</li> <li>- Tightening of packing gland nuts</li> <li>- Injection of lubricant into lubricated packing.)</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.62. TSDFs 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 264.1058 and 265.1058).	<p>Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors are required to be monitored within five days if evidence of a potential leak is found by visual, olfactory, audible, or other detection method.</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.)</p> <p>Verify that, when a leak is detected, the first attempt at repair occurs within five days and repair is done within 15 days after discovery.</p> <p>(NOTE: First attempts at repair include, but are not limited to:</p> <ul style="list-style-type: none"> <li>- Tightening of bonnet bolts</li> <li>- Replacement of bonnet bolts</li> <li>- Tightening of packing gland nuts</li> <li>- Injection of lubricant into lubricated packing.)</li> </ul> <p>(NOTE: Any connector that is inaccessible or is ceramic or ceramic-lined is exempt from the monitoring requirements.)</p>
DF.63. TSDFs are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and submit certain reports (40 CFR 264.1058(e), 264.1064, 264.1065, 265.1058(e), and 265.1064).	<p>Verify that the following information is maintained in the TSDF operating record:</p> <ul style="list-style-type: none"> <li>- Equipment identification number and hazardous management unit identification</li> <li>- Approximate locations</li> <li>- Type of equipment</li> <li>- Percent-by-weight total organics in the hazardous waste stream at the equipment</li> <li>- Hazardous waste state at the equipment (gas, liquid, vapor)</li> <li>- Method of compliance</li> <li>- Implementation schedule if needed</li> <li>- A performance plan for control devices as needed</li> <li>- Documentation of compliance</li> <li>- Documentation of repair, including: <ul style="list-style-type: none"> <li>-- the instrument and operator identification numbers and the equipment identification number</li> <li>-- the date evidence of a potential leak was found</li> <li>-- the date the leak was detected and the date of each attempt to repair the leak</li> <li>-- repair methods applied in each attempt</li> <li>-- "Above 10,000" if the maximum instrument reading after each repair attempt is greater than 10,000 ppm</li> <li>-- "Repair delayed" and the reason for delay if the leak is not repaired within 15 calendar days after discovery</li> <li>-- documentation supporting the delay of valve repair</li> <li>-- signature of the owner or operator whose decision it was that repair could not be made without a hazardous waste management unit shutdown</li> <li>-- the expected date of successful repair of the leak when it is not repaired within 15 calendar days</li> <li>-- the date of the successful repair of the leak</li> </ul> </li> <li>- 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</li> <li>- 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 adsorption system</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.63. (continued)	<ul style="list-style-type: none"> <li>- The following information for all equipment subject to 40 CFR 265.1052 through 265.1060: <ul style="list-style-type: none"> <li>-- a list of identification numbers for equipment (except welded fittings)</li> <li>-- a list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions</li> <li>-- a list of equipment identification numbers for pressure relief devices</li> <li>-- the dates of required compliance tests, background levels, maximum instrument reading, measured during the compliance test</li> <li>-- a list of identification numbers for equipment in vacuum service</li> <li>-- 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.</li> </ul> </li> </ul> <p>Verify that the following information is kept for all valves subject to 40 CFR 265.1057(g) and (h):</p> <ul style="list-style-type: none"> <li>- A list of identification numbers for valves listed as unsafe to monitor, an explanation for each valve stating why it is unsafe to monitor, and the plan for monitoring each valve</li> <li>- 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</li> <li>- The following for all valves complying with 40 CFR 265.1062: <ul style="list-style-type: none"> <li>-- a schedule of monitoring</li> <li>-- the percent of valves found leaking in each monitoring period.</li> </ul> </li> </ul> <p>Verify that the following information is kept for use in determining exemptions:</p> <ul style="list-style-type: none"> <li>- An analysis determining the design capacity of the unit</li> <li>- 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</li> <li>- An up-to-date analysis and the supporting information and data used to determine if equipment is subject to the requirements.</li> </ul> <p>(NOTE: If repairs are made and the control device does not exceed or operate outside of the design specifications for more than 24 hours, a report to the regulatory agency is not required.)</p> <p>Verify that permitted TSDFs submit a semiannual report indicating leaks and repairs to the regulatory agency.</p> <p>(NOTE: Any connector that is inaccessible or is ceramic or ceramic-lined is exempt from the recordkeeping requirements.</p>
DF.64. Each piece of equipment subject to the requirements in 40 CFR 264.1050 through 264.1064 and 265.1050 through 265.1064 is required to be marked so that it can be distinguished from other equipment (40 CFR 264.1050(d) and 265.1050(c)).	Verify that each piece of equipment subject to the requirements in 40 CFR 264.1050 through 264.1064 and 265.1050 through 265.1064 is marked so that it can be distinguished from other equipment.

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.65. When a TSDF owner/operator has elected to comply with alternative standards, specific actions are required (40 CFR 264.1061 and 265.1061).	<p>Determine if the owner/operator subject to 40 CFR 264.1057/265.1057 (see checklist item DF.61) 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.</p> <p>Verify that the following actions have been taken if complying with the 2 percent alternative:</p> <ul style="list-style-type: none"> <li>- The regulatory agency has been notified of the choice to comply with the alternative standard</li> <li>- A performance test was conducted initially upon designation, annually, and at other times as required by the regulatory agency</li> <li>- If a valve leak is detected, first attempt at repair is within 5 calendar days and leak repair is completed within 15 days after detection.</li> </ul> <p>Verify that, if the owner/operator has decided to no longer apply with the 2 percent rule, they have notified the regulatory agency.</p>
<i>Documentation Requirements</i>	
DF.66. TSDFs must develop and follow a written waste analysis plan (40 CFR 264.13(b), 264.13(c), 265.13(b), and 265.13(c)).	<p>Determine if the TSDF treats, stores, or disposes of hazardous waste.</p> <p>Verify that the TSDF has a waste analysis plan.</p> <p>Verify that the TSDF is following the waste analysis plan by comparing the plan to records of actual procedures.</p> <p>Verify that the waste analysis plan contains the following:</p> <ul style="list-style-type: none"> <li>- Testing parameters for which each hazardous waste will be analyzed</li> <li>- Test methods</li> <li>- Sampling methods used to obtain a representative sample</li> <li>- Frequency in which the analysis will be reviewed or repeated to ensure that the analysis is up-to-date and accurate</li> <li>- Waste analysis supplied by offsite generators</li> <li>- Methods used to meet the additional analysis requirements for management of ignitable, reactive, or incompatible wastes, bulk and containerized liquids, and incineration are stated (if applicable)</li> <li>- Procedures and schedules for sampling, analysis and removal of residues, where required, for the surface impoundments exempted from the LDR restrictions</li> <li>- Additional information required for TSDFs seeking an exemption from the air emission standards of subpart CC</li> <li>- Additional information as follows for offsite facilities: <ul style="list-style-type: none"> <li>-- specific procedures to inspect (and analyze if necessary) each movement of hazardous waste received to ensure that it matches the identity of the waste designated in the manifest</li> <li>-- the method of sampling used to obtain a representative sample (if the identification method includes sampling)</li> <li>-- the procedures that an offsite landfill receiving containerized hazardous waste will use to determine if a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container.</li> </ul> </li> </ul>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.67. Each TSD site on the facility must have a formal written inspection schedule and a log of inspection results (40 CFR 264.15 and 265.15).	<p>Verify that the TSDF has a formal written inspection schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards.</p> <p>Verify that the schedule is kept at the TSDF and lists types of problems to be looked for during the inspection.</p> <p>Verify that areas subject to spills, such as loading and unloading areas, are inspected daily when in use.</p> <p>Verify that any deterioration or malfunction detected by the inspections has been corrected.</p> <p>Verify that logs, or records, of the inspections are kept for three years and include the following:</p> <ul style="list-style-type: none"> <li>- The date and time of the inspection</li> <li>- The name of the inspector</li> <li>- A notation of the observations made</li> <li>- The date and nature of any repairs or other remedial actions.</li> </ul>
DF.68. TSDFs must have a contingency plan (40 CFR 264.50 through 264.54 and 265.50 through 265.54).	<p>(NOTE: TSDFs may be addressed in the facility's SPCC plan or other emergency plan, or if none exists, in a separate contingency plan.)</p> <p>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.</p> <p>Verify that the plan includes the following:</p> <ul style="list-style-type: none"> <li>- A description of actions to be taken during an emergency</li> <li>- A description of arrangements, as appropriate, agreed to by local police departments, fire departments, hospitals, contractors, and state and local emergency response teams</li> <li>- Names, addresses, and phone numbers of all persons qualified to act as emergency coordinator</li> <li>- A list of all emergency equipment at the TSDF, its location, a physical description, and an outline of its capabilities</li> <li>- An evacuation plan for TSDF personnel where there is a possibility evacuation would be needed.</li> </ul> <p>Verify that copies of the contingency plan are maintained at the TSDF and also have been submitted to organizations which may be called upon to provide emergency services.</p> <p>Verify that the contingency plan is routinely reviewed and updated, especially when the TSDF is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes.</p>
DF.69. TSDF operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 264.56(j) and 265.56(j)).	<p>Review TSDF operating records to determine if incidents have been recorded and corrective actions taken.</p> <p>Verify that written reports have been submitted to the regulatory agency within 15 days after the incident.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.70. TSDF operators must keep written operating records at the facility (40 CFR 264.73 through 264.74 and 265.73 through 265.74).	<p>Verify that the TSDF has a written operating record.</p> <p>Determine if the operating record includes:</p> <ul style="list-style-type: none"> <li>- A description and quantity of each hazardous waste received at the TSDF and the method(s) and date(s) of treatment, storage, or disposal of each waste received at the TSDF</li> <li>- The location of each hazardous waste within the TSDF (cross-referenced to specific manifest document numbers and the quantity at each location)</li> <li>- For disposal facilities, the location and quantity is recorded on a map or diagram of each cell or disposal area</li> <li>- Records and results of waste analyses and waste determinations performed</li> <li>- Reports of all the incidents that required the implementation of the contingency plan</li> <li>- Records and results of inspections (only a 3 year retention period)</li> <li>- Monitoring, testing, and analytical data (where required)</li> <li>- For offsite facilities, notices to the generator</li> <li>- Annual certification that the TSDF has a program in place to reduce the volume and toxicity of hazardous waste, and that the proposed method of treatment, storage, or disposal minimizes the present and future threat to human health and the environment</li> <li>- The record of the quantities and date of placement for each shipment of hazardous waste placed in land disposal units under an extension granted by 40 CFR 268.5, a petition granted under 40 CFR 268.6, or a certification granted under 40 CFR 268.8</li> <li>- A copy of the applicable notice, demonstration, and certification required for any restricted hazardous wastes</li> <li>- Certifications and demonstrations provided to generators or received from generators</li> <li>- Closure cost estimates or, for disposal facilities, post-closure cost estimates.</li> </ul> <p>(NOTE: This information must be recorded and maintained in the operating record until closure of the disposal facility.)</p> <p>(NOTE: The retention period for all records is extended automatically during the course of any unresolved enforcement action or as required by the regulatory agency.)</p>
DF.71. TSDFs must prepare and submit a single copy of a biennial report to the regulatory agency by March 1 of each even numbered year (40 CFR 264.75 and 265.75).	<p>Obtain a copy of the biennial report (EPA Form 8700-13D or applicable state form).</p> <p>Verify that biennial reports are prepared and submitted and contain the following information:</p> <ul style="list-style-type: none"> <li>- EPA identification number</li> <li>- TSDF name and address</li> <li>- Calendar year covered by report</li> <li>- Description and quantity of each waste received</li> <li>- Method of treatment, storage, or disposal for each waste</li> <li>- Certification signed by owner or operator of the TSDF</li> <li>- Offsite facilities must also report EPA identification number for each hazardous waste generator from which waste was received</li> <li>- Description of efforts undertaken during the year to reduce the volume and toxicity of waste generated (for onsite facilities only)</li> <li>- Description of changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent that information is available for the years prior to 1984 (for onsite facilities only).</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.72. TSDFs must have a written closure plan for each TSDF (40 CFR 264.110, 264.112(a), 264.112(b), 265.110, 265.112(a), and 265.112(b)).	<p>Determine if the TSDF has a written closure plan.</p> <p>Determine, by review, if the closure plan addresses:</p> <ul style="list-style-type: none"> <li>- How the TSDF will be closed</li> <li>- Estimates of the maximum amount of wastes in storage and in treatment during the life of the TSDF</li> <li>- Description of removal or decontamination procedures to be used during closure</li> <li>- Schedule for closure of each unit.</li> </ul>
DF.73. TSDFs with hazardous waste disposal units and certain surface impoundments and waste piles are required to have a written post-closure plan (40 CFR 264.118 and 265.118(a) through 265.118(d)).	<p>Verify that the plan includes the following information:</p> <ul style="list-style-type: none"> <li>- Identifies the monitoring and maintenance activities that will be carried on after closure of each disposal unit and the frequency of these activities</li> <li>- Name address and phone number of the person or office to contact during post-closure care.</li> </ul> <p>Verify that the plan is amended if there is a change in the expected year of final closure, if events occur during the life of the TSDF that impact closure care or there is a change in TSDF design.</p>
DF.74. TSDFs that receive waste from offsite sources must comply with manifest requirements (40 CFR 264.70, 264.71, 265.70 and 265.71).	<p>Determine if the TSDF receives waste from offsite sources and if their permit allows for the receipt of offsite waste.</p> <p>Determine if manifests contain the following by reviewing a random number of manifests:</p> <ul style="list-style-type: none"> <li>- Proper signature</li> <li>- Date of receipt.</li> </ul> <p>Verify that a copy was sent to the generator within 30 days of receipt of waste.</p> <p>Verify that copies are retained at the TSDF for three years from the date of delivery of hazardous waste.</p> <p>Verify that wastes received by the TSDF are included in their permit.</p> <p>(NOTE: Periods of retention of records are extended automatically during the course of any unresolved enforcement action or as requested by the regulatory agency.)</p>
DF.75. TSDFs which receive waste from offsite sources are required to attempt to resolve manifest discrepancies when they occur (40 CFR 264.72 and 265.72).	<p>Determine if significant discrepancies existed between the quantity or type of waste designated on the manifest or shipping paper, and the quantity or type of waste the TSDF received.</p> <p>Verify that on discovery of a significant discrepancy, an attempt was made to reconcile the discrepancy with the generator and/or the transporter.</p> <p>Verify that if the discrepancy could not be resolved within 15 days after receipt of the waste, the regulatory agency was notified by mail and the following was included:</p> <ul style="list-style-type: none"> <li>- A letter describing the discrepancy and the attempts to reconcile it</li> <li>- Copy of the manifest or shipping paper at issue.</li> </ul> <p>(NOTE: For bulk waste, variations greater than 10 percent in weight, and for batch waste, any variation in piece count is a significant discrepancy. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper. These discrepancies may only be discovered after waste analysis.)</p>

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.76. Reports must be submitted to the regulatory agency when a TSDF accepts an unmanifested waste shipment (40 CFR 264.76 and 265.76).	<p>Determine if unmanifested shipments have been accepted.</p> <p>Verify that reports (Form 8700-13B or applicable state form) are submitted within 15 days.</p> <p>(NOTE: When small quantities (i.e., waste from CESQGs) are received without certification that the waste is excluded from manifest requirements, an unmanifested waste report should be filed.)</p>
<i>Surface Impoundments</i>	
DF.77. TSDFs must follow specific restrictions concerning the types of wastes placed in any surface impoundment (40 CFR 264.229, 264.230, 265.229 and 265.230).	<p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same surface impoundment unless precautions are taken to prevent:</p> <ul style="list-style-type: none"> <li>- Generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- Production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- Production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- Damage to structural integrity of the device or TSDF</li> <li>- Threats to human health or the environment through other means.</li> </ul> <p>Verify that ignitable or reactive wastes are not placed in surface impoundments unless the wastes and impoundments satisfy the restrictions in 40 CFR 268 (see checklist items DF.44 through DF.49, "Restricted Wastes") and they are treated, rendered or mixed so that it is no longer ignitable or reactive.</p> <p>Verify that one of the following conditions is met for the surface impoundment when used for ignitable or reactive waste:</p> <ul style="list-style-type: none"> <li>- Precautions are taken so that the following are prevented: <ul style="list-style-type: none"> <li>-- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>-- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>-- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>-- damage to structural integrity of the device or TSDF</li> <li>-- threats to human health or the environment through other means</li> </ul> </li> <li>- The waste is managed so that it is protected from any materials or conditions which may cause it to ignite or react</li> <li>- The surface impoundment is used only for emergencies.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.78. When surface impoundments use floating membrane covers, the covers are required to meet specific design standards (40 CFR 264.1085(a) through 264.1085(c)(2), and 265.1086(a) through 265.1086(c)(ii)).	<p>(NOTE: These requirements do not apply to a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 264.1080(b)(4) and 265.1080(b)(4)).)</p> <p>(NOTE: These requirements do not apply to surface impoundments in which all the hazardous waste entering the surface impoundment meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the EPA for the waste in 268.42(a) or an equivalent method.)</li> </ul> <p>Verify that the surface impoundment has installed and operates one of the following:</p> <ul style="list-style-type: none"> <li>- A floating membrane cover</li> <li>- A cover that is vented through a closed-vent system to an approved control device.</li> </ul>
DF.78. (continued)	<p>Verify that the floating membrane cover is designed and operated to meet the following:</p> <ul style="list-style-type: none"> <li>- It is designed to float on the liquid surface during normal operations and form a continuous barrier over the entire surface area of the liquid</li> <li>- It is fabricated from a synthetic membrane material that is either high density polyethylene with a thickness no less than 2.5 millimeters or a material or a composite of different materials determined to have both organic permeability properties that are equivalent to the polyethylene and chemical and physical properties that maintain the material integrity for the intended service life of the material</li> <li>- It is installed so that there are no visible cracks, holes, gaps, or other open spaces between cover section seams or between the interface of the cover edge and its foundation mountings</li> <li>- All openings, except for emergency cover drains, are equipped with a closure device designed to operate so that when the closure device is secured in the closed position, there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device</li> <li>- The emergency cover drains are equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening or a flexible fabric sleeve seal</li> <li>- The closure device is made of suitable materials to minimize the exposure of the hazardous waste to the atmosphere and maintain the integrity of the closure devices through their intended service life.</li> </ul> <p>Verify that, whenever hazardous waste is in the surface impoundment, the floating membrane cover floats on the liquid and each closure device is secured in the closed position except for the following:</p> <ul style="list-style-type: none"> <li>- To provide access to the surface impoundment for performing routine maintenance, inspection, or other activities for normal operations</li> <li>- To remove accumulated sludge or other residues from the bottom of the surface impoundments</li> <li>- When necessary to avoid an unsafe condition.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.79. When surface impoundments use a cover that is vented through a closed-vent system to a control device, the cover is required to meet specific design standards (40 CFR 264.1085(d)(1), 264.1085(d)(2), 265.1086(d)(1), and 265.1086(d)(2)).	<p>(NOTE: These requirements do not apply to a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 264.1080(b)(4) and 265.1080(b)(4)).)</p> <p>(NOTE: These requirements do not apply to surface impoundments in which all the hazardous waste entering the surface impoundment meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the EPA for the waste in 268.42(a) or an equivalent method.)</li> </ul> <p>Verify that the cover is vented directly through a closed-vent system to a control device as follows:</p> <ul style="list-style-type: none"> <li>- The cover and the closure devices form a continuous barrier over the entire surface area of the liquid in the surface impoundment</li> <li>- Each opening not vented to the control device is equipped with a closure device</li> <li>- When the pressure in the vapor headspace underneath the cover is less than atmospheric pressure when the control device is in operation, closure devices are designed to operate so that when the closure device is secure in the closed position, there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device</li> <li>- When the pressure in the vapor headspace is equal to or greater than atmospheric pressure when the control device is operating, the closure device is designed to operate with no detectable organic emissions</li> <li>- The cover and its closure devices are made of suitable materials to minimize exposure of the hazardous waste to the atmosphere, to the extent practical, and maintains the integrity of the cover and closure devices throughout their intended life service.</li> </ul> <p>Verify that, when a hazardous waste is in the surface impoundment, the cover is installed with each closure device secured in the closed position, and the vapor underneath the cover vented to the control devices except as follows:</p> <ul style="list-style-type: none"> <li>- Venting to the control device is not done and opening of the closure devices or removal is allowed in order to provide access to the surface impoundment for performing routine inspection, maintenance, or other activities needed for normal operations</li> <li>- Venting to the control device is not done and opening of the closure devices or removal is allowed to remove accumulated sludge or other residues from the bottom of the surface impoundment</li> <li>- Opening of safety devices to avoid an unsafe condition.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.80. Closed-vent systems and control devices are required to be designed according to 40 CFR 264.1087 or 265.1088 (40 CFR 264.1085(d)(1)(iv), 264.1087, 265.1086(d)(1)(iv), and 265.1088).	<p>(NOTE: These requirements do not apply to a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 264.1080(b)(4) and 265.1080(b)(4)).)</p> <p>(NOTE: These requirements do not apply to surface impoundments in which all the hazardous waste entering the surface impoundment meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the EPA for the waste in 268.42(a) or an equivalent method.)</li> </ul> <p>Verify that closed-vent systems:</p> <ul style="list-style-type: none"> <li>- Route the gases, vapors, and fumes emitted from the hazardous waste to a control device</li> <li>- Are designed according to 264.1033(k) or 265.1033(j) as appropriate</li> <li>- Are equipped with one of the following when the system includes bypass devices (except for low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, spring-loaded pressure relief valves, and other fittings used for safety purposes) that could be used to divert the gas or vapor stream to the atmosphere: <ul style="list-style-type: none"> <li>-- a flow indicator at the inlet to the bypass device that indicates whether gas or vapor flow is present in the bypass device</li> <li>-- a seal or locking device placed on the mechanism by which the bypass device position is controlled when the bypass device is in the closed position so that the bypass device cannot be opened without breaking the seal or removing the lock.</li> </ul> </li> </ul> <p>Verify that if a control device is used, it is one of the following:</p> <ul style="list-style-type: none"> <li>- A control 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 weight</li> <li>- An enclosed combustion device (i.e., vapor incinerator, boiler, or process heater), 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°C [1400°F]</li> <li>- A flare that: <ul style="list-style-type: none"> <li>-- is designed and operated with no visible emissions except for periods not in excess of 5 minutes during any 2 consecutive hours</li> <li>-- is operated with a flame present at all times</li> <li>-- is 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.</li> <li>-- if nonassisted, the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater</li> <li>-- if nonassisted or steam-assisted, has 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).</li> </ul> </li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.80. (continued)	<p>(NOTE: These specifications do not apply during periods of planned routine maintenance, nor do they apply during control device system malfunctions.)</p> <p>(NOTE: The performance of each flare will be demonstrated in accordance with 40 CFR 265.1033(e).)</p> <p>Verify that, when using a closed-vent system and control device, periods of planned routine maintenance of the control device during which specifications will be exceeded do not exceed 240 hours/year.</p> <p>Verify that malfunctions are corrected as soon as is practical.</p> <p>Verify that closed-vent systems are operated so that gases, vapors, and/or fumes are not actively vented to the control device during periods of planned maintenance or control device system malfunctions.</p> <p>Verify that, when a carbon adsorption system is used, all activated carbon in the control device is replaced on a regular basis after start-up.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Regenerated or reactivated in a thermal treatment unit that meets one of the following: <ul style="list-style-type: none"> <li>-- the unit has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart X</li> <li>-- the unit is equipped with and operating air emission controls in accordance with applicable requirements</li> </ul> </li> <li>- Incinerated in a hazardous waste incinerator for which the operator either: <ul style="list-style-type: none"> <li>-- has a final permit under 40 CFR 270 which implements the requirements of 40 CFR 264, subpart O</li> <li>-- has designed and operates the incinerator in accordance with the interim status required in 40 CFR 265, subpart O</li> </ul> </li> <li>- Burned in a boiler or industrial furnace for which the operator either: <ul style="list-style-type: none"> <li>-- has been issued a final permit under 40 CFR 270 implementing 40 CFR 266</li> <li>-- has designed and operates the boiler or industrial furnace in accordance with the interim status requirements of 40 CFR 266, subpart H.</li> </ul> </li> </ul> <p>Verify that operation and maintenance is done in accordance with 264.1033(j) or 265.1033(i) if a control device is used other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system.</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.80. (continued)	<p>Verify that achievement of control device performance requirements is demonstrated by a performance test or design analysis is used for each control device except for the following:</p> <ul style="list-style-type: none"> <li>- A flare</li> <li>- A boiler or process heater with a design heat input capacity of 44 MW or greater</li> <li>- A boiler or process heater into which the vent stream is introduced with the primary fuel</li> <li>- A boiler or process heater burning hazardous waste for which a final permit has been issued under 40 CFR 270 and is designed and operated in accordance with the requirements of 40 CRR 266, subpart H</li> <li>- A boiler or industrial furnace burning hazardous waste which the owner or operator has designed and operates in accordance with the interim status requirements of 40 CFR 266, subpart H.</li> </ul> <p>Verify that carbon adsorption systems demonstrate achievement of performance requirements based on the total quantity of organics vented to the atmosphere from all carbon adsorption equipment that is used for organic adsorption, organic desorptions or carbon regeneration, organic recovery, and carbon disposal.</p>
DF.81. Surface impoundments are required to have enclosed pipes or other closed systems for the transfer of hazardous waste in certain circumstances (40 CFR 264.1085(e) and 265.1086(e)).	<p>(NOTE: These requirements do not apply to a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 264.1080(b)(4) and 265.1080(b)(4)).)</p> <p>(NOTE: These requirements do not apply to surface impoundments in which all the hazardous waste entering the surface impoundment meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the EPA for the waste in 268.42(a) or an equivalent method.)</li> </ul> <p>Verify that transfer of hazardous waste is done using continuous hard piping or another closed system that does not allow exposure of the waste to the atmosphere.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.82. Facilities are required to meet inspection and monitoring requirements and requirements for the repair of defects identified in the inspection and monitoring process for surface impoundments (40 CFR 264.1085(c)(3), 264.1085(d)(3), 264.1085(f), 264.1085(g), 264.1087(c)(7), 264.1088, 265.1086(c)(3), 265.1086(d)(3), 265.1086(f), 265.1086(g), 265.1088(c)(7), and 265.1089).	<p>(NOTE: These requirements do not apply to a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure following an approved closure plan (40 CFR 264.1080(b)(4) and 265.1080(b)(4)).)</p> <p>(NOTE: These requirements do not apply to surface impoundments in which all the hazardous waste entering the surface impoundment meets one of the following (40 CFR 264.1082(c) and 265.1083(c)):</p> <ul style="list-style-type: none"> <li>- The average VO concentration of the hazardous waste at the point of waste origination is less than 500 ppmw</li> <li>- The organic content of the hazardous waste has been reduced by an organic destruction or removal process</li> <li>- The waste meets the numerical concentration limits for organic hazardous constituents as specified in 40 CFR 268.40 or has been treated by the treatment technology established by the EPA for the waste in 268.42(a) or an equivalent method.)</li> </ul> <p>Verify that the facility has a written plan and schedule for performing inspections and monitoring.</p> <p>Verify that, when a floating membrane cover is used, inspection is done as follows:</p> <ul style="list-style-type: none"> <li>- Initial visual inspection of the cover and its closure devices to check for defects that could result in air emissions on or before the date that the surface impoundment becomes subject to this section</li> <li>- Annual visual inspection of the cover and its closure devices to check for defects that could result in air emissions.</li> </ul> <p>Verify that, when a cover vented to a control device is used, inspection is done as follows:</p> <ul style="list-style-type: none"> <li>- Initial visual inspection of the cover and its closure devices to check for defects that could result in air emissions on or before the date that the surface impoundment becomes subject to this section</li> <li>- Annual visual inspection of the cover and its closure devices to check for defects that could result in air emissions.</li> </ul> <p>(NOTE: After the initial inspection, subsequent inspection and monitoring may be done at intervals longer than 1 year when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions as long as there is a written explanation stating the reasons the cover is unsafe to inspect and there is a written plan to inspect the cover.)</p> <p>Verify that, when a defect is identified, the first efforts at repair are made no later than 5 calendar days after detection and repair is completed as soon as possible, but no later than 45 calendar days after detection.</p> <p>(NOTE: Repair may be delayed beyond 45 calendar days if the owner or operator determines that repair requires emptying or temporary removal from service of the surface impoundment and no alternative capacity is available at the site to accept the hazardous waste normally managed in the surface impoundment.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.82. (continued)	<p>Verify that each required control device has a device to continuously monitor it as follows:</p> <ul style="list-style-type: none"> <li>- A temperature monitoring device equipped with a continuous recorder for a thermal vapor incinerator</li> <li>- A temperature monitoring device equipped with a continuous recorder for a catalytic vapor incinerator</li> <li>- A heat sensing monitor with a continuous recorder for flares</li> <li>- A temperature monitoring device equipped with a continuous recorder to measure a parameter that indicates good combustion operating practices are being used for a boiler or process heater having a design heat input capacity less than 44 MW</li> <li>- For a condenser, one of the following: <ul style="list-style-type: none"> <li>-- a monitoring device with a continuous recorder to measure the concentration level of the organic compound in the exhaust vent stream from the condenser</li> <li>-- 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 <math>\pm 1</math> percent of the temperature being monitored in Celsius or in <math>\pm 0.5^{\circ}\text{C}</math>, whichever is greater</li> </ul> </li> <li>- For a carbon adsorption system such as a fixed bed carbon adsorber that regenerates the carbon bed directly in the control device, one of the following: <ul style="list-style-type: none"> <li>-- 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</li> <li>-- 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.</li> </ul> </li> </ul> <p>Verify that the continuous monitoring devices are inspected at least once each operating day to check control device operation.</p> <p>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:</p> <ul style="list-style-type: none"> <li>- An initial leak detection monitoring of the closed-vent system on or before the date the system becomes subject to this section of the CFR</li> <li>- Visual inspection according to 40 CFR 264.1034(b)/265.1034(b) 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)</li> <li>- Annually and at times required by the regulatory agency for all other parts of the system.</li> </ul> <p>Verify that closed-vent systems designed to operate at no detectable emissions are monitored as follows:</p> <ul style="list-style-type: none"> <li>- Annual visual inspection to check for defects that could result in air pollutant emissions</li> <li>- Initial inspection on or before the date the system becomes subject to this section of the CFR.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.82. (continued)	<p>(NOTE: For closed-vent systems designed to operate at no detectable emissions, portions of the system designated as unsafe to monitor are exempt from the visual monitoring if:</p> <ul style="list-style-type: none"> <li>- The components are unsafe to monitor because monitoring personnel would be exposed to an immediate danger</li> <li>- A written plan that requires monitoring as practicable during safe to monitor periods is in place and followed.)</li> </ul> <p>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 emission is detected.</p> <p>Verify that a first attempt at repair is made no later than 5 calendar days after the emission is detected.</p> <p>(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.)</p>
DF.83. Facilities are required to meet documentation requirements for surface impoundments (40 CFR 264.1089(a), 264.1089(c), 264.1089(e) through 264.1089(h), 265.1090(a), 265.1090(c), and 265.1090(e) through 265.1090(h)).	<p>Verify that the facility records and maintains the following:</p> <ul style="list-style-type: none"> <li>- The surface impoundment identification number (or other unique identification description as selected by the owner/operator)</li> <li>- Documentation describing the floating membrane cover or cover design, as applicable, that includes information prepared by the owner/operator or provided by the cover manufacturer or vendor describing the cover design, and certification by the owner/operator that the cover meets specifications</li> <li>- A record of each required inspection, including the following information: <ul style="list-style-type: none"> <li>-- date inspection was completed</li> <li>-- for each defect, the location, description of the defect, date of detection, and corrective action taken.</li> </ul> </li> </ul> <p>Verify that the following documentation is kept for closed-vent systems and control devices:</p> <ul style="list-style-type: none"> <li>- Certification that the control device is designed to operate at the necessary performance level when the surface impoundment is or would be operating at capacity or the highest level reasonably expected to occur</li> <li>- Design documentation, if design analysis is used</li> <li>- A performance test plan, if performance tests are used</li> <li>- Description and date of each modification</li> <li>- Identification of operating parameters, description of monitoring devices, and diagram of monitoring sensor location or locations</li> <li>- For planned routine maintenance operations where the control device would not meet requirements, the following semiannually: <ul style="list-style-type: none"> <li>-- a description of the planned routine maintenance that is anticipated for the next 6-month period</li> <li>-- a description of the planned routine maintenance that was performed during the previous 6-month period</li> <li>-- the total number of hours that the control device did not meet the requirements of 40 CFR 264.1089(i)(1)/265.1090(l)(1)</li> </ul> </li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.83. (continued)	<ul style="list-style-type: none"> <li>- For unexpected malfunctions:               <ul style="list-style-type: none"> <li>-- the duration and occurrence of each malfunction</li> <li>-- 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</li> <li>-- actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation</li> </ul> </li> <li>- Records of the management of carbon removed from a carbon adsorption system.</li> </ul> <p>Verify that all records, except design information records, are kept for a minimum of 3 years.</p> <p>Verify that design information records are kept in the operating record until the air pollution control equipment is replaced or otherwise no longer in service.</p> <p>Verify that records for exempted facilities are kept as long as the facility is not using air emissions controls.</p> <p>Verify that, for exempted facilities, the following information is kept:</p> <ul style="list-style-type: none"> <li>- The information used for waste determination in the operating log</li> <li>- The identification number of the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.</li> </ul> <p>Verify that, for unsafe to inspect and monitor covers, a record is kept of the identification numbers of the units and the reasons why the cover is unsafe to monitor and a plan and a schedule for inspecting and monitoring each cover.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Waste Piles</i>	
DF.84. All waste piles containing ignitable or incompatible wastes must follow certain requirements (40 CFR 264.256, 264.257, 265.256 and 265.257).	<p>Verify that ignitable wastes are not placed into piles unless one of the following is met:</p> <ul style="list-style-type: none"> <li>- The waste is treated or rendered, or mixed before or immediately after placement in the pile so that: <ul style="list-style-type: none"> <li>-- the waste or mixture no longer meets the definition of ignitable or reactive waste</li> <li>-- there is no generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>-- there is no production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>-- there is no production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>-- there is no damage to structural integrity of the device or TSDF</li> <li>-- there is no threat to human health or the environment through other means</li> </ul> </li> <li>- The waste is managed in such a way that it is protected from any material or conditions that may cause it to ignite or react.</li> </ul> <p>Verify that ignitable or reactive wastes are not placed in waste piles unless the waste and the waste pile meet the applicable requirements of 40 CFR 268 (see checklist items under the section "Restricted Wastes").</p> <p>Verify that incompatible wastes are not placed in the same pile and hazardous waste is not piled on the same base where incompatible wastes or materials were previously piled unless the base has been decontaminated and the following are avoided:</p> <ul style="list-style-type: none"> <li>- Generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>- Production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>- Production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>- Damage to structural integrity of the device or TSDF</li> <li>- Threats to human health or the environment through other means.</li> </ul> <p>Verify that piles of hazardous waste that are incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments are separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Land Treatment Units</i>	
DF.85. All land treatment facilities must follow specific guidelines for ignitable or reactive wastes and incompatible wastes (40 CFR 264.281, 264.282; 265.281 and 265.282).	<p>Determine if the land treatment facility handles any ignitable or incompatible waste.</p> <p>Verify that ignitable or reactive wastes are not land treated unless the waste and the treatment zone meet all the requirements of 40 CFR 268 (see checklist items under the section "Restricted Wastes").</p> <p>Verify that ignitable or reactive waste are not land treated unless:</p> <ul style="list-style-type: none"> <li>- The waste is immediately incorporated into the soil so that the resulting mixture no longer meets the definition of ignitable or reactive waste and the following are prevented: <ul style="list-style-type: none"> <li>-- generation of extreme heat or pressure, fire or explosions, or violent reactions</li> <li>-- production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment</li> <li>-- production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion</li> <li>-- damage to structural integrity of the device or facility</li> <li>-- threats to human health or the environment through other means, or</li> <li>-- the waste is managed in such a way that it is protected from any materials that may cause it to react.</li> </ul> </li> </ul>
<i>Hazardous Waste Landfills</i>	
DF.86. All hazardous waste landfills are required to have a run-on control system, a runoff management system and control the wind dispersal of particulate matter (40 CFR 264.301(g) through 264.301(k), 265.301(f) through 265.301(i)).	<p>Verify that:</p> <ul style="list-style-type: none"> <li>- The run-on control system has the capacity to prevent flow onto the active portion of the landfill during peak discharge of 25 year storm</li> <li>- The runoff management system has adequate capacity to collect and control water from a 24 hour, 25 year storm and the contents tested to determine correct disposal methodology</li> <li>- Collection and holding tanks or basins for run-on and runoff control systems are emptied expeditiously after storms</li> <li>- There is adequate control of wind dispersal and no blowing debris.</li> </ul> <p>(NOTE: For permitted TSDFs, the permit will specify all design and operating practices necessary to ensure compliance.)</p>
<i>Closure</i>	
DF.87. TSDFs must comply with certain closure schedules (40 CFR 264.113(a) through 264.113(d), 264.114, 265.113(a) through 265.113(d), and 265.114).	<p>Verify that within 90 days after receiving final volume of waste, all hazardous waste has been treated and removed or disposed of onsite in accordance with the closure plan.</p> <p>Verify that partial and final closure activities are completed in accordance with approved closure plan within 180 days after receiving the final volume of waste.</p> <p>(NOTE: The regulatory agency may grant variances on the time period.)</p> <p>(NOTE: During partial and final closure periods all contaminated equipment, structures and soils must be properly disposed of. By removing any hazardous wastes or constituents during closure, the TSDF becomes a hazardous waste generator and is subject to the requirements of 40 CFR 262.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.88. All TSDFs are required to follow certain notification procedures for partial and final closure (40 CFR 264.112(d)(1) and 265.112(d)(1)).	<p>Verify that TSDFs with surface impoundments, waste piles, land treatment or landfill units notify the regulatory agency:</p> <ul style="list-style-type: none"> <li>- 180 days prior to expected date of beginning closure of the first unit for interim status TSDFs without an approved closure plan, 60 days with an approved closure plan</li> <li>- 60 days prior to expected date of beginning closure for all permitted TSDFs.</li> </ul> <p>Verify that TSDFs with only tanks, containers, or incinerator units notify the regulatory agency within 45 days prior to the date of beginning final closure.</p>
DF.89. Within 60 days of completion of closure of each hazardous waste surface impoundment, waste pile, land treatment, and landfill unit, facilities must submit a certification of closure to the regulatory agency (40 CFR 264.115 and 265.115).	Verify that a certification of closure was sent to the regulatory agency by registered mail.
DF.90. By the time that certification of closure has been submitted, TSDFs are required to submit a survey plat indicating the location and dimensions of landfill cells in relationship to permanently surveyed landmarks to specific authorities (40 CFR 264.116 and 265.116).	Verify that a survey plat was submitted to the local zoning authorities or the authority with jurisdiction over local land use, and the regulatory agency.
DF.91. Post-closure care of hazardous waste management units must meet specific requirements (40 CFR 264.117 and 265.117).	<p>Verify that post-closure care lasts for 30 years after closure and consists of the following:</p> <ul style="list-style-type: none"> <li>- Monitoring and reporting as required in other sections</li> <li>- Maintenance of waste containment systems</li> <li>- Use of the property is not allowed to disturb the integrity of the final cover, liner, or any other components.</li> </ul>
<b>Additional Requirements for Permitted TSDFs</b>	
<i>General</i>	
DF.92. Permitted TSDFs that receive hazardous waste from offsite sources must inform the generator in writing that the TSDF has the appropriate permit and will accept the waste (40 CFR 264.12(b)).	Verify that notification is sent and a copy is kept in the operating record.
DF.93. Permitted TSDFs that treat, store, or dispose of hazardous waste with solid waste management units are required to institute corrective actions as outlined in the permit to protect human health and the environment from releases (40 CFR 264.90(a) and 264.101).	<p>(NOTE: This applies regardless of when the waste was placed in solid waste management units.)</p> <p>Verify that corrective actions required by the permit are being done.</p> <p>(NOTE: The regulatory agency may identify the unit as not having to comply with this requirement.)</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.94. Container storage areas at TSDFs must have a containment system that meets specific standards (40 CFR 264.175(a) and 264.175(b)).	<p>Verify that all container storage areas meet the following criteria:</p> <ul style="list-style-type: none"> <li>- Containers are stored on a base that is free from cracks or gaps and is impervious so that leaks, spills, and precipitation are contained</li> <li>- The base is sloped (or otherwise designed) to drain and remove liquids resulting from leaks, spills, or precipitation unless the containers are elevated</li> <li>- Spilled or leaked waste and accumulated precipitation is removed in a timely manner</li> <li>- The containment system has adequate capacity to contain 10 percent of the volume of all the containers or the volume of the largest container, whichever is greater</li> <li>- Run-on into the containment system is prevented unless the system has sufficient capacity to contain any run-on that might enter the system in addition to the already required capacity.</li> </ul> <p>(NOTE: If the collected material is a hazardous waste, it must be handled accordingly. If it is discharged through a point source, it is subject to the Clean Water Act requirements.)</p>
DF.95. Containment at permitted TSDFs for containers holding wastes that do not contain free liquids must meet specific criteria which is lesser than that for general containment areas (40 CFR 264.175(c)).	<p>Verify that one of the following storage area criteria is met:</p> <ul style="list-style-type: none"> <li>- The area is sloped or able to drain and remove liquid resulting from precipitation</li> <li>- Containers are elevated or protected from contact with accumulated liquid.</li> </ul> <p>(NOTE: Storage areas must have complete containment systems when the containers holding F020, F022, F023, F026, and F027 do not contain free liquids.)</p>
DF.96. When container storage areas are closed at permitted TSDFs, specific conditions must be met (40 CFR 264.178).	<p>Verify that closure criteria were met:</p> <ul style="list-style-type: none"> <li>- All hazardous waste and residues were removed from the containment system</li> <li>- Remaining containers, liners, bases, and soils (containing or contaminated with hazardous waste or hazardous waste residues) were decontaminated or removed</li> <li>- All hazardous wastes (including materials removed from the containment system) were managed appropriately.</li> </ul>
DF.97. <i>The facility should develop a formal groundwater protection program which includes groundwater monitoring, documentation, recordkeeping and standard operating procedures for groundwater related activities (e.g., drilling, well inspection and maintenance, etc.) (MP).</i>	<p>Confirm that facility standard operating procedures exist for:</p> <ul style="list-style-type: none"> <li>- Drilling</li> <li>- Well construction</li> <li>- Management and disposal of investigation derived waste (e.g., borehole cuttings, development water and purge water, and drilling fluid)</li> <li>- Well inspection and maintenance</li> <li>- Groundwater and soil sampling, preservation and shipment and chain of custody control</li> <li>- Well abandonment</li> <li>- Data management.</li> </ul> <p>Verify that the facility developed and maintains documentation relating to hydrogeologic characterization which includes the definition and description of site geology and hydrology including identification of aquifers, and surface water/groundwater relationships.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
(NOTE: DF.98 through DF.103 describe the requirements for groundwater programs pursuant to 40 CFR 264 Subpart F, Releases from Solid Waste Management Units, such as surface impoundments, waste piles, land treatment units, or landfill units which have received waste after July 26, 1982 (40 CFR 264.90(a)(2)).)	
DF.98. Facilities are required to conduct a monitoring and response program (40 CFR 264.91).	<p>Verify that the facility conducts the following monitoring and response activities as applicable:</p> <ul style="list-style-type: none"> <li>- At a minimum, the facility must institute a detection monitoring program as described in DF.101</li> <li>- Whenever hazardous constituents are detected at statistically significant concentrations at a compliance point, the facility must institute a compliance monitoring program as described in DF.102</li> <li>- Whenever the groundwater protection standard is exceeded or hazardous constituents exceed concentration limits beyond the point of compliance, the facility must institute a corrective action program as described in DF.103.</li> </ul>
DF.99. The facility must comply with the conditions specified in the facility permit meant to ensure that hazardous constituents under 40 CFR 264.93 detected in the groundwater do not exceed the concentration limits under 40 CFR 264.94 in the uppermost aquifer underlying the waste management area beyond the point of compliance under 40 CFR 264.95 (40 CFR 264.92).	<p>Review the facility permit and determine whether the groundwater protection standards set forth are addressed in the facility's groundwater protection program. The groundwater protection standards should include at least the following parts:</p> <ul style="list-style-type: none"> <li>- The identification of hazardous constituents listed in Appendix VIII of 40 CFR 261 that have been detected in the groundwater from the facility</li> <li>- Concentration limits for the hazardous constituents identified</li> <li>- The point of compliance at which monitoring must be conducted</li> <li>- The compliance period during which the groundwater protection standard applies.</li> </ul>
DF.100. Facilities must comply with the requirements in 40 CFR 264.97 for any groundwater monitoring program developed to satisfy 40 CFR 264.98, 264.99, or 264.100 (40 CFR 264.97).	<p>If there is a possibility of hazardous constituents in the groundwater, ensure that the following activities are added to the groundwater monitoring plan:</p> <ul style="list-style-type: none"> <li>- For each hazardous constituent in each well, one of the statistical methods described in 40 CFR 264.97(h) for evaluating monitoring data has been chosen by the facility, approved by the regulatory agency, and complies with the performance standards in 40 CFR 264.97(i)</li> <li>- All groundwater monitoring data collected is maintained in the facility operating record and submitted for review as required by the regulatory agency</li> <li>- The program includes sampling and analytical procedures that are appropriate and accurately measure hazardous constituents in groundwater samples</li> <li>- An appropriate method for determining background water quality has been selected and background groundwater quality has been determined.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.101. Facilities required to establish a detection monitoring program under 40 CFR 264 Subpart F must, at a minimum, comply with 40 CFR 264.98 (40 CFR 264.98).	<p>If the facility is required by the regulatory agency to establish a detection monitoring program, ensure that the following activities are included in the groundwater monitoring plan:</p> <ul style="list-style-type: none"> <li>- Monitoring for indicator parameters (e.g., specific conductance, total organic carbon, or total organic halogen), waste constituents, or reaction products that provide a reliable indication of the presence of hazardous constituents in the groundwater (NOTE: The regulatory agency will specify the parameters or constituents to be monitored and their frequency for collection and statistical analysis in the facility permit (40 CFR 264.98(a) and 264.98(d).)</li> <li>- Determination of the groundwater flow rate and direction in the uppermost aquifer, at least annually</li> <li>- Determination of whether statistically significant evidence of contamination exists and if it does exist, the following steps are taken: (NOTE: If statistically significant evidence of contamination exists but, may have been caused by contamination from another source or by an error in sampling, then the facility must demonstrate that to the regulatory agency. Note also that facility permits may provide additional time for resampling after an indication of a groundwater release.) <ul style="list-style-type: none"> <li>-- the regulatory agency is notified in writing within seven days</li> <li>-- the groundwater is immediately sampled in all monitoring wells to determine if any constituents in Appendix IX of 40 CFR 264 are present, and if so, in what concentration.</li> </ul> </li> </ul> <p>(NOTE: If Appendix IX constituents are present in the sample then the following activities are required:</p> <ul style="list-style-type: none"> <li>- An application for a permit modification to establish a compliance monitoring program is submitted within 90 days to the regulatory agency</li> <li>- An engineering feasibility plan for corrective action and all data necessary to justify any alternative concentration limits are submitted to the regulatory agency within 180 days.)</li> </ul>
DF.102. Facilities required to establish a compliance monitoring program under CFR 264 Subpart F must, at a minimum, comply with 40 CFR 264.99 (40 CFR 264.99).	<p>If the facility is required to establish a compliance monitoring plan, verify that the plan contains procedures for the following activities to be done in conjunction with the groundwater monitoring plan:</p> <ul style="list-style-type: none"> <li>- Determination of whether any significant evidence of increased contamination exists and if it does exist, the following steps are taken: <ul style="list-style-type: none"> <li>-- the regulatory agency is notified in writing which limits are exceeded within seven days</li> <li>-- an application for a permit modification to establish a corrective action program is submitted to the regulatory agency within 180 days.</li> </ul> </li> </ul> <p>(NOTE: If statistically significant evidence of increased contamination exists but, may have been caused by contamination from another source or by an error in sampling, then the facility must demonstrate that to the regulatory agency. Note also that facility permits may provide additional time for resampling after an indication of a groundwater release.)</p>
DF.103. Facilities required to establish a corrective action program under 40 CFR 264 Subpart F must, at a minimum, comply with 40 CFR 264.100 (40 CFR 264.100).	<p>If the facility is required to establish a corrective action program, determine whether the following procedures are in place in addition to the groundwater monitoring plan:</p> <ul style="list-style-type: none"> <li>- The facility either removes hazardous waste constituents or treats them in place to prevent the constituents from exceeding their respective concentration limits. The permit will specify the specific measures that will be taken</li> <li>- The facility establishes a groundwater monitoring program to evaluate the effectiveness of the corrective action program and submits the results of the evaluation semi-annually in a written report to the regulatory agency.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.104. TSDFs operating corrective actions programs are required to report semi-annually to the regulatory agency on their effectiveness (40 CFR 264.100(g)).	Determine if the TSDF operates a corrective action program.  Verify that a semi-annual progress report is sent to the regulatory agency.
DF.105. TSDFs that are seeking a permit for the treatment, storage, or disposal of hazardous waste must initiate the corrective actions needed to protect human health and the environment from all releases of hazardous waste of constituents from any solid waste management unit, regardless of when the waste was placed in the unit (40 CFR 264.101).	Verify that the corrective actions specified in the permit are being done and the compliance schedule is being met.  (NOTE: As a part of the corrective action program the regulatory agency may designate an area of the TSDF as a Corrective Action Management Unit (CAMU) or a Temporary Unit (TU).)
DF.106. All permitted TSDFs are required to document compliance with ignitable, reactive, or incompatible waste management requirements (40 CFR 264.17(c)).	Verify that compliance documentation is maintained at the TSDF. Such documentation may be based on published scientific or engineering literature, data from field tests, or the results of the treatment of similar wastes by similar treatment processes or similar operating conditions.
DF.107. Permitted TSDFs 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 submit a semi-annual report concerning process vent emissions (40 CFR 264.1036).	Verify that a semi-annual report is submitted to the regulatory agency and that it includes the following: <ul style="list-style-type: none"> <li>- The EPA identification number, name, and address of the TSDF</li> <li>- Dates when the control device exceeded or operated outside of design specification and the exceedences were not corrected within 24 hours</li> <li>- Dates when a flare operated with visible emissions</li> <li>- The duration and cause of exceedences and corrective measures taken</li> </ul> (NOTE: If there are no exceedences a report is not required.)

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.108. Permitted facilities are required to meet specific reporting requirements as related to air emissions controls (40 CFR 1090(a), 264.1090(c), and 264.1090(d)).	<p>Verify that a written report is submitted to the regulatory agency within 15 days of becoming aware that hazardous waste is being managed in an exempted container in noncompliance with the applicable design and operating requirements.</p> <p>Verify that, in regard to required control devices, a semiannual written report is submitted to the regulatory agency describing each occurrence of noncompliance during the previous 6 months when either of the following occurred:</p> <ul style="list-style-type: none"> <li>- A control device is operated continuously for 24 hours or longer in noncompliance with the applicable operating values</li> <li>- A flare is operated with visible emissions for 5 minutes or longer in a 2-hour period.</li> </ul> <p>Verify that the report contains an explanation of why the control device could not be returned to compliance within 24 hours and actions taken to correct noncompliance.</p> <p>(NOTE: The semiannual report is not required for a 6-month period if all control devices are operated so there is not a period of 24 hours or longer in which the control device was in continuous noncompliance and no flare was operated with visible emissions for 5 minutes or longer in a 2-hour period.)</p> <p>(NOTE: If the facility received its permit under RCRA Section 3005 prior to 6 December 1996, these requirements will be incorporated in the permit when it is reviewed. Until that time, the TSDF is required to comply with 40 CFR 265 Subpart CC (40 CFR 264.1080(c) and 265.1080(c)).)</p>
<i>Surface Impoundments</i>	
DF.109. Permitted surface impoundments must be designed according to specific parameters (40 CFR 264.221(a), 264.221(g) through 264.221(i)).	<p>Determine if the TSDF has a permitted surface impoundment constructed before July 29, 1992. If so, the following items should be assessed:</p> <p>Verify that surface impoundments have a liner for all portions of the impoundment.</p> <p>Verify that the impoundment is designed, constructed, maintained, and operated to prevent overtopping, overfilling, wind and wave action, rainfall, run-on, malfunctions of level controllers, alarms and other equipment, and human error.</p> <p>Verify that the impoundment has dikes that are designed and constructed and maintained to prevent massive failure of the dikes.</p> <p>(NOTE: The regulatory agency will specify in the permit all design and operating practices that are necessary.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.110. New permitted surface impoundments that started construction after January 19, 1992, lateral expansions of permitted surface impoundments which started construction after July 29, 1992, and replacements of existing surface impoundments where reuse started after July 29, 1992, are required to meet specific design and operating criteria. (40 CFR 264.19, 264.221(c) through 264.221(f), 264.222, 264.223, and 264.226(d)).	<p>Verify that the impoundment has two or more liners and a leachate collection and removal system between liners, or the double liner requirement has been waived by the regulatory agency.</p> <p>Verify that the liner meets the specifications stated in 40 CFR 264.221(c).</p> <p>Verify that the TSDF has a Construction Quality Assurance (CQA) program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that these surface impoundments comply with the action leakage rate assigned by the regulatory agency.</p> <p>Verify that the surface impoundment facility has an approved response action plan prior to the receipt of waste.</p> <p>Verify that the amount of liquid removed from each leak detection system sump is recorded at least once a week during the active life and closure period.</p> <p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- If the liquid level in the sump stays below the pump operating level of two consecutive months, then the liquid amounts may be recorded quarterly</li> <li>- If the liquid level in the sump stays below the pump operating level for two consecutive quarters, then the liquid amounts may be recorded semiannually.</li> </ul> <p>(NOTE: TSDFs with replacement surface impoundments may be exempt from these requirements if the existing unit was constructed in compliance with the design standards of sections 3004(o)(1)(A)(i) and (o)(5) of RCRA and there is no reason to believe the liner is not functioning as designed.)</p>
DF.111. Permitted TSDFs must inspect liners and cover systems during construction and installation of liners (40 CFR 264.226(a)).	<p>(NOTE: This excludes existing portions of surface impoundments exempt from 264.221(a).)</p> <p>Verify that liners and covers are inspected for uniformity, damage, and imperfections.</p>
DF.112 TSDFs must conduct inspections while surface impoundments are in operation (40 CFR 264.226(b)).	<p>Verify that inspections are conducted at least weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- Deterioration, malfunctions, or improper operation of overtop piping control systems</li> <li>- Sudden drops in the level of the impoundment contents</li> <li>- Severe erosion or other signs of deterioration in dikes or other containment devices.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.113. Prior to the issuance of a permit and/or after any period of greater than six months of disuse, the TSDF must obtain certification from a qualified engineer that surface impoundment dikes have structural integrity (40 CFR 264.226(c)).	<p>Determine if the TSDF is permitted or if any impoundment has been out of service for six months or more.</p> <p>Verify that the certification of structural integrity includes:</p> <ul style="list-style-type: none"> <li>- Verification that the impoundment can withstand the amounts and types of waste it will contain</li> <li>- That without dependence on any liner system the impoundment will not fail due to scouring or piping.</li> </ul>
DF.114. TSDFs must follow specific restrictions concerning the types of wastes placed in permitted surface impoundments (40 CFR 264.231).	Verify that hazardous wastes F020, F021, F022, F023, F026, and F027 are not placed in the impoundment unless it is done according to a management plan approved by the regulatory agency.
DF.115. Permitted surface impoundments are required to be removed from service under specific circumstances (40 CFR 264.227(a)).	<p>Verify that surface impoundments have been removed from service if any of the following circumstances exist:</p> <ul style="list-style-type: none"> <li>- The level of liquid suddenly drops and the drop is not known to be caused by changes in flow</li> <li>- The dike leaks.</li> </ul>
DF.116. In order to remove a permitted surface impoundment from service, specific parameters have to be met (40 CFR 264.227(b), 264.227(c), and 264.227(e)).	<p>Verify that when a surface impoundment is removed from service the following requirements are met:</p> <ul style="list-style-type: none"> <li>- The flow or addition of waste is immediately shut off or stopped</li> <li>- Surface leakage is immediately contained</li> <li>- Leaks are stopped or the impoundment is emptied</li> <li>- The regulatory agency is notified within seven days of problems.</li> </ul> <p>Verify that the contingency plan specifies a procedure for taking a surface impoundment out of service.</p> <p>Verify that if a surface impoundment is removed from service and it is not being repaired, it is closed.</p>
DF.117. Surface impoundments may not be restored to service unless specific standards are met (40 CFR 264.227(d)).	<p>Verify that prior to being returned to service the following is done:</p> <ul style="list-style-type: none"> <li>- The portion of the impoundment that was failing is repaired</li> <li>- The dike is recertified if the reason for removal from service was faulty dike integrity</li> <li>- Liners are correctly installed and operating.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.118. TSDFs that have surface impoundments must follow certain closure and post-closure requirements (40 CFR 264.228(a) and 264.228(b)).	<p>Determine if the TSDF has closed or plans to close any surface impoundments.</p> <p>Verify that at closure the TSDF does one of the following:</p> <ul style="list-style-type: none"> <li>- Removes or decontaminates all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate and manages them as hazardous waste</li> <li>- Eliminates the free liquids by removing liquid wastes or solidifying the remaining wastes and water residue and stabilizes remaining wastes to a bearing capacity sufficient to support final cover and cover the surface impoundment with a final cover designed and constructed to: <ul style="list-style-type: none"> <li>-- provide long-term minimization of the migration of liquids</li> <li>-- function with minimum maintenance</li> <li>-- promote drainage and minimized erosion or abrasion of the final cover</li> <li>-- accommodate settling and subsidence so that the cover's integrity is maintained</li> <li>-- have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.</li> </ul> </li> </ul> <p>Verify that if waste residues or contaminated materials are left in place, the TSDF meets post-closure requirements outlined in 40 CFR 264.117 through 264.120 and:</p> <ul style="list-style-type: none"> <li>- Maintains the integrity and effectiveness of the final cover</li> <li>- Maintains and monitors the leak detection system</li> <li>- Maintains and monitors the groundwater monitoring system</li> <li>- Prevents run-on and runoff from eroding or otherwise damaging the final cover.</li> </ul>
DF.119. Facilities are required to meet specific reporting requirements as related to air emissions (40 CFR 264.1090(a), 264.1090(c), and 264.1090(d)).	<p>Verify that a written report is submitted to the regulatory agency within 15 days of becoming aware that hazardous waste is being managed in an exempted surface impoundment in noncompliance with the applicable design and operating requirements.</p> <p>Verify that, in regard to required control devices, a semiannual written report is submitted to the regulatory agency describing each occurrence of noncompliance during the previous 6 months when either of the following occurred:</p> <ul style="list-style-type: none"> <li>- A control device is operated continuously for 24 hours or longer in noncompliance with the applicable operating values</li> <li>- A flare is operated with visible emissions for 5 minutes or longer in a 2-hour period.</li> </ul> <p>Verify that the report contains an explanation of why the control device could not be returned to compliance within 24 hours and actions taken to correct noncompliance.</p> <p>(NOTE: The semiannual report is not required for a 6-month period if all control devices are operated so there is not a period of 24 hours or longer in which the control device was in continuous noncompliance and no flare was operated with visible emissions for 54 minutes or longer in a 2-hour period.)</p> <p>(NOTE: If the facility received its permit under RCRA Section 3005 prior to 6 December 1996, these requirements will be incorporated in the permit when it is reviewed. Until that time, the TSDF is required to comply with all 40 CFR 265, Subpart CC (40 CFR 165.1080(c).)</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Waste Piles</i>	
DF.120. Permitted TSDFs that store or treat hazardous waste in waste piles must meet specific design and operating standards (40 CFR 264.250 and 264.251(a), 264.251(b), and 264.251(g) through 264.251(k)).	<p>(NOTE: Waste piles closed with wastes left in place are regulated as landfills. Waste piles inside or under a protective structure are exempt from the standards in 40 CFR 264.250 through 264.259 if they contain no liquids, are protected from run-on, are designed and operated to control dispersal of waste by wind, and do not generate leachate through decomposition or other reactions.)</p> <p>Determine if the TSDF treats or stores hazardous waste in waste piles.</p> <p>Verify that the following standards are met for each waste pile:</p> <ul style="list-style-type: none"> <li>- The pile has a liner and is located on a foundation that provides support</li> <li>- The liner is installed to cover all surrounding earth likely to be in contact with the waste or leachate</li> <li>- A leachate collection and removal system is located immediately above the liner</li> <li>- Leachate depth over the liner does not exceed 30 cm (1 ft.)</li> <li>- Protection from wind and run-on is provided</li> <li>- A runoff management system is in place and in operating condition</li> <li>- Tanks and basins associated with the run-on and runoff control systems are emptied.</li> </ul> <p>(NOTE: The permit will designate all design and operating practices necessary to ensure that the requirements are satisfied.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.121. Permitted waste piles constructed after January 29, 1992, lateral expansions that started after July 29, 1992, and replacement of existing waste piles where reuse started after July 29, 1992, are required to meet specific design and operating requirements (40 CFR 264.19, 264.251(c) through 264.251(f), 264.252, 264.253).	<p>Verify that the described waste piles have two or more liners and a leachate collection and removal system above and between the liners.</p> <p>Verify that the liner is designed and constructed of materials to prevent the migration of hazardous constituents into the liner during the active life and post-closure care period.</p> <p>(NOTE: See 40 CFR 264.251(c)(1) and 264.251(c)(2) for details on the design of the liner and the leachate collection system.)</p> <p>Verify that the TSDF has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that the pumpable liquids in the leak detection sumps are removed to minimize the head on the bottom liner.</p> <p>Verify that the TSDF is complying with the action leakage rate assigned by the regulatory agency.</p> <p>Verify that the TSDF has an approved response action plan prior to the receipt of waste.</p> <p>(NOTE: The regulatory agency may approve alternative designs or grant a waiver.)</p>
DF.122. TSDFs must conduct inspections of permitted waste piles during construction and while they are in operation (40 CFR 264.254).	<p>Verify that if construction of a waste pile is occurring at the TSDF the following are taking place:</p> <ul style="list-style-type: none"> <li>- Liners and cover systems are inspected for uniformity, damage, and imperfection</li> <li>- Synthetic liners and covers are inspected for tight seams and joints immediately after construction</li> <li>- Soil based and admixed liners and covers are inspected for imperfections</li> </ul> <p>Verify that the waste pile is inspected at least weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- Deterioration, malfunctions, or improper operation in run-on and runoff systems</li> <li>- Proper functioning of wind dispersal control system</li> <li>- Presence of leachate in, and proper functioning of leachate control system.</li> </ul> <p>Verify that the amount of liquids removed from each leak detection system is recorded at least once a week during the active life and closure period.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.123. TSDFs that treat F020, F021, F022, F023, F026, and/or F027 in permitted waste piles are required to follow specific operating procedures (40 CFR 264.259).	<p>Determine if the TSDF treats F020-F023, F026, or F027.</p> <p>Verify that these wastes are kept in enclosed piles unless the owner/operator has a management plan approved by the regulatory agency.</p>
DF.124. TSDFs that operate permitted waste piles must follow specific requirements for closure and post-closure care (40 CFR 264.258).	<p>Verify that at the time of closure all waste residues, contaminated containment system components, subsoils, and structures and equipment contaminated with hazardous waste have been removed or decontaminated.</p> <p>Verify that if all contaminated subsoils cannot be removed or decontaminated practicably, then the site is closed and managed according to closure and post-closure care requirements for a landfill.</p> <p>Verify that if the TSDF has a waste pile that does not comply with the liner requirement, and is not exempted from this requirement, they comply with the following:</p> <ul style="list-style-type: none"> <li>- The written closure plan addresses the removal of all contaminated substances and a contingency plan if all contamination cannot be removed from the pile</li> <li>- A contingency post-closure plan is prepared for the waste pile and be submitted to the appropriate agency within 90 days after determining the waste pile must be closed.</li> </ul>
<i>Land Treatment Units</i>	
DF.125. TSDFs with permitted hazardous waste land treatment units must meet certain standards (40 CFR 264.270 through 264.273(f)).	<p>Determine if the TSDF operates a land treatment facility.</p> <p>Verify that the following standards are met at each permitted hazardous waste land treatment unit:</p> <ul style="list-style-type: none"> <li>- The treatment zone is no more than 1.5 m (5 ft.) from the initial soil surface</li> <li>- The treatment zone is more than 1 m (3 ft.) above the seasonal high water table</li> <li>- Only wastes with hazardous constituents that can be degraded, transformed, or immobilized are placed in the treatment zone</li> <li>- Run-on control systems are operated to prevent flow onto the treatment zone during peak discharge from at least a 25 year storm</li> <li>- Tanks and basins associated with the run-on and runoff control systems are emptied or otherwise managed after storms</li> <li>- Wind dispersal is controlled.</li> </ul> <p>(NOTE: The regulatory agency will specify in a permit the exact elements of the treatment program.)</p>
DF.126. TSDFs must conduct inspections while land treatment facilities are in operation (40 CFR 264.273(g)).	<p>Verify that the land treatment system is inspected weekly and after storms to detect evidence of:</p> <ul style="list-style-type: none"> <li>- Deterioration, malfunctions, or improper operation of run-on and runoff control systems</li> <li>- Improper functioning of wind dispersal control measures.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.127. TSDFs with food chain crops grown in or on the treatment zone are required to meet specific operational standards (40 CFR 264.276).	<p>Determine if food chain crops are grown in or on the treatment zone.</p> <p>Verify that prior to the growth of food chain crops in or on the treatment zone, it has been demonstrated that there is no substantial risk to human health caused by the growth of the crops by demonstrating that hazardous constituents other than cadmium meet one of the following:</p> <ul style="list-style-type: none"> <li>- Will not be transferred to the food or feed portions of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals</li> <li>- Will not occur in greater concentrations in or on food or feed portions of the crops grown on untreated soils under similar conditions in the same region.</li> </ul> <p>Verify that if food chain crops are grown, only those specified in the permit by the regulatory agency are being grown.</p> <p>Verify that if cadmium-containing wastes are applied to food chain crops in or on treatment zones, the following are met:</p> <ul style="list-style-type: none"> <li>- The pH of the waste and soil mixture is 6.5 or greater at the time of application, except in cases where the waste contains cadmium at concentrations of 2 mg/kg or less</li> <li>- The annual application of cadmium from waste does not exceed 0.5 kg/ha on land used for production of tobacco, leafy vegetables, root crops grown for human consumption, or other food chain crops</li> <li>- The cumulative application of cadmium from waste does not exceed 5 kg/ha if the waste and soil mixture has a pH less than 6.5</li> <li>- If the waste and soil mixture has a pH of 6.5 or greater or is maintained at a pH of 6.5 or greater during crop growth, then one of the following must be met: <ul style="list-style-type: none"> <li>-- the cumulative application of cadmium from waste does not exceed 5 kg/ha if soil cation exchange capacity is less than 5 meq/100 g</li> <li>-- the cumulative application of cadmium from waste does not exceed 10 kg/ha if soil cation exchange capacity is 5 to 15 meq/100 g</li> <li>-- the cumulative application of cadmium from waste does not exceed 20 kg/ha if soil cation exchange capacity is greater than 15 meq/100 g</li> <li>-- animal feed is the only food chain crop produced.</li> </ul> </li> </ul>
DF.128. Permitted land treatment units must have an unsaturated zone monitoring program (40 CFR 264.278).	<p>Verify that the unsaturated zone monitoring program meets the following:</p> <ul style="list-style-type: none"> <li>- The soil and soil-pore liquid are monitored to determine if hazardous constituents migrate out of the treatment zone</li> <li>- A system is installed that includes soil monitoring using soil cores and soil-pore liquid monitoring using devices such as lysimeters</li> <li>- A background value has been established for each hazardous constituent to be monitored (see permit)</li> <li>- The soil monitoring and soil-pore liquid monitoring is done immediately below the treatment zone</li> <li>- Consistent sampling and monitoring procedures are used.</li> </ul> <p>Verify that the contaminants listed in the permit are being monitored.</p> <p>Verify that when it is found that there is a statistically significant increase of hazardous constituents below the treatment zone the following steps are taken:</p> <ul style="list-style-type: none"> <li>- The regulatory agency is notified in writing within seven days</li> <li>- Within 90 days a permit application is submitted to the regulatory agency for a permit modification to modify the operating practices.</li> </ul>
DF.129. Land treatment facilities must keep an operating record that includes dates and rates of application (40 CFR 265.279).	Verify that the operating record contains the dates and rates of applications.

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.130. All land treatment facilities are required to meet specific closure and post-closure plans (40 CFR 264.280).	<p>Verify that during the closure period the following requirements are met:</p> <ul style="list-style-type: none"> <li>- All operations are continued as necessary to maximize degradation, transformation, or immobilization of hazardous constituents in the treatment zone</li> <li>- Runoff is minimized</li> <li>- Run-on and runoff management systems are maintained</li> <li>- Wind dispersal of hazardous waste is controlled</li> <li>- Compliance with food chain crop prohibitions is continued</li> <li>- Unsaturated zone monitoring is continued except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone</li> <li>- A vegetative cover is established on the portion of the land treatment facility being closed when the cover will not substantially impede degradation, transformation, or immobilization of hazardous constituents.</li> </ul> <p>Verify that when closure is completed, certification by an independent qualified soil scientist or independent registered professional engineer was submitted to the regulatory agency that the facility has been closed according to the specifications of an approved closure plan.</p> <p>Verify that during the post-closure period:</p> <ul style="list-style-type: none"> <li>- Operations are continued to enhance degradation, transformation, and sustain immobilization of hazardous constituents in the treatment zone</li> <li>- A vegetative cover is maintained</li> <li>- Run-on control systems are maintained</li> <li>- Runoff management systems are maintained</li> <li>- Wind dispersal of hazardous waste is controlled</li> <li>- Food chain crop prohibitions are met</li> <li>- Unsaturated zone monitoring is continued except that soil-pore liquid monitoring may be terminated 90 days after the last application of waste to the treatment zone.</li> </ul> <p>(NOTE: The TSDF may not be required to establish a vegetative cover or meet post-closure requirements if the regulatory agency finds that the level of hazardous waste constituents in the treatment soil zone does not exceed the background value of those constituents by an amount that is statistically significant.)</p>
DF.131. Hazardous wastes F020 through F023, F026, and F027 must not be placed in a land treatment facility unless it is done according to an approved management plan for these wastes (40 CFR 264.283).	Verify that these wastes are only place in a land treatment unit according to the requirements of the approved waste management plan.

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Hazardous Waste Landfills</i>	
DF.132. Permitted hazardous waste landfills are required to have a liner and a leachate collection and removal system (40 CFR 264.301(a) through 264.301(b)).	<p>Determine if the TSDF disposes of hazardous wastes in an onsite landfill.</p> <p>Verify that the landfill liner is:</p> <ul style="list-style-type: none"> <li>- Designed, constructed, and installed to prevent any migration of waste out of the landfill</li> <li>- Placed on a properly supported base or foundation</li> <li>- Installed to cover all surrounding earth likely to be in contact with the waste.</li> </ul> <p>Verify that the leachate collection and removal system is immediately above the liner and will operate to remove leachate from the landfill.</p> <p>Verify that collected leachate is tested to determine correct disposal methodology.</p> <p>(NOTE: The permit will contain specific design and operating conditions.)</p>
DF.133. New landfills on which construction started after January 29, 1992, lateral expansions which started construction after July 29, 1992, and each replacement of an existing landfill that will start reuse after July 29, 1992, are required meet specific design and operating standards (40 CFR 264.19, 264.301(c) through 264.301(f), 264.302, 264.304).	<p>Determine if the TSDF has any landfills meeting the stated criteria.</p> <p>Verify that the landfill has two or more liners and a leachate collection and removal system above and between the liners or a waiver of double liner requirement has been obtained from the regulatory agency.</p> <p>Verify that the TSDF has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that the pumpable liquids in the leak detection system sumps are collected and removed to minimize the head on the bottom liner.</p> <p>Verify that surface impoundments subject to these landfill requirements meet the action leakage rate set by the regulatory agency.</p> <p>Verify that the TSDF has an approved response action plan before the receipt of waste.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.133. (continued)	<p>Verify that if the flow rate into the leak detection system exceeds the action leakage rate for any sump:</p> <ul style="list-style-type: none"> <li>- The regulatory agency is notified within seven days</li> <li>- A written notification is submitted within 14 days</li> <li>- To the extent practicable, the location, size and cause of any leak is determined</li> <li>- A determination is made as to whether waste receipt should be stopped or restricted</li> <li>- The regulatory agency is notified of actions taken and actions to be taken within 30 days after discovery</li> <li>- A monthly report is submitted to the regulatory agency as long as the flow rate in the leak detection systems exceeds the action leakage rate.</li> </ul> <p>(NOTE: These restrictions do not apply if the existing unit was constructed in accordance with the design standards of section 3004(o)(1)(A)(i) and (o)(5) of RCRA and there is no reason to believe that the liner is not functioning as designed.)</p>
DF.134. Hazardous waste landfills are required to be inspected (40 CFR 264.303).	<p>Verify that liners were inspected during construction for overall integrity.</p> <p>Verify that immediately after construction was completed, the following inspections were performed:</p> <ul style="list-style-type: none"> <li>- Synthetic liners and covers to ensure tight seams and joints and absence of tears</li> <li>- Soil-based and admixed liners for imperfections that may increase impermeability (e.g., cracks and root-holes).</li> </ul> <p>Verify that while a landfill is in operation it is inspected weekly and after storms to detect evidence of the following:</p> <ul style="list-style-type: none"> <li>- Deterioration, malfunctions, or improper operations of run-on and runoff control systems</li> <li>- Proper functioning of wind dispersal control systems where present</li> <li>- The presence of leachate in and proper functioning of the leachate collection system.</li> </ul> <p>Verify that the amount of liquid removed from each leak detection sump is recorded at least once a week during the active life of the landfill and closure period.</p> <p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- If the liquid level in the sump stays below the pump operating level for two consecutive months, the liquid amounts are recorded quarterly</li> <li>- If the liquid level in the sump stays below the pump operating level for two consecutive quarters, the liquid amounts are recorded semi-annually.</li> </ul>
DF.135. TSDFs with permitted hazardous waste landfills are required to meet specific standards for hazardous wastes F020, F021, F022, F023, F026, and F027 (40 CFR 264.317).	<p>Determine whether or not these wastes are landfilled at the disposal facility.</p> <p>Verify that if they are landfilled, the TSDF has a management plan for their disposal that is approved by the regulatory agency.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Incinerators</i>	
DF.136. TSDFs with permitted hazardous waste incinerators must comply with certain operating requirements (40 CFR 264.340 (a) through 264.340(c) and 264.341 through 264.344(a), 264.345, and 264.347).	<p>Determine if specific wastes (principal organic hazardous constituents (POHC)) are specified in the permit.</p> <p>Verify that only the wastes listed in the permit are burned, and only under the operating conditions set forth in the permit.</p> <p>Verify that sufficient waste analyses are conducted throughout normal operations to ensure that waste feed is within the limits specified in the permit.</p> <p>Verify that for each waste specified in the permit, the incinerator achieves a destruction and removal efficiency (DRE) of 99.99 percent.</p> <p>Verify that the DRE for all wastes incinerated is determined by the following equation:</p> $DRE = \frac{(W_{in} - W_{out})}{W_{out}} \times 100\%$ <p>where:</p> <p><math>W_{in}</math> = mass feed rate of one POHC in the waste stream feeding the incinerator</p> <p><math>W_{out}</math> = mass emissions rate of the same POHC present in the exhaust emissions.)</p> <p>Verify that when EPA Hazardous Waste Numbers F020 through F023, F026, or F027 are incinerated a DRE of 99.9999 percent is achieved and the regulatory agency is notified of the intent to burn.</p>
DF.137. Permitted hazardous waste incinerators are required to meet specific emission standards (40 CFR 264.343(b) and 264.343(c)).	<p>Determine if the incinerator produces stack emissions of hydrogen chloride (HCl).</p> <p>Verify that if HCl emissions exceed 1.8 kg/hr (4 lb/h), the emissions are controlled so that the rate of emission is no greater than the larger of either 1.8 kg/hr (4 lb/h) or 1 percent HCl in the stack gas prior to entering any pollution control equipment.</p> <p>Verify that particulate matter no greater than 180 mg/dscm is emitted.</p> <p>(NOTE: Compliance with operating requirements established in the permit will be regarded as compliance with 40 CFR 262.343 (i.e., only the wastes listed in the permit are burned, and only under the operating conditions set forth in the permit (see 40 CFR 264.343(d))).)</p>
DF.138. Operators of incinerators must conduct monitoring while incinerating hazardous waste (40 CFR 264.347).	<p>Verify that the operator monitors, at a minimum, the following at the indicated intervals:</p> <ul style="list-style-type: none"> <li>- Waste feed rate, combustion temperature, specified indicator of combustion gas velocity, CO (prior to release): continuously</li> <li>- The incinerator and associated equipment for leaks, spills etc.: daily</li> <li>- The emergency waste feed cutoff system and associated emergency cutoff alarms: weekly.</li> </ul> <p>Verify that any other monitoring required in the permit is conducted.</p> <p>Verify that monitoring and inspection data are recorded and the records placed in the operating log.</p> <p>(NOTE: Upon request by the regulatory agency, sampling and analysis of the waste and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the performance standards of 40 CFR 264.343 (see 40 CFR 264.347(a)(3)).)</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.139. When permitted hazardous waste incinerators are closed all hazardous waste and hazardous waste residues must be removed (40 CFR 264.351).	Verify that all hazardous wastes and hazardous waste residues, including ash, scrubber waters, and scrubber sludges, are removed from the incinerator site.
<i>Miscellaneous Units</i>	
(NOTE: The open burning/open detonation (OB/OD) of waste explosives at permitted TSDFs is done under the classification of miscellaneous unit. This is also sometimes referred to as a Subpart X Permit.)	
DF.140. TSDFs that treat, store, or dispose of hazardous wastes in permitted miscellaneous units must comply with specific environmental performance standard requirements (40 CFR 264.601).	<p>Determine whether the TSDF treats, stores, or disposes of any hazardous waste in miscellaneous units.</p> <p>Verify that miscellaneous units are located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment, including:</p> <ul style="list-style-type: none"> <li>- Prevention of any release due to migration in the surface water, wetlands, or the soil surface, taking in to consideration: <ul style="list-style-type: none"> <li>-- volume and physical and chemical characteristics of the waste in the unit</li> <li>-- the effectiveness of containing, confining, and collection systems and structures in preventing migration</li> <li>-- the hydrologic characteristics of the unit and surrounding area, including the topography of the land around the unit</li> <li>-- regional patterns of precipitation</li> <li>-- existing quality, quantity, and direction of groundwater flow</li> <li>-- the proximity of the unit to surface waters</li> <li>-- the current and potential uses of nearby surface waters and any water quality standards established for those surface waters</li> <li>-- the existing quality of surface waters and surface soils including other sources of contamination and their cumulative impact</li> <li>-- regional pattern of land use</li> <li>-- potential health risks caused by human exposure to the waste</li> <li>-- potential for damage from exposure to domestic animals, wildlife, crops, vegetation, and physical structures.</li> </ul> </li> <li>- Prevention of any release that may have adverse affects on human health or the environment due to migration of waste constituents in the groundwater or subsurface environment, taking in to consideration: <ul style="list-style-type: none"> <li>-- volume, physical, and chemical characteristics of waste including its potential for migration through soil, liners, or other containing structures</li> <li>-- the hydrological and geological characteristics of the unit and surrounding area</li> <li>-- existing quality of groundwater including other sources of contamination and their cumulative impact on the groundwater</li> <li>-- the quantity and direction of groundwater flow</li> <li>-- proximity to and withdrawal rates of current and potential groundwater users</li> <li>-- regional pattern of land use</li> <li>-- potential for deposition or migration of waste into subsurface physical structures, and the root zone of food-chain crops and other vegetation</li> <li>-- potential health risks caused by human exposure to the waste</li> <li>-- potential for damage from exposure to domestic animals, wildlife, crops, vegetation, and physical structures</li> <li>-- regional pattern of precipitation.</li> </ul> </li> </ul> <p>Verify that miscellaneous units are designed and operated according to their permit conditions.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management											
Regulatory Requirement or Management Practice:	Reviewer Checks:										
DF.141. TSDFs that treat, store, or dispose of hazardous wastes in permitted miscellaneous units must comply with monitoring, analysis, inspection, responses, reporting, and corrective action regulations (40 CFR 264.602).	<p>Determine if the TSDF:</p> <ul style="list-style-type: none"> <li>- Follows the general inspection requirements of 40 CFR 264.15</li> <li>- Tests and maintains equipment in compliance with 40 CFR 264.33</li> <li>- Prepares a biennial report as specified in 40 CFR 264.75</li> <li>- Prepares unmanifested waste reports and additional reports, if applicable, as required in 40 CFR 264.76 through 264.77</li> <li>- Takes corrective action to prevent releases as defined in 40 CFR 264.101.</li> </ul>										
DF.142. A permitted miscellaneous unit that is a disposal unit must be maintained according to the permit requirements during the post-closure period (40 CFR 264.603).	<p>Determine if the TSDF has a closed miscellaneous unit.</p> <p>Verify that the post-closure requirements specified in the permit are being carried out.</p>										
<b>Additional Requirements for Interim Status TSDFs</b>											
<i>General</i>											
DF.143. Interim status TSDFs are allowed to conduct OB/OD of waste explosives under specific conditions (40 CFR 265.382).	<p>Determine if the TSDF is conducting OB/OD activities.</p> <p>Verify that the OB/OD occurs at the distance from an adjoining property line indicated in the following chart:</p> <table> <tr> <td>Lb. of waste explosive or propellants</td><td>Minimum distance from OB/OD activity to the property of others</td></tr> <tr> <td>0 to 100</td><td>204 m (670 ft.)</td></tr> <tr> <td>101 to 1,000</td><td>380 m (1,250 ft.)</td></tr> <tr> <td>1,001 to 10,000</td><td>530 m (1,730 ft.)</td></tr> <tr> <td>10,000 to 30,000</td><td>690 m (2,260 ft.)</td></tr> </table>	Lb. of waste explosive or propellants	Minimum distance from OB/OD activity to the property of others	0 to 100	204 m (670 ft.)	101 to 1,000	380 m (1,250 ft.)	1,001 to 10,000	530 m (1,730 ft.)	10,000 to 30,000	690 m (2,260 ft.)
Lb. of waste explosive or propellants	Minimum distance from OB/OD activity to the property of others										
0 to 100	204 m (670 ft.)										
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10,000 to 30,000	690 m (2,260 ft.)										
DF.144. TSDFs operating surface impoundments, landfills, or land treatment facilities are required to have a groundwater monitoring program that can determine the impact of these activities on the uppermost aquifer (40 CFR 265.90(a) through 265.90(c) and 265.90(e)).	<p>Verify that, unless the TSDF has demonstrated in writing there is a low potential for water migration or received a waiver, the TSDF has a groundwater monitoring program.</p> <p>Verify that the monitoring program is carried out throughout the active life of the activity and during post-closure for disposal activities.</p>										

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.145. The TSDF must gather and analyze samples from the groundwater monitoring system according to a groundwater sampling and analysis plan (40 CFR 265.92).	<p>Verify that the plan includes procedures and techniques for the following:</p> <ul style="list-style-type: none"> <li>- Sample collection</li> <li>- Sample preservation and shipment</li> <li>- Analytical procedures</li> <li>- Chain of custody control.</li> </ul> <p>Verify that the TSDF established initial background groundwater quality.</p> <p>Verify that the concentrations and/or values are determined for the following parameters and samples collected as indicated:</p> <ul style="list-style-type: none"> <li>- Parameters characterizing the suitability of groundwater as drinking water as found in Appendix III of 40 CFR 265</li> <li>- Parameters of chloride, iron, manganese, phenols, sodium, sulfate: annually</li> <li>- Parameters for pH, specific conductance, total organic carbon, total organic halogen: semiannually.</li> </ul> <p>(NOTE: The last two listed parameters are quarterly for the first year.)</p> <p>Verify that the elevation of the groundwater surface is determined each time a sample is obtained.</p>
DF.146. Groundwater monitoring systems are required to meet specific standards (40 CFR 265.91).	<p>Verify that the groundwater monitoring system is capable of yielding groundwater samples for analysis.</p> <p>Verify that groundwater monitoring systems consist of the following:</p> <ul style="list-style-type: none"> <li>- Monitoring wells, at least three, installed hydraulically downgradient at the limit of the waste management area</li> <li>- Monitoring wells, at least one, installed hydraulically upgradient from the limit of the waste management area</li> <li>- An alternate hydraulically downgradient monitoring well location that has been demonstrated in writing to be sufficient.</li> </ul> <p>(NOTE: Separate monitoring systems are not required for each component of a waste management system if the upgradient and downgradient sampling will detect any discharge from the waste management area.)</p>
DF.147. Facilities with interim status TSDFs must have an outline of a groundwater quality assessment program (40 CFR 265.93(a)).	<p>Determine if a groundwater quality assessment program outline has been developed.</p> <p>Verify that the program is capable of determining:</p> <ul style="list-style-type: none"> <li>- Whether or not hazardous waste or hazardous waste constituents have entered the groundwater</li> <li>- The rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater</li> <li>- The concentrations of hazardous waste or hazardous waste constituents in the groundwater.</li> </ul>
DF.148. When there is a significant increase for pH, specific conductance, total organic carbon, or total organic halogen (or pH decrease) in the downgradient wells, the TSDF must perform specific actions (40 CFR 265.93(c)(2) and 265.93(d)(1) through 265.93(d)(4)).	<p>Verify that additional samples are taken from the wells showing a significant change.</p> <p>Verify that, if a significant increase (or pH decrease) is confirmed, written notice is issued to the regulatory agency within 7 days of the confirmation.</p> <p>Verify that, within 15 days after the notification was submitted, the TSDF submits a groundwater quality assessment program.</p> <p>Verify that the program is implemented.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.149. If a TSDF is required to have a groundwater assessment program, specific reports must be submitted and actions taken depending on the results of the program (40 CFR 265.93(d)(5) through 265.93(d)(7)).	<p>Verify that the program was implemented as soon as possible and a written report containing an assessment of the water was sent to the regulatory agency.</p> <p>(NOTE: If the results of the first determination under the program show that no hazardous waste or hazardous waste constituents have entered the groundwater, the TSDF can return to its usual practices of monitoring.)</p>
DF.150. Unless the groundwater is being monitored to satisfy a groundwater assessment program, the TSDF is required to meet specific reporting and recordkeeping requirements (40 CFR 265.94(a)).	<p>Verify that records on analyses and groundwater elevations are kept throughout the life of the site, and for disposal facilities through post-closure.</p> <p>Verify that, during the first year of groundwater monitoring, the results of parameter monitoring are submitted to the regulatory agency within 15 days after completing each quarterly analysis.</p> <p>Verify that, after the first year, concentrations and values for monitored parameters are reported annually.</p>
DF.151. When the groundwater is being monitored to satisfy a groundwater assessment program, records have to be maintained of the analyses and annual reports submitted (40 CFR 265.94(b)).	<p>Verify that records of analyses and evaluations specified in the plan are maintained throughout the active life of the site, and for disposal facilities throughout post-closure.</p> <p>Verify that the results of the program are submitted annually to the regulatory agency by 1 March of each calendar year.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Surface Impoundments</i>	
DF.152. New surface impoundments that started construction after January 29, 1992, lateral expansions of surface impoundments which started construction after July 29, 1992, and replacements of existing surface impoundments where reuse started after July 29, 1992 are required to meet specific design and operating criteria (40 CFR 265.19, 265.221(a) through 265.221(e), 265.221(h), 265.222, and 265.223).	<p>Verify that the listed surface impoundments have two liners and a leachate collection and removal system between the liners unless a waiver has been granted by the regulatory agency.</p> <p>Verify that the TSDF has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that the regulatory agency is notified 60 days prior to the receipt of wastes.</p> <p>Verify that a TSDF submitting notice files a Part B application within six months of the receipt of notice.</p> <p>Verify that the TSDF is complying with the action leakage rate established by the regulatory agency and if the rate is exceeded by flow into any sump:</p> <ul style="list-style-type: none"> <li>- The regulatory agency is notified within seven days</li> <li>- A written notification is submitted within 14 days</li> <li>- The location, size and cause of any leak is determined to the extent practicable</li> <li>- A determination is made as to whether waste receipt should be stopped or restricted</li> <li>- The regulatory agency is notified of actions taken and actions to be taken within 30 days after discovery of a leak</li> <li>- A monthly report is submitted to the regulatory agency as long as the flow rate in the leak detection system exceeds the action leakage rate.</li> </ul> <p>Verify that the TSDF has an approved response action plan.</p> <p>(NOTE: As of February 18, 1993, surface impoundments that are newly subject to hazardous waste requirements because of new additions or characteristics for the identification of hazardous waste are required to meet the standards outlined above concerning having two or more liners and a leachate collection system.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.153. Interim status surface impoundments are required to meet specific operating and containment standards (40 CFR 265.221(f), 265.221(g), 265.223, 265.225, and 265.226).	<p>Verify that there is enough freeboard to prevent any overtopping of the dike by overfilling, wave actions, or a storm.</p> <p>Verify that there is a freeboard of 60 cm (2 ft) unless written certification states that a lesser freeboard is acceptable.</p> <p>Verify that all earthen dikes have a protective cover such as grass, shale, or rock to minimize wind and water erosion and preserve integrity.</p> <p>Verify that the freeboard is inspected at least once each day.</p> <p>Verify that the surface impoundment is inspected at least once a week for signs of deterioration, leaks, or failure.</p> <p>Verify that the amount of liquids removed from each leak detection system sump is recorded at least:</p> <ul style="list-style-type: none"> <li>- Once a week during the active life and closure period</li> <li>- Monthly after the final cover is installed or: <ul style="list-style-type: none"> <li>--if the liquid level in the sump stays below the pump operating level of two consecutive months, quarterly</li> <li>--if the liquid level in the sump stays below the pump operating level for two consecutive quarters, semi-annually.</li> </ul> </li> </ul>
DF.154. In specific circumstances additional waste analyses must be done (40 CFR 265.225).	<p>Verify that additional waste analyses are done whenever:</p> <ul style="list-style-type: none"> <li>- The surface impoundment is used to treat a substantially different hazardous waste from what was previously treated</li> <li>- A substantially different process is used to treat the waste.</li> </ul>
DF.155. Specific procedures must be followed during the closure and post-closure periods for an interim status surface impoundment (40 CFR 265.228).	<p>Verify that at closure all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate are removed or decontaminated.</p> <p>Verify that post-closure care includes care equivalent to that for interim status landfills and 40 CFR 265.310, including:</p> <ul style="list-style-type: none"> <li>- Elimination of free liquids</li> <li>- Stabilization of wastes to a bearing capacity sufficient to support the final cover</li> <li>- Covering of surface impoundment</li> <li>- Maintenance and monitoring of leak detection system.</li> </ul> <p>Verify that if wastes, waste residues, or contaminated materials remain after closure:</p> <ul style="list-style-type: none"> <li>- The integrity of the final cover is maintained</li> <li>- A groundwater monitoring system is maintained that meets the requirements of 40 CFR 265.90 through 265.94</li> <li>- Run-on and runoff are prevented from damaging or eroding the final cover</li> <li>- Maintenance and monitoring of the groundwater monitoring system is provided by the facility owner/operator.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Waste Piles</i>	
DF.156. Interim status waste piles are required to meet specific standards for wind protection, waste analysis, and containment (40 CFR 265.250, 265.251, and 265.253).	<p>Determine if the TSDF operates an interim waste pile.</p> <p>Verify that interim status waste piles are covered or otherwise managed to prevent dispersal of the pile contents by the wind.</p> <p>Verify that if the leachate or runoff from a pile is a hazardous waste, one of the following is done:</p> <ul style="list-style-type: none"> <li>- Option one: <ul style="list-style-type: none"> <li>-- place the pile on an impermeable base that is compatible with the waste</li> <li>-- design, construct, operate, and maintain a run-on control system capable of preventing flow onto the active portion of the pile during peak discharge from at least a 25 year storm</li> <li>-- design, construct, operate, and maintain a runoff management system to collect and control at least the water volume resulting for a 24 hour, 25 year storm</li> <li>-- empty and manage collection and holding facilities for the run-on and runoff systems</li> </ul> </li> <li>- Option two: <ul style="list-style-type: none"> <li>-- protect the pile from precipitation and run-on</li> <li>-- no liquids or wastes containing liquids are placed in the pile.</li> </ul> </li> </ul>
DF.157. New interim status piles which start construction after January 29, 1992, lateral expansions of a waste pile unit which started after July 29, 1992, and each such replacement of an existing waste pile unit for which reuse started after July 29, 1992 must meet specific design and operating standards (40 CFR 265.19, 265.254, 265.255, 265.259, and 265.260).	<p>Determine if the TSDF operates an interim status waste pile meeting the listed description.</p> <p>Verify that the waste pile has two or more liners and a leachate collection and removal system.</p> <p>Verify that the TSDF has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that waste piles subject to these requirements meet the action leakage rate set by the regulatory agency.</p> <p>Verify that the TSDF has an approved response action plan before receipt of waste.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.157. (continued)	<p>Verify that if the flow rate into the leak detection system exceeds the action leakage rate for any sump:</p> <ul style="list-style-type: none"> <li>- The regulatory agency is notified within seven days</li> <li>- A written notification is submitted within 14 days</li> <li>- The location, size and cause of any leak is determined to the extent practicable</li> <li>- A determination is made as to whether waste receipt should be stopped or restricted</li> <li>- The regulatory agency is notified of actions to be taken within 30 days after discovery of a leak</li> <li>- A monthly report is submitted to the regulatory agency as long as the flow rate in the leak detection system exceeds the action leakage rate.</li> </ul> <p>Verify that the amount of liquids removed from each leak detection sump is recorded at least one a week during the active life and closure period.</p>
DF.158. Except in specific instances, TSDFs are required to analyze a representative sample from each incoming waste before adding the waste to an existing pile (40 CFR 265.252).	<p>Verify that an analysis is performed unless one of the following occurs:</p> <ul style="list-style-type: none"> <li>- The only wastes that the TSDF receives for piling are compatible</li> <li>- The waste received is compatible with the pile in which it is to be placed.</li> </ul>
DF.159. Interim status waste piles must meet specific closure and post closure requirements (40 CFR 265.258).	<p>Verify that at closure all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate are removed or decontaminated.</p> <p>Verify that if all residues cannot be removed, the waste pile is closed and post-closure care is carried out as for a landfill.</p>
<i>Land Treatment Units</i>	
DF.160. Interim status land treatment units are required to be operated according to specific standards (40 CFR 265.270, 265.272, 265.273, and 265.279).	<p>Determine if the TSDF operates an interim status land treatment unit.</p> <p>Verify that the following standards are met at the land treatment unit:</p> <ul style="list-style-type: none"> <li>- Hazardous wastes are not placed in or on a land treatment facility unless it can be made less hazardous or nonhazardous by degradation, transformation, or immobilization processes occurring in or on the soil</li> <li>- Run-on control systems are operated to prevent flow onto the treatment zone during peak discharge from at least a 25 year storm</li> <li>- Runoff management systems are capable of controlling and collecting a water volume at least equivalent to a 24 hour, 25 year storm</li> <li>- Tanks and basins associated with the run-on and runoff control systems are emptied or otherwise managed after storms</li> <li>- Wind dispersal is controlled.</li> </ul> <p>Verify that in addition to required waste analysis, prior to placing a hazardous waste in or on a land treatment facility the owner or operator:</p> <ul style="list-style-type: none"> <li>- Determines the concentrations in the waste of any substance which equals or exceeds the maximum concentrations contained in Table 1 of 264.21</li> <li>- Determines the concentration of any substance which caused the waste to be listed as hazardous</li> <li>- Determines the concentrations of arsenic, cadmium, lead, and mercury if food chain crops are grown unless there is documentation present to prove that none of these constituents exist.</li> </ul> <p>Verify that hazardous waste application dates and rates are included in the operating record.</p>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.161. TSDFs are required to operate interim status land treatment facilities where food chain crops are grown according to specific standards (40 CFR 265.276).	<p>Determine if the TSDF grows food chain crops on their land treatment facilities.</p> <p>Verify that the TSDF notified the regulatory agency that food chain crops were being grown.</p> <p>Verify that food chain crops are not grown on the land treatment facility unless there is proof that the crop will not be contaminated by arsenic, lead, mercury, or other harmful constituents.</p> <p>Verify that if the TSDF accepts waste that is contaminated with cadmium, the handling practices outlined in 50 CFR 265.276(c) are followed.</p>
DF.162. TSDFs with interim status land treatment facilities are required to have an unsaturated zone monitoring plan (40 CFR 265.278).	<p>Verify that the TSDF has an unsaturated zone monitoring plan that includes:</p> <ul style="list-style-type: none"> <li>- Soil monitoring using soil cores</li> <li>- Soil-pore water monitoring using devices such as lysimeters</li> <li>- Depth and number of samples to be taken.</li> </ul> <p>Verify that the TSDF is following the plan.</p>
DF.163. TSDFs with interim status land treatment facilities are required to meet specific requirements concerning closure and post-closure (40 CFR 265.280).	<p>Verify that in the closure plan, the TSDF has addressed the following issues for interim status land treatment facilities:</p> <ul style="list-style-type: none"> <li>- Control of migration of wastes</li> <li>- Control of the release of contaminated runoff into surface water</li> <li>- Control of the release of airborne particulates</li> <li>- Compliance with food chain crop restrictions.</li> </ul> <p>Verify that during closure:</p> <ul style="list-style-type: none"> <li>- Unsaturated zone monitoring is continued</li> <li>- The run-on control system is maintained</li> <li>- The runoff management system is maintained</li> <li>- There is continued control of wind dispersal of particulate matter.</li> </ul> <p>Verify that when closure was completed, the TSDF notified the regulatory agency.</p> <p>Verify that during post-closure the following is done:</p> <ul style="list-style-type: none"> <li>- Soil-core monitoring is continued as specified in the post closure plan</li> <li>- Access to the unit is restricted as appropriate</li> <li>- Growth of food chain crops complies with restrictions</li> <li>- Wind dispersal of hazardous wastes is controlled.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Hazardous Waste Landfills</i>	
DF.164. New interim status landfill units which started construction after January 29, 1992, each lateral expansion of a landfill unit that started construction after July 29, 1992, and each replacement of an existing landfill that will begin reuse after July 29, 1992, is required to meet specific design and operating standards (40 CFR 265.19, 265.301(a) through 265.301(e) and 265.302 through 265.304).	<p>Determine if the TSDF has any interim status landfills meeting the stated criteria.</p> <p>Verify that the landfill has two or more liners and a leachate collection system above and between the liners or that a waiver of the double liner requirement has been obtained from the regulatory agency.</p> <p>Verify that the TSDF has a CQA program to ensure that constructed units meet or exceed all design criteria and specifications in the permit.</p> <p>Verify that the designated CQA officer is a registered professional engineer.</p> <p>Verify that the TSDF has a written CQA plan that addresses the following:</p> <ul style="list-style-type: none"> <li>- Identification of applicable units and a description of how they will be constructed</li> <li>- Identification of key personnel</li> <li>- A description of sampling and inspection activities.</li> </ul> <p>Verify that waste is not received in a unit until an approved CQA plan has been submitted to the regulatory agency.</p> <p>Verify that documentation supporting construction quality assurance certification can be provided upon request.</p> <p>Verify that the TSDF notifies the regulatory agency at least 60 days prior to receiving waste and files a Part B application within six months of the receipt of notice.</p> <p>Verify that landfills subject to these requirements meet the action leakage rate set by the regulatory agency.</p> <p>Verify that the TSDF has an approved response action plan before the receipt of waste.</p> <p>Verify that if the flow rate into the leak detection system exceed the action leakage rate for any sump:</p> <ul style="list-style-type: none"> <li>- The regulatory agency is notified within seven days</li> <li>- A written notification is submitted within 14 days</li> <li>- To the extent practicable, the location, size and cause of any leak is determined</li> <li>- A determination is made as to whether waste receipt should be stopped or restricted</li> <li>- The regulatory agency is notified of actions taken and actions to be taken within 30 days after discovery</li> <li>- A monthly report is submitted to the regulatory agency as long as the flow rate is the leak detection system exceeds the action leakage rate.</li> </ul> <p>Verify that after a final cover is installed, the amount of liquids removed from each leak detection system sump is recorded at least monthly or:</p> <ul style="list-style-type: none"> <li>- If the liquid level in the sump stays below the pump operating level for two consecutive months, quarterly</li> <li>- If the liquid level in the sump stays below the pump operating level for two consecutive quarters, semiannually.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Incinerators</i>	
DF.165. TSDFs with interim status that use incinerators for hazardous waste must sufficiently analyze all wastes burned (40 CFR 265.340 and 40 CFR 265.341).	<p>Determine if the TSDF incinerates hazardous wastes.</p> <p>Determine if the results of each waste analysis are kept on file in the operating record.</p> <p>Verify that for each waste not previously burned at the site, a waste analysis is conducted to establish steady state (normal) operating conditions including:</p> <ul style="list-style-type: none"> <li>- Waste fuel feed</li> <li>- Auxiliary fuel feed</li> <li>- Air flow</li> <li>- Type of pollutants that might be emitted</li> <li>- At a minimum, the waste analysis must determine: <ul style="list-style-type: none"> <li>-- heating value</li> <li>-- halogen content</li> <li>-- sulfur content</li> <li>-- lead concentration level</li> <li>-- mercury concentration level.</li> </ul> </li> </ul> <p>(NOTE: TSDFs with interim status may be exempt from all the requirements for hazardous waste incinerators (except closure) under certain conditions:</p> <ul style="list-style-type: none"> <li>- The TSDF has written documentation that the wastes they incinerate do not contain any hazardous constituents listed in 40 CFR 261 appendix VIII (see Appendix B of this protocol)</li> <li>- The documentation is retained at the TSDF</li> <li>- The wastes are listed as hazardous solely because of their ignitable (Hazard Code I) or corrosive (Hazard Code C) properties, or both, as listed and determined in 40 CFR 261, part C or D</li> <li>- The wastes are listed as reactive (Hazard Code R) for characteristics other than those listed in 40 CFR 261.23(a)(4) and (5) and will not be burned when other hazardous wastes are present in the combustion zone</li> <li>- The wastes are hazardous wastes solely because they possess the characteristics of ignitability, corrosivity, or both, as determined by the tests for characteristics of hazardous waste</li> <li>- The wastes are hazardous wastes solely because they possess the reactivity characteristics described in 40 CFR 261.23(a)(1), (2), (3), (6), (7) and (8) and will not be burned when other hazardous wastes are present in the combustion zone.)</li> </ul>
DF.166. TSDFs with interim status may burn F020 through F023, F026, F027 if they have proper certification (40 CFR 265.352).	<p>Determine if the TSDF burns EPA hazardous waste numbers F020 through F023, F026, or F027.</p> <p>Verify that the TSDF has received certification from the regulatory agency if such wastes are burned at the site.</p>
DF.167. TSDFs with interim status that incinerate hazardous waste must not feed hazardous waste unless the incinerator is at a steady state (40 CFR 265.345).	Observe the incinerator during startup and shutdown to verify that the waste is not fed until steady state conditions are reached.

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.168. An interim status TSDF that incinerates hazardous waste must conduct monitoring and inspections (40 CFR 265.347).	<p>Verify that the following monitoring and inspection procedures are followed:</p> <ul style="list-style-type: none"> <li>- Existing instruments related to combustion and emission control are monitored every 15 minutes including the instruments that control: <ul style="list-style-type: none"> <li>-- waste feed</li> <li>-- auxiliary fuel feed</li> <li>-- air flow</li> <li>-- incinerator temperature</li> <li>-- scrubber flow</li> <li>-- scrubber pH</li> </ul> </li> <li>- The complete incinerator and associated equipment are inspected at least daily for leaks, spills, and fugitive emissions, including: <ul style="list-style-type: none"> <li>-- pumps</li> <li>-- valves</li> <li>-- conveyors</li> <li>-- pipes</li> <li>-- emergency shutdown controls and system alarms are checked at least daily to assure proper operation.</li> </ul> </li> </ul>
DF.169. At closure of an interim status incinerator, all hazardous waste and hazardous waste residues must be removed (40 CFR 265.351).	<p>Verify that when an interim status hazardous waste incinerator is closed, the wastes and residues are removed.</p>
<i>Thermal Treatment</i>	
DF.170. TSDFs with interim status thermal treatment facilities must meet specific requirements (40 CFR 265.370, 265.373, 265.375, 265.381, and 265.383).	<p>Determine if the TSDF operates an interim status thermal treatment facility (other than enclosed devices using controlled flame combustion).</p> <p>Verify that the following requirements are met:</p> <ul style="list-style-type: none"> <li>- The thermal treatment process is operating at steady state (normal) conditions, including temperature, before adding hazardous waste (unless the process is a noncontinuous (batch) process that requires a complete thermal cycle to treat the waste)</li> <li>- Waste analysis is performed on waste not previously treated at the thermal treatment facility that includes: <ul style="list-style-type: none"> <li>-- establishing steady state (normal) operating condition</li> <li>-- types of pollutants which might be emitted</li> <li>-- heating value</li> <li>-- halogen and sulfur content</li> <li>-- concentrations of lead and mercury.</li> </ul> </li> </ul> <p>(NOTE: The open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives.)</p> <p>Verify that if open burning or detonation of waste explosives is conducted, the following standards are met:</p> <ul style="list-style-type: none"> <li>- Pounds of waste explosives or propellants determines the minimum distance from open burning or detonation to property of others as shown below: <ul style="list-style-type: none"> <li>-- 0-100 lb.: 204 m (670 ft.)</li> <li>-- 101-1,000 lb.: 380 m (1250 ft.)</li> <li>-- 1001-10,000 lb.: 530 m (1730 ft.)</li> <li>-- 10,001-30,000 lb.: 690 m (2260 ft.).</li> </ul> </li> </ul> <p>Verify that at closure all wastes and residues are removed.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.171. Interim status thermal treatment facilities must be certified, if they treat certain wastes (40 CFR 265.383).	<p>Determine if the TSDF thermally treats EPA waste numbers F020 through F023, F026, or F027.</p> <p>Verify that the TSDF has received certification from the regulatory agency to burn such wastes.</p>
DF.172. Operators of interim status thermal treatment facilities must conduct monitoring and inspections while thermally treating hazardous waste (40 CFR 265.377).	<p>Determine if the operator conducts at a minimum the following monitoring while thermally treating hazardous wastes:</p> <ul style="list-style-type: none"> <li>- Every 15 min, the following instrumentation for temperature and emission controls are monitored and appropriate corrections are made immediately: <ul style="list-style-type: none"> <li>-- waste feed rate</li> <li>-- auxiliary fuel rate</li> <li>-- treatment process temperature</li> <li>-- relevant process flow and level controls</li> <li>-- every hour, stack emissions are visually checked for normal appearance (color and opacity)</li> </ul> </li> <li>- Every day, the complete thermal treatment process and associated equipment are checked including: <ul style="list-style-type: none"> <li>-- pumps, valves, conveyors, pipes, etc. inspected for leaks, spills, and fugitive emissions</li> <li>-- emergency shutdown controls and systems alarms are checked for proper operation.</li> </ul> </li> </ul>
<i>Chemical/Physical/Biological Treatment</i>	
DF.173. TSDFs with interim status chemical, physical, and biological treatment facilities must meet certain requirements (40 CFR 265.400 through 265.402, and 265.404).	<p>Determine if the TSDF operates a chemical, physical, or biological treatment facility to treat hazardous wastes.</p> <p>(NOTE: These requirements do not apply to TSDFs which treat hazardous wastes by chemical, physical, biological methods in other than tanks, surface impoundments, and land treatment units.)</p> <p>Verify that the following criteria are met:</p> <ul style="list-style-type: none"> <li>- Wastes or treatment reagents are not placed in treatment process or equipment if they could cause ruptures, leaks, corrosion or other failures</li> <li>- In addition to the analyses required by 40 CFR 265.13, continuously fed systems are equipped with waste feed cutoff or bypass system</li> <li>- Waste analyses and treatment tests (e.g., bench scale or pilot plant tests) are performed, or written, documented information is obtained whenever a substantially different waste is treated or a substantially different treatment process is used.</li> </ul> <p>Verify that at closure all wastes and residues are removed.</p>
DF.174. TSDFs with chemical, physical, and biological treatment facilities must conduct regular inspections (40 CFR 265.403).	<p>Determine if the chemical, physical, and biological treatment facility is inspected in accordance with the following:</p> <ul style="list-style-type: none"> <li>- At least daily, discharge control and safety equipment (e.g., waste feed cutoff system, bypass system, drainage systems, and pressure relief systems) to ensure good working order</li> <li>- At least daily, data from monitoring equipment is checked to ensure process is operated in accordance with its design</li> <li>- At least weekly, construction materials of the treatment process or equipment is inspected to detect corrosion, leaks, etc.</li> <li>- At least weekly, construction materials of and the area surrounding dikes or other discharge confinement structures are inspected to detect erosion or signs of leakage (dead vegetation, wet spots, etc.).</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.175. TSDFs with interim status may not place ignitable, reactive, or incompatible waste in a treatment process or equipment unless certain requirements are met (40 CFR 265.405 through 265.406 and 265.17(b)).	<p>Determine whether the TSDF treats any of these wastes.</p> <p>Verify that any ignitable or reactive waste is treated or mixed in such a way before or immediately after placement in the treatment process so that the resultant material no longer meets the definition for ignitable or reactive wastes and is treated in such a way that it is not exposed to conditions that may cause it to react or ignite.</p> <p>Verify that incompatible wastes are not placed in the same treatment process, equipment, or in unwashed equipment that previously held incompatible waste.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<b>Export/Import of Hazardous Waste</b>	
<i>Exports of Hazardous Waste for Recovery within the OECD Member Countries</i>	
<p>DF.176. 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).</p>	<p>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].</p> <p>(NOTE: The following countries have become OECD member countries since EPA promulgated its OECD regulations in 1996: South Korea, Czech Republic, Poland, and Hungary. EPA plans to amend its regulations to reflect these new OECD countries. In the interim, 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.)</p> <p>Determine whether the waste is destined for recovery operations, including resource recovery, recycling, reclamation, direct re-use or alternative uses.</p> <p>Verify that 45 days prior to shipment of hazardous waste, the facility has notified EPA (in writing) of the following:</p> <ul style="list-style-type: none"> <li>- Serial number or other accepted identifier of the notification form</li> <li>- Name, address, telephone and telefax numbers, and EPA ID number of the notifier</li> <li>- 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</li> <li>- Intended transporters and any agents</li> <li>- Country of export and point of departure</li> <li>- Countries of transit, relevant competent authority, and point of entry and departure</li> <li>- Country of import, relevant competent authority, and point of entry</li> <li>- Statement of whether the notification is for a single or multiple shipments and, for multiple shipments, period of validity requested</li> <li>- Date foreseen for shipments to begin</li> <li>- Designation of waste types from the appropriate list (amber or red and waste list code), descriptions of each waste type, estimated total quantity of each, RCRA waste code, and United Nations number for each waste type <b>and</b></li> <li>- Signed certification that states the following:</li> </ul> <p>"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."</p> <p>(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.)</p> <p>(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.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.176. (continued)	<p>(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 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.)</p> <p>For amber list wastes, verify that 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.</p> <p>For red list wastes, verify that written consent was received from the importing country and any transit countries prior to export.</p>
DF.177. 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).	<p>Verify that contracts specify the name and EPA ID number, where available, of:</p> <ul style="list-style-type: none"> <li>- The generator of each type of waste</li> <li>- Each person who will have physical custody of the waste</li> <li>- Each person who will have legal control of the waste <b>and</b></li> <li>- The recovery facility.</li> </ul> <p>Verify that contracts specify:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- 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</li> <li>- 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</li> <li>- Notification prior to re-export to a third country <b>and</b></li> <li>- Provisions for financial guarantees.</li> </ul>



## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.178. 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).	<p>Verify that a copy of the tracking document is attached to the shipment.</p> <p>Verify that the tracking document includes all information contained in the notification and the following:</p> <ul style="list-style-type: none"> <li>- The date shipment commenced</li> <li>- Name, address, telephone and telefax numbers of primary exporter, if different than the notifier</li> <li>- Name and EPA ID number of all transporters</li> <li>- Any special precautions to be taken by transporters</li> <li>- Signed certification that states the following:</li> </ul> <p>“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:</p> <ol style="list-style-type: none"> <li>1. All necessary consents have been received; OR</li> <li>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</li> <li>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.”</li> </ol> <p>(NOTE: The notifier may delete sentences that are not applicable.)</p> <p><b>and</b></p> <ul style="list-style-type: none"> <li>- Appropriate signatures for each custody transfer.</li> </ul>
DF.179. A U.S. notifier must comply with special manifest requirements (40 CFR 262.84(c) and 262.54(a), (b), (c), (e), and (i)).	<p>Verify that the tracking documents contain the following:</p> <ul style="list-style-type: none"> <li>- 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 <b>and</b></li> <li>- The point of departure from the United States indicated in the Special Handling Instructions and Additional Information section.</li> </ul> <p>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.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.180. A primary exporter must file an annual report with EPA by March 1 of each year regarding hazardous waste exported for recovery during the previous year (40 CFR 262.87(a)).	<p>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.</p> <p>Randomly check several annual reports to determine whether they contain the following information for all hazardous waste exported for recovery during the previous year:</p> <ul style="list-style-type: none"> <li>- The EPA ID number, name, mailing and site address of the notifier filing the report</li> <li>- Calendar year covered by the report</li> <li>- The name and address of each final recovery facility</li> <li>- 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</li> <li>- 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 <b>and</b></li> <li>- Certification signed by the primary exporter that states the following:</li> </ul> <p>"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."</p>
DF.181. A primary exporter must file an exception report with EPA under certain circumstances (40 CFR 262.87(b)).	<p>Verify that an exception report is filed with EPA each time any of the following occurs:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- 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</li> <li>- The waste is returned to the U.S.</li> </ul>
DF.182. A primary exporter must maintain records that relate to export activities (40 CFR 262.87(c)).	<p>Verify that the following records are kept for the appropriate period of time:</p> <ul style="list-style-type: none"> <li>- 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)</li> <li>- Each annual report (at least 3 years from the due date of the report), <b>and</b></li> <li>- Any exception reports and each confirmation of delivery received from the recovery facility (at least 3 years from the date the initial waste was received from the recovery facility).</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Exports of Hazardous Waste (Except to the OECD Member Countries) for Recovery</i>	
DF.183. A primary exporter of hazardous waste must comply with notification requirements (40 CFR 262.53(a) and 262.53(b)).	<p>Determine if the facility imports/exports hazardous waste.</p> <p>Verify that 60 days prior to the initial shipment of hazardous waste to each country in each calendar year, the facility has notified the EPA (in writing) of the following:</p> <ul style="list-style-type: none"> <li>- Name, mailing address, telephone number, and EPA identification number of the primary exporter</li> <li>- By consignee, for each hazardous waste type: <ul style="list-style-type: none"> <li>-- identification of the hazardous waste shipped by EPA identification number</li> <li>-- DOT shipping name, hazard class, and importer for the waste</li> <li>-- estimated frequency/rate at which such wastes(s) is to be exported</li> <li>-- estimated total quantity (in units)</li> <li>-- all points of entry to and departure from each foreign country the waste will pass through</li> <li>-- a description of the approximate length of time the waste will remain in each country, and how it will be handled there</li> <li>-- the mode of transportation used to transport the waste and type(s) of containers used</li> <li>-- description of the treatment, storage, or disposal method to be used in the receiving country</li> <li>-- name and address of the foreign consignee.</li> </ul> </li> </ul>
DF.184. The primary exporter must attach a copy of an 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)).	<p>Verify that a copy of the EPA Acknowledgment of Consent is on file by checking the records.</p> <p>Verify that a copy of this document was attached to the shipment.</p>
DF.185. 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)).	<p>Verify that the facility has been receiving confirmation of delivery.</p> <p>Determine if there are any notations of discrepancies.</p>
DF.186. 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)).	<p>Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20 through 262.23.</p> <p>Determine if the following modifications are made by reviewing the manifest copies:</p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- The point of departure from the United States is indicated in the Special Instructions and Additional Information sections.</li> <li>- This statement, "and conform to the terms of the attached EPA Acknowledgment of Consent," is added to the end of the first sentence of the certification in Item 16.</li> </ul> <p>Verify that a copy of the manifest is provided for delivery to the U.S. Customs official at the U.S. point of departure.</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.187. 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)).	<p>Verify that when a shipment cannot be delivered, the primary exporter does one of the following:</p> <ul style="list-style-type: none"> <li>- Notifies the EPA of a change in the conditions of the original notification to allow shipment to a new consignee and obtains an EPA Acknowledgment of Consent prior to delivery, or</li> <li>- Instructs the transporter to return the waste to the primary exporter in the United States or designates another facility within the United States.</li> </ul> <p>Verify that the facility instructs the transporter to revise the manifest to reflect changes made.</p>
DF.188. Primary exporters of hazardous waste are required to file an exception report under certain conditions (40 CFR 262.55).	<p>Verify that an exception report was filed if:</p> <ul style="list-style-type: none"> <li>- 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: <ul style="list-style-type: none"> <li>-- date of departure of the waste from the United States</li> <li>-- place of departure of the waste from the United States</li> </ul> </li> <li>- 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</li> <li>- The waste is returned to the United States.</li> </ul>
DF.189. 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).	<p>Verify that an Annual Report has been submitted by March 1 of every calendar year.</p> <p>Verify that the Annual Reports contain the following information for all hazardous waste exported during the previous calendar year:</p> <ul style="list-style-type: none"> <li>- Type, EPA hazardous waste number, DOT hazard class and name for each hazardous waste(s) exported</li> <li>- EPA identification number for each transporter (where applicable)</li> <li>- Quantity of hazardous waste(s) exported</li> <li>- Frequency (dates) of hazardous waste(s) exported</li> <li>- Ultimate destination for all hazardous waste(s) exported</li> <li>- Efforts used to reduce the volume and toxicity of the waste (and the changes achieved during the year in comparison to previous years)</li> <li>- A certification signed by the primary exporter that states:</li> </ul> <p>"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."</p>
DF.190. Primary exporters of hazardous wastes must maintain additional records that relate to their export activities (40 CFR 262.57).	<p>Verify that the following are kept for at least three years:</p> <ul style="list-style-type: none"> <li>- A copy of each notification of intent to export</li> <li>- A copy of each EPA Acknowledgment of Consent</li> <li>- A copy of each confirmation of delivery (signed manifests) of the waste</li> <li>- Annual reports.</li> </ul> <p>(NOTE: Periods of retention are automatically extended during the course of any unresolved enforcement action.)</p>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<i>Imports of Hazardous Waste for Recovery Within the OECD Member Countries</i>	
DF.191. 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).	<p>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].</p> <p>(NOTE: The following countries have become OECD member countries since EPA promulgated its regulations in 1996: South Korea, Czech Republic, Poland, and Hungary. EPA plans to amend its regulations to reflect these new OECD countries. In the interim, 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.)</p> <p>Determine whether the waste is for recovery operations, including resource recovery, recycling, reclamation, direct re-use or alternative uses.</p> <p>Verify that contracts specify the name and EPA ID number, where available, of:</p> <ul style="list-style-type: none"> <li>- The generator of each type of waste</li> <li>- Each person who will have physical custody of the waste</li> <li>- Each person who will have legal control of the waste <b>and</b></li> <li>- The recovery facility.</li> </ul> <p>Verify that contracts specify:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- 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</li> <li>- 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</li> <li>- Notification prior to re-export to a third country <b>and</b></li> <li>- Provisions for financial guarantees.</li> </ul>
DF.192. 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).	<p>Verify that a copy of the tracking document was attached to the shipment.</p> <p>Verify that the tracking document included all information contained in the notification and the following:</p> <ul style="list-style-type: none"> <li>- The date shipment commenced</li> <li>- Name, address, telephone and telefax numbers of primary exporter, if different than the notifier</li> <li>- Name and EPA ID number of all transporters</li> <li>- Identification of means of transport, including types of packaging</li> <li>- Any special precautions to be taken by transporters</li> <li>- Signed certification required by 40 CFR 262.84(b)(6) <b>and</b></li> <li>- Appropriate signatures for each custody transfer.</li> </ul>

## Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
DF.193. A consignee must comply with general manifest requirements with certain modifications (40 CFR 262.84(c) and 262.60).	<p>Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20.</p> <p>Determine if the following modifications are made by reviewing the manifest copies:</p> <ul style="list-style-type: none"> <li>- 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 <b>and</b></li> <li>- 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.</li> </ul>
DF.194. 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.
DF.195. An owner/operator of a U.S. recovery facility must send signed copies of the tracking document to the notifier, to 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 EPA, and to the competent authorities of the exporting and transit countries within the three days.
DF.196. A facility that has arranged to receive hazardous waste from a foreign source must notify EPA (40 CFR 264.12(a)(1) and 265.12(a)(1)).	<p>Verify that the facility notifies the appropriate EPA Regional Administrator in writing at least four weeks prior to the date the waste is expected to arrive at the facility.</p> <p>(NOTE: Notice of subsequent shipments of the same waste from the same foreign source is not required.)</p>
<i>Imports of Hazardous Waste (Except from the OECD Member Countries) for Recovery</i>	
DF.197. Any person who imports hazardous waste must comply with general manifest requirements with certain modifications (40 CFR 262.60).	<p>Verify that the manifest copies comply with the general manifest requirements of 40 CFR 262.20.</p> <p>Determine if the following modifications are made by reviewing the manifest copies:</p> <ul style="list-style-type: none"> <li>- 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 <b>and</b></li> <li>- 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.</li> </ul>
DF.198. A facility that has arranged to receive hazardous waste from a foreign source must notify EPA (40 CFR 264.12(a)(1) and 265.12(a)(1)).	<p>Verify that the facility notifies the appropriate EPA Regional Administrator in writing at least four weeks prior to the date the waste is expected to arrive at the facility.</p> <p>(NOTE: Notice of subsequent shipments of the same waste from the same foreign source is not required.)</p>

**Protocol for Conducting Environmental Compliance Audits of  
Treatment, Storage and Disposal Facilities under the Resource  
Conservation and Recovery Act**

**Appendix A:  
Identification and Listing of Hazardous Waste  
(40 CFR 261.30 through 261.31)**

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**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix A: Identification and Listing of Hazardous Waste (40 CFR 261.30 through 261.31)**

**Table 1 - Hazardous Waste from Nonspecific Sources**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F001	The spent halogenated solvents used in degreasing. Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures or 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 listed in F002, F004, 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-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures or 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 spent nonhalogenated solvents, xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures.	(i)
F004	The spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(t)
F005	The following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures or blends containing, before use, a total of ten percent or more by volume of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents.	(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 solution from electroplating operations.	(r, t)
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 from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. **	(h)

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix A: Identification and Listing of Hazardous Waste (40 CFR 261.30 through 261.31)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F021	Wastes of pentachlorophenol, or intermediates used to produce its derivatives. **	(h)
F022	Wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. **	(h)
F023	Wastes, of tri- and tetrachlorophenols. **	(t)
F024	Wastes, including but not limited to distillation residues, heavy ends, tars and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five, (Omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 40 CFR 261.32).	(t)
F025	Condensed light ends, spent filters 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 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 (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.	(h)
F028	Residues from 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 residue, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use of have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 261.35 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 come into contact w/ 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 sludge from the treatment of wastewater from wood preserving processes that use creosote and or pentachlorophenol.	(t)
F035	Wastewaters (except those that have come into contact w/ 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)
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 oily cooling wastewaters from petroleum refiners. This includes, but is not limited to, sludges generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow.  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 generated in aggressive biological treatment units*** (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.	(t)

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix A: Identification and Listing of Hazardous Waste (40 CFR 261.30 through 261.31)**

Industry and USEPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
F038	<p>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.</p> <p>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*** (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.</p>	(t)
F039	<p>Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under 40 CFR 261 Subpart D.</p> <p>(Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.)</p>	

NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

\* Hazard Codes:

t = toxic waste	h = acute hazardous waste
i = ignitable waste	c = corrosive waste
r = reactive waste	e = toxicity characteristic waste

\*\* (except wastewater and spent carbon from hydrogen chloride purification) the manufacturing or production use: as a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of Hexachlorophene from highly purified 2,4,5- trichlorophenol.

\*\*\* Aggressive biological treatment units are defined as units which employ one of the following treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix A: Identification and Listing of Hazardous Waste (40 CFR 261.30 through 261.31)**

**Table 2 - Hazardous Waste from Organic and Inorganic Chemical Industries**

Industry and EPA Hazardous Waste Number	Hazardous Waste	Hazard Code*
<b>Organic Chemicals</b>		
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 fractionation 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)
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 methyl ethyl pyridines.	(t)
K027	Centrifuge residue 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 stream 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 of fractionation column bottoms from the production of chlorobenzene.	(t)
K103	Process residues from aniline extraction from the production of aniline.	(t)

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<b>Industry and EPA Hazardous Waste Number</b>	<b>Hazardous Waste</b>	<b>Hazard Code*</b>
K104	Combined wastewater streams generated from nitrobenzene or 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	(c, t)
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 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)
K093	Distillation light ends from the production of phthalic anhydride from orthoxylene.	(t)
K094	Distillation bottoms from the production of phthalic anhydride from orthoxylene.	(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)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.	(c, t)
K112	Reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(t)
K113	Condensed liquid light ennation of dinitrotoluene.	(t)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine.	(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)
<b>Inorganic Chemicals</b>		
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)
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)

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix A: Identification and Listing of Hazardous Waste (40 CFR 261.30 through 261.31)**

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<b>Industry and EPA Hazardous Waste Number</b>	<b>Hazardous Waste</b>	<b>Hazard Code*</b>
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.	(t)
<b>Hazardous Waste from Explosives Manufacturing</b>		
K044	Wastewater treatment sludge 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.	(t)

\* Hazard Codes:

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- c = corrosive waste

**Protocol for Conducting Environmental Compliance Audits of  
Hazardous Waste Generators under the Resource Conservation  
and Recovery Act**

**Appendix B:  
Identification of Hazardous Waste Hazardous Constituents  
(40 CFR 261, Appendix VIII)**

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**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix B: Identification of Hazardous Waste Hazardous Constituents (40 CFR 261, Appendix VIII)**

Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Acetonitrile	Same	75-05-8	U003
Acetophenone	Ethanone, 1-phenyl-	98-86-2	U004
2-Acetylaminofluorene	Acetamide, N-9H-fluorene-2-yl	53-96-3	U005
Acetyl chloride	Same	75-36-5	U006
1-Acetyl-2-thiourea	Acetamide, N-(aminothioxomethyl)-	591-08-2	P002
Acrolein	2-Propenal	107-02-8	P003
Acrylamide	2-Propenamide	79-06-1	U007
Acrylonitrile	2-Propenenitrile	107-13-1	U009
Aflatoxins	Same	1402-68-2	
Aldicarb	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime.	116-06-3	P070
Aldrin	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro- 1,4,4a,5,8,8a-hexahydro-, (1 alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-.	309-00-2	P004
Allyl alcohol	2-Propen-1-ol	107-18-6	P005
Allyl chloride	1-Propane, 3-chloro	107-18-6	
Aluminum phosphide	Same	20859-73-8	P006
4-Aminobiphenyl	[1,1'-Biphenyl]-4-amine	92-67-1	
5-(Aminomethyl)-3-isoxazolol	3(2H)-Isoxazolone, 5-(aminomethyl)-	2763-96-4	P007
4-Aminopyridine	4-Pyridinamine	504-24-5	P008
Amitrole	1H-1,2,4-Triazol-3-amine	61-82-5	U011
Ammonium vanadate	Vanadic acid, ammonium salt	7803-55-6	P119
Aniline	Benzenamine	62-53-3	U012
Antimony	Same	7440-36-0	
Antimony compounds, N.O.S. <sup>1</sup>			
Aramite	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester.	140-57-8	
Arsenic	Same	7440-38-2	
Arsenic compounds, N.O.S. <sup>1</sup>			
Arsenic acid	Arsenic acid H <sup>3</sup> AsO <sup>4</sup>	7778-39-4	P010
Arsenic pentoxide	Arsenic oxide As <sup>2</sup> O <sup>5</sup>	1303-28-2	P011
Arsenic trioxide	Arsenic oxide As <sup>2</sup> O <sup>3</sup>	1327-53-3	P012
Auramine	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl	492-80-8	

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Azaserine	L-Serine, diazoacetate (ester)	115-02-6	U015
Barium	Same	7440-39-3	
Barium compounds, N.O.S. <sup>1</sup>			
Barium cyanide	Same	542-62-1	P013
Benz[c]acridine	Same	225-51-4	U016
Benz[a]anthracene	Same	56-55-3	U018
Benzal chloride	Benzene, (dichloromethyl)-	98-87-3	U017
Benzene	Same	71-43-2	U019
Benzene arsonic acid	Arsonic acid, phenyl-	98-05-5	
Benzidine	[1,1'-Biphenyl]-4,4'-diamine	92-87-5	U021
Benzo[b]fluoranthene	Benz[e]acephenanthrylene	205-99-2	
Benzo[j]fluoranthene	Same	205-82-3	
Benzo(k)fluoranthene	Same	207-08-9	
Benzo[a]pyrene	Same	50-32-8	U022
p-Benzoquinone	2,5-Cyclohexadiene-1,4-dione	106-51-4	U197
Benzotrichloride	Benzene, (trichloromethyl)-	98-07-7	U023
Benzyl chloride	Benzene, (chloromethyl)-	100-44-7	P028
Beryllium powder	Same	7440-41-7	P015
Beryllium compounds, N.O.S. <sup>1</sup>			
Bromoacetone	2-Propanone, 1-bromo-	598-31-2	P017
Bromoform	Methane, tribromo-	75-25-2	U225
4-Bromophenyl phenyl ether	Benzene, 1-bromo-4-phenoxy-	101-55-3	U030
Brucine	Strychnidin-10-one, 2,3-dimethoxy-	357-57-3	P018
Butyl benzyl phthalate	1,2-Benzenedicarboxylic acid, butyl phenyl-methyl ester.	85-68-7	
Cacodylic acid	Arsinic acid, dimethyl-	75-60-5	U136
Cadmium	Same	7440-43-9	
Cadmium compounds, N.O.S. <sup>1</sup>			
Calcium chromate	Chromic acid H <sub>2</sub> CrO <sub>4</sub> , calcium salt	13765-19-0	U032
Calcium cyanide	Calcium cyanide Ca(CN) <sub>2</sub>	592-0108	P021
Carbon disulfide	Same	75-15-0	P022
Carbon oxyfluoride	Carbonic difluoride	353-50-4	U033

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Carbon tetrachloride	Methane, tetrachloro-	56-23-5	U211
Chloral	Acetaldehyde, trichloro-	75-87-6	U034
Chlorambucil	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-.	305-03-3	U035
Chlordane	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-oc-tachloro-2,3,3a,4,7,7a-hexahydro-.	57-74-9	U036
Chlordane (alpha and gamma isomers)			
Chlorinated benzenes, N.O.S. <sup>1</sup>			
Chlorinated ethane, N.O.S. <sup>1</sup>			
Chlorinated fluorocarbons, N.O.S. <sup>1</sup>			
Chlorinated naphthalene, N.O.S. <sup>1</sup>			
Chlorinated phenol, N.O.S. <sup>1</sup>			
Chlomaphazin	Naphthalenamine, N,N'-bis(2-chloroethyl)-	494-03-1	U026
Chloroacetaldehyde	Acetaldehyde, chloro-	107-20-0	P023
Chloroalkyl ethers, N.O.S. <sup>1</sup>			
p-Chloroaniline	Benzenamine, 4-chloro-	106-47-8	P024
Chlorobenzene	Benzene, chloro-	108-90-7	U037
Chlorobenzilate	Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-,ethyl ester.	510-15-6	U038
p-Chloro-m-cresol	Phenol, 4-chloro-3-methyl-	59-50-7	U039
2-Chloroethyl vinyl ether	Ethene, (2-chloroethoxy)-	110-75-8	U042
Chloroform	Methane, trichloro-	67-66-3	U044
Chloromethyl methyl ether	Methane, chloromethoxy-	107-30-2	U046
beta-Chloronaphthalene	Naphthalene, 2-chloro-	91-58-7	U047
o-Chlorophenol	Phenol, 2-chloro-	95-57-8	U048
1-(o-Chlorophenyl)thiourea	Thiourea, (2-chlorophenyl)-	5344-82-1	P026
Chloroprene	1,3-Butadiene, 2-chloro	126-99-8	
3-Chloropropionitrile	Propanenitrile, 3-chloro-	542-76-7	P027
Chromium	Same	7440-47-3	
Chromium compounds, N.O.S. <sup>1</sup>			
Chrysene	Same	218-01-9	U050
Citrus red no. 2	2-Naphthalenol, 1-[(2,5-dimethoxyphenyl)azo]-.	6358-53-8	

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Coal tar creosote	Same	8007-45-2	
Copper cyanide	Copper cyanide CuCN	544-92-3	P029
Creosote	Same		U051
Cresol (Cresylic acid)	Phenol, methyl-	1319-77-3	U052
Crotonaldehyde	2-Butenal	4170-30-3	U053
Cyanides (soluble salts and complexes) N.O.S. <sup>1</sup>			P030
Cyanogen	Ethanedinitrile	460-19-5	P031
Cyanogen bromide	Cyanogen bromide (CN)Br	506-68-3	U246
Cyanogen chloride	Cyanogen chloride (CN)Cl	506-77-4	P033
Cycasin	beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl.	14901-08-7	
2-Cyclohexyl-4,6-dinitrophenol	Phenol, 2-cyclohexyl-4,6-dinitro-	131-89-5	P034
Cyclophosphamide	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide.	50-18-0	U058
2,4-D	Acetic acid, (2,4-dichlorophenoxy)-	94-75-7	U240
2,4-D, salts, esters			U240
Daunomycin	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)-.	20830-81-3	U059
DDD	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-.	72-54-8	U060
DDE	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-.	72-55-9	
DDT	Benzene, 1,1'-(2,2,2 trichloroethylidene)bis[4-chloro-.	50-29-3	U061
Diallate	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester.	2303-16-4	U062
Dibenz[a,h]acridine	Same	226-36-8	
Dibenz[a,j]acridine	Same	224-42-0	
Dibenz[a,h]anthracene	Same	53-70-3	U063
7H-Dibenzo[c,g]carbazole	Same	194-59-2	
Dibenzo[a,e]pyrene	Naphtho[1,2,3,4-def]chrysene	192-65-4	
Dibenzo[a,h]pyrene	Dibenzo[b,dif]chrysene	189-64-0	
Dibenzo[a,i]pyrene	Benzo[rs]pentaphene	189-55-9	U064
1,2-Dibromo-3-chloropropane	Propane, 1,2-dibromo-3-chloro-	96-12-8	U066
Dibutyl phthalate	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	U069

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**Appendix B: Identification of Hazardous Waste Hazardous Constituents (40 CFR 261, Appendix VIII)**

Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
o-Dichlorobenzene	Benzene, 1,2-dichloro-	95-50-1	U070
m-Dichlorobenzene	Benzene, 1,3-dichloro-	541-73-1	U071
p-Dichlorobenzene	Benzene, 1,4-dichloro-	106-46-7	U072
Dichlorobenzene, N.O.S. <sup>1</sup>	Benzene, dichloro-	25321-22-6	
3,3'-Dichlorobenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	91-94-1	U073
1,4-Dichloro-2-butene	2-Butene, 1,4-dichloro	764-41-0	U074
Dichlorodifluoromethane	Methane, dichlorodifluoro-	75-71-8	U075
Dichloroethylene, N.O.S. <sup>1</sup>	Dichloroethylene	25323-30-2	
1,1-Dichloroethylene	Ethene, 1,1-dichloro	75-35-4	U078
1,2-Dichloroethylene	Ethene, 1,2-dichloro-, (E)	156-60-5	U079
Dichloroethyl ether	Ethane, 1,1'-oxybis[2-chloro-	111-44-4	U025
Dichloroisopropyl ether	Propane, 2,2'-oxybis[2-chloro	108-60-1	U027
Dichloromethoxy ethane	Ethane, 1,1'-[methylenebis(oxy)bis[2-chloro-	111-91-1	U024
Dichloromethyl ether	Methane, oxybis[chloro-	542-88-1	P016
2,4-Dichlorophenol	Phenol, 2,4-dichloro-	120-83-2	U081
2,6-Dichlorophenol	Phenol, 1,6-dichloro-	87-65-0	U082
Dichlorophenylarsine	Arsinous dichloride, phenyl-	696-28-6	P036
Dichloropropane, N.O.S. <sup>1</sup>	Propane, dichloro-	26638-19-7	
Dichloropropanol, N.O.S. <sup>1</sup>	Propanol, dichloro-	26545-73-3	
Dichloropropene, N.O.S. <sup>1</sup>	1-Propene, dichloro-	26952-23-8	
1,3-Dichloropropene	1-Propene, 1,3-dichloro-	542-75-6	U084
Dieldrin	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,6aalpha,7beta,7aalpha)-.	60-57-1	P037
1,2:3,4-Diepoxybutane	2,2'-Bioxirane	1464-53-5	U085
Diethylarsine	Arsine, diethyl-	692-42-2	P038
1,4-Diethyleneoxide	1,4Dioxane	123-91-1	U108
Diethylhexyl phthalate	1,2-Benzenedicarboxylic acid, bis(2-ethyl-hexyl) ester.	117-81-7	U028
N,N'-Diethylhydrazine	Hydrazine, 1,2-diethyl-	1615-80-1	U086
O,O-Diethyl S-methyl dithiophosphate	Phosphorodithioic acid, O,O-diethyl S-methyl	3288-58-2	U087
Diethyl-p-nitrophenyl phosphate	Phosphoric acid, diethyl 4-nitrophenyl ester	311-45-5	P041

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Diethyl phthalate	1,2-Benzenedicarboxylic acid, diethyl ester	84-66-2	U088
O,O-Diethyl O-pyrazinyl phosphoro-thioate	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester.	297-97-2	P040
Diethylstilbesterol	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-.	56-53-1	U089
Dihydrosafrole	1,3-Benzodioxole, 5-propyl-	94-58-6	U090
Diisopropylfluorophosphate (DFP)	Phosphorofluoridic, bis(1-mthylethyl) ester.	55-91-4	P043
Dimethoate	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	60-51-5	P044
3,3'-Dimethoxybenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U091
p-Dimethylaminoazobenzene	Benzenamine, N,N-dimethyl-4-(phenylazo)-	60-11-7	U093
7,12-Dimethylbenz[a]anthracene	Benz[a]anthracene, 7,12-dimethyl-	57-97-6	U094
3,3'-Dimethylbenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-	119-90-4	U095
Dimethylcarbamoyl chloride	Carbamic chloride, dimethyl-	79-44-7	U097
1,1-Dimethylhydrazine	Hydrazine, 1,1-dimethyl-	57-14-7	U098
1,2-Dimethylhydrazine	Hydrazine, 1,2-dimethyl-	540-73-8	U099
alpha,alpha-Dimethylphenethylamine	Benzenethanamine, alpha,alpha-dimethyl	122-09-8	P046
2,4-Dimethylphenol	Phenol, 2,4-dimethyl-	105-67-9	U101
Dimethyl phthalate	1,2-Benzenedicarboxylic acid, dimethyl ester	131-11-3	U102
Dimethyl sulfate	Sulfuric acid, dimethyl ester	77-78-1	U103
Dinitrobenzene, N.O.S. <sup>1</sup>	Benzene, dinitro-	25154-54-5	
4,6-Dinitro-o-cresol	Phenol, 2-methyl-4,6-dinitro-	534-52-1	P047
4,6-Dinitro-o-cresol salts			P047
2,4-Dinitrophenol	Phenol, 2-methyl-4,6-dinitro-	51-28-5	P048
2,4-Dinitrotoluene	Benzene, 1-methyl-2,4-dinitro-	121-14-2	U105
2,6-Dinitrotoluene	Benzene, 2-methyl-1,3-dinitro-	606-20-2	U106
Dinoseb	Phenol, 2-(1-methylpropyl)-4,6-dinitro-	88-85-7	P020
Di-n-octyl phthalate	1,2-Benzenedicarboxylic acid, dioctyl ester	117-84-0	U017
Diphenylamine	Benzenamine, N-phenyl-	122-39-4	
1,2-Diphenylhydrazine	Hydrazine, 1,2-diphenyl-	122-66-7	U109
Di-n-propyl nitrosamine	1-Propanamine, N-nitroso-N-propyl-	621-64-7	U111
Disulfoton	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester.	298-04-4	P039

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Dithiobiuret	Thioimidodicarbonic diamide [(H <sub>3</sub> N)C(S)] <sub>2</sub> NH	541-53-7	P049
Endothall	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic	145-73-3	P088
Endrin	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a- octa-hydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta,7aalpha)-	72-20-8	P051
Endrin metabolites			P051
Epichlorohydrin	Oxirane, (chloromethyl)-	106-89-8	U041
Epinephrine	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-	51-43-4	P042
Ethyl carbamate (urethane)	Carbamic acid, ethyl ester	51-79-6	U238
Ethyl cyanide	Propanenitrile	107-12-0	P101
Ethylenebisdithiocarbamic acid	Carbamodithioic acid, 1,2-ethanediylbis-	111-54-6	U114
Ethylenebisdithiocarbamic acid, salts and esters.			U114
Ethylene dibromide	Ethane, 1,2-dibromo-	106-93-4	U067
Ethylene dichloride	Ethane, 1,2-dichloro-	107-06-2	U077
Ethylene glycol monoethyl ether	Ethanol, 2-ethoxy-	110-80-5	U359
Ethyleneimine	Aziridine	151-56-4	P054
Ethylene oxide	Oxirane	75-21-8	U115
Ethylenethiourea	2-Imidazolidinethione	96-45-7	U116
Ethylidene dichloride	Ethane, 1,1-dichloro-	75-34-3	U076
Ethyl methacrylate	2-Propenoic acid, 2-methyl-, ethyl ester	97-63-2	U118
Ethyl methanesulfonate	Methanesulfonic acid, ethyl ester	65-50-0	U119
Famphur	Phosphorothioic acid, 0-[4-[(dimethylamino)sulfonyl]phenyl] O,O-di-methyl ester	52-85-7	P097
Fluoranthene	Same	206-44-0	U120
Fluorine	Same	7782-41-4	P056
Fluoroacetamide	Acetamide, 2-fluoro-, sodium salt	62-74-8	P058
Formaldehyde	Same	50-00-0	U122
Formic acid	Same	64-18-6	U123
Glycidylaldehyde	Oxiranecarboxyaldehyde	765-34-4	U126
Halomethanes, N.O.S. <sup>1</sup>			

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Heptachlor	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-hep-tachloro-3a,4,7,7a-tetrahydro-	76-44-8	P059
Heptachlor epoxide	2,5-Methano-2H-indeno[1,2-b]oxirene, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexa- hydro-, 1aalpha, 1bbeta, 2alpha, 5alpha, 5abeta, 6beta, 6aalpha)-.		
Heptachlor epoxide (alpha, beta, and gamma isomers).			
Heptachlorodibenzofurans			
Heptachlorodibenzo-p-dioxins			
Hexachlorobenzene	Benzene, hexachloro-	118-74-1	U127
Hexachlorobutadiene	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-	87-68-3	U128
Hexachlorocyclopentadiene	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-	77-47-4	U130
Hexchlorodibenzo-p-dioxins			
Hexchlorodibenzofurans			
Hexachloroethane	Ethane, hexachloro-	67-72-1	U131
Hexachlorophene	Phenol, 2,2'-methylenebis[3,4,6-trichloro-	70-30-4	U132
Hexachloropropene	1-Propene, 1,1,2,3,3,3-hexachloro-	1888-71-7	U243
Hexaethyl tetraphosphate	Tetraphosphoric acid, hexaethyl ester	757-58-4	P062
Hydrazine	Same	302-01-2	U133
Hydrogen cyanide	Hydrocyanic acid	74-90-8	P063
Hydrogen fluoride	Hydrofluoric acid	7654-39-3	U134
Hydrogen sulfide	Hydrogen sulfide H <sub>2</sub> S	7738-06-4	U135
Indeno[1,2,3-cd]pyrene	Same	193-39-3	U134
Isobutyl alcohol	1-Propanol, 2-methyl-	78-83-1	U140
Isodrin	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-.	465-73-6	P060
Isosafrole	1,3-Benzodioxole, 5-(1-propenyl)-	120-58-1	U141
Kepone	1,3,4-Methano-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-	143-50-0	U142
Lasiocarpine	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [S-[1alpha(Z),7(2S*,3R*),7aalpha]]-	303-34-1	4143
Lead	Same	7439-92-1	



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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Lead compounds, N.O.S. <sup>1</sup>			
Lead acetate	Acetic acid, lead(2+) salt	301-04-2	U144
Lead phosphate	Phosphoric acid, lead(2+) salt (2:3)	7446-27-7	U145
Lead subacetate	Lead, bis(acetato-O)tetrahydroxytri-	1335-32-6	U146
Lindane	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-.	58-89-9	U129
Maleic anhydride	2,5-Furandione	108-31-6	U147
Maleic hydrazide	3,6-Pyridazinedione, 1,2-dihydro-	123-33-1	U148
Malononitrile	Propanedinitrile	109-77-3	U149
Melphalan	L-Phenylalanine, 4-[bis(2-chloroethyl)aminol]-.	148-82-3	U150
Mercury	Same	7439-97-6	U151
Mercury compounds, N.O.S. <sup>1</sup>			
Mercury fulminate	Fulminic acid, mercury(2+) salt	628-86-4	P065
Methacrylonitrile	2Propenenitrile, 2-methyl-	126-98-7	U152
Methapyrilene	1,2-Ethanediamine, NN-dimethyl-N'-(2-pyridinyl-N'-(2-thienylmethyl)-.	91-80-5	U155
Methomyl	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester.	16752-77-5	P066
Methoxychlor	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-.	72-43-5	U247
Methyl bromide	Methane, bromo-	74-83-9	U029
Methyl chloride	Methane, chloro-	74-87-3	U045
Methyl chlorocarbonate	Carbonochloridic acid, methyl ester	79-22-1	U158
Methyl chloroform	Ethane, 1,1,1-trichloro-	71-55-6	U226
3-Methylcholanthrene	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl	56-49-5	U157
4,4'-Methylenebis(2-chloroaniline)	Benzenamine, 4,4'-methylenebis[2-chloro-	101-14-4	U158
Methylene bromide	Methane, dibromo-	74-95-3	U068
Methylene chloride	Methane, dichloro-	75-09-2	U080
Methyl ethyl ketone (MEK)	2-Butanone	78-93-3	U159
Methyl ethyl ketone peroxide	2-Butanone, peroxide	1338-23-4	U160
Methyl hydrazine	Hydrazine, methyl-	60-34-4	P068
Methyl iodide	Methane, iodo-	74-88-4	U138
Methyl isocyanate	Methane, isocyanato-	624-83-9	P064

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
2-Methylactonitrile	Propanenitrile, 2-hydroxy-2-methyl-	75-86-5	P069
Methyl methacrylate	2-Propenoic acid, 2-methyl-methyl ester	80-62-6	U162
Methyl methanesulfonate	Methanesulfonic acid, methyl ester	66-27-3	
Methyl parathion	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	298-00-0	P071
Methylthiouracil	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-	56-04-2	U164
Mitomycin C	Azirino[2',3':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,8balph)]-.	50-07-7	U010
MNNG	Guanidine, N-methyl-N'-nitro-N-nitroso-	70-25-7	U163
Mustard gas	Ethane, 1,1'-thiobis[2-chloro-	505-60-2	
Naphthalene	Same	91-20-3	U165
1,4-Naphthoquinone	1,4-Naphthalenedione	130-15-4	U166
alpha-Naphthylamine	1-Naphthalenamine	134-32-7	U167
beta-Naphthylamine	2-Naphthalenamine	91-59-8	U168
alpha-Naphthylthiourea	Thiourea, 1-naphthalenyl-	86-88-4	P072
Nickel	Same	7440-02-0	
Nickel compounds, N.O.S. <sup>1</sup>			
Nickel carbonyl	Nickel carbonyl Ni(CO) <sub>4</sub> , (T-4)-	13463-39-3	P073
Nickel cyanide	Nickel cyanide Ni(CN) <sub>2</sub>	557-19-7	P074
Nicotine	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-	54-11-5	P075
Nicotine salts			P075
Nitric oxide	Nitrogen oxide NO	10102-43-9	P076
p-Nitroaniline	Benzeneamine, 4-nitro-	100-01-6	P077
Nitrobenzene	Benzene, nitro-	98-95-3	U169
Nitrogen dioxide	Nitrogen dioxide NO <sub>2</sub>	10102-44-0	P078
Nitrogen mustard	Ethanamine, 2-chloro-N-(2-chloroethyl)-N-methyl-, N-oxide.	51-75-2	
Nitrogen mustard, N-oxide, hydrochloride salt.			
Nitroglycerin	1,2,3-Propanetriol, trinitrate	55-63-0	P081
p-Nitrophenol	Phenol, 4-nitro-	100-02-7	U170
2-Nitropropane	Propane, 2-nitro-	79-46-9	U171

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Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Nitrosamines, N.O.S. <sup>1</sup>		35576-91-1D	
N-Nitosodi-n-butylamine	1-Butamine, N-butyl-N-nitroso	924-16-3	U172
N-Nitrosodiethanolamine	Ethanol, 2,2'-(nitrosoimino)bis-	1116-54-7	U173
N-Nitrosodiethylamine	Ethanamine, N-ethyl-N-nitroso-	55-18-5	U174
N-Nitrosodimethylamine	Methanamine, N-methyl-N-nitroso-	62-75-9	P082
N-Nitroso-N-ethylurea	Urea, N-ethyl-N-nitroso-	759-73-9	U176
N-Nitrosomethylethylamine	Ethanamine, N-methyl-N-nitroso-	10595-95-6	
N-Nitroso-N-methylurea	Urea, N-methyl-N-nitroso-	684-93-5	U177
N-Nitroso-N-methylurethane	Carbamic acid, methylnitroso-, ethyl ester	615-53-2	U178
N-Nitrosomethylvinylamine	Vinylamine, N-methyl-N-nitroso-	4549-40-0	P084
N-Nitrosomorpholine	Morpholine, 4-nitroso-	59-89-2	
N-Nitrosomonicotine	Pyridine, 3-(1-nitroso-2-pyrrolidinyl)-, (S)	16543-55-8	
N-Nitrosopiperidine	Piperidine, 1-nitroso-	100-75-4	U179
N-Nitrosopyrrolidine	Pyrrolidine, 1-nitroso-	930-55-2	U180
N-Nitrososarcosine	Glycine, N-methyl-N-nitroso-	13256-22-9	
5-Nitro-o-toluidine	Benzenamine, 2-methyl-5-nitro-	99-55-8	U181
Octamethylpyrophosphoramidate	Diphosphoramidate, octamethyl-	152-16-9	P085
Osmium tetroxide	Osmium oxide OsO <sub>4</sub> (T-4)-	20816-12-0	P087
Paraldehyde	1,3,5-Trioxane, 2,4,6-trimethyl-	123-63-7	U182
Parathion	Phosphorothioic acid, O,O-diethyl O-(4-nitro-phenyl) ester.	56-38-2	P089
Pentachlorobenzene	Benzene, pentachloro-	608-93-5	U183
Pentachlorodibenzo-p-dioxins			
Pentachlorodibenzofurans			
Pentachloroethane	Ethane, pentachloro-	76-01-7	U184
Pentachloronitrobenzene (PCNB)	Benzene, pentachloronitro-	82-68-8	U185
Pentachlorophenol	Phenol, pentachloro-	87-86-5	See F027
Phenacetin	Acetamide, N-(4-ethoxyphenyl)-	62-44-2	U187
Phenol	Same	108-95-2	U188
Phenylenediamine	Benzenediamine	25265-76-3	
Phenylmercury acetate	Mercury, (acetato-O)phenyl-	62-38-4	P092

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Phenylthiourea	Thiourea, phenyl-	103-85-5	P093
Phosgene	Carbonic dichloride	75-44-5	P095
Phosphine	Same	7803-51-2	P096
Phorate	Phosphorodithioic, O,O-diethyl S-[(ethylthio)methyl] ester.	298-02-2	P094
Phthalic acid esters, N.O.S. <sup>1</sup>			
Phthalic anhydride	1,3-Isobenzofurandione	85-44-9	U190
2-Picoline	Pyridine, 2-methyl-	109-06-8	U191
Polychlorinated biphenyls, N.O.S. <sup>1</sup>			
Potassium cyanide	Potassium cyanide K(CN)	151-50-8	P098
Potassium silver cyanide	Argentate(1-), bis(cyano-C)-, potassium	506-61-6	P099
Pronamide	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-.	23950-58-5	U192
1,3-Propane sultone	1,2-Oxathiolane, 2,2-dioxide	1120-71-4	U193
n-Propylamine	1-Propanamine	107-10-8	U194
Propargyl alcohol	2-Propyn-1-ol	107-19-7	P102
Propylene dichloride	Propane, 1,2-dichloro-	78-87-5	U083
1,2-Propylenimine	Aziridine, 2-methyl-	75-55-8	P067
Propylthiouracil	4(1H)-Pyrimidinone, 2,3-dihydro-6-propyl-2 thioxo-.	51-52-5	
Pyridine	Same	110-86-1	U196
Reserpine	Yohimban-16-carboxylic acid, 11,17-dimeth-oxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-smethyl ester, (3beta,16beta,17alpha,18beta,20alpha)-.	50-55-5	U200
Resorcinol	1,3-Benzenediol	108-46-3	U201
Saccharin	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide	81-07-2	U202
Saccharin salts			U202
Safrole	1,3-Benzodioxole, 5-(2-propenyl)-	94-59-7	U203
Selenium	Same	7782-49-2	
Selenium compounds, N.O.S. <sup>1</sup>			
Selenium dioxide	Selenious acid	7783-00-8	U204
Selenium sulfide	Selenium sulfide SeS <sub>2</sub>	7488-56-4	U205
Selenourea	Same	630-10-4	P103
Silver	Same	7440-22-4	
Silver compounds, N.O.S. <sup>1</sup>			

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Silver cyanide	Silver cyanide Ag(CN)	506-64-9	P104
Silvex (2,4,5-TP)	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	93-72-1	See F027
Sodium cyanide	Sodium cyanide Na(CN)	143-33-9	P106
Streptozotocin	D-Glucose, 2-deoxy-2- [[[(methylnitrosoamino)carbonyl]amino]-.	18883-66-4	U206
Strychnine	Strychnidin-10-one	57-24-9	P108
Strychnine salts			P108
TCDD	Dibenzob,e][1,4]dioxin, 2,3,7,8-tetrachloro-	1746-01-6	
1,2,4,5-Tetrachlorobenzene	Benzene, 1,2,4,5-tetrachloro-	95-94-3	U207
Tetrachlorodibenzo-p-dioxins			
Tetrachlorodibenzofurans			
Tetrachloroethane, N.O.S. <sup>1</sup>	Ethane, tetrachloro-, N.O.S.	25322-20-7	
1,1,1,2-Tetrachloroethane	Ethane, 1,1,1,2-tetrachloro-	630-20-6	U208
1,1,2,2-Tetrachloroethane	Ethane, 1,1,2,2-tetrachloro-	79-34-5	U209
Tetrachloroethylene	Ethene, tetrachloro-	127-18-4	U210
2,3,4,6-Tetrachlorophenol	Phenol, 2,3,4,6-tetrachloro-	58-90-2	See F027
Tetraethyldithiopyrophosphate	Thiodiphosphoric acid, tertaethyl ester	3689-24-5	P109
Tetraethyl lead	Plumbane, tetraethyl-	78-00-2	P110
Tetraethyl pyrophosphate	Diphosphoric acid, tetraethyl ester	107-49-3	P111
Tetranitromethane	Methane, tetranitro-	509-14-8	P112
Thallium	Same	7440-28-0	
Thallium compounds, N.O.S. <sup>1</sup>			
Thallic oxide	Thallium oxide Tl <sub>2</sub> O <sub>3</sub>	1314-32-5	P113
Thallium(I) acetate	Acetic acid, thallium(1+) salt	563-68-8	U214
Thallium(I) carbonate	Carbonic acid, dithallium(1+) salt	6533-73-9	U215
Thallium(I) chloride	Thallium chloride TlCl	7791-12-0	U216
Thallium(I) nitrate	Nitric acid, thallium(1+) salt	10102-45-1	U217
Thallium selenite	Selenious acid, dithallium(1+) salt	12039-52-0	P114
Thallium(I) sulfate	Sulfuric acid, dithallium(1+) salt	7446-18-6	P115
Thioacetamide	Ethanethioamide	62-55-5	U218
Thiofanox	2-Butanone, 3,3-dimethyl-1-(methylthio)-, )- [(methylamino)carbonyl] oxime.	39196-18-4	P045

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Thiomethanol	Methanethiol	74-93-1	U153
Thiophenol	Benzenethiol	108-98-5	P014
Thiosemicarbazide	Hydrazinecarbothioamide	79-19-6	P116
Thiourea	Same	62-56-6	U219
Thiram	Thioperoxydicarbonic diamide [(H <sub>2</sub> N)C(S)] <sub>2</sub> S <sub>2</sub> tetramethyl-	137-26-8	U244
Toluene	Benzene, methyl-	108-88-3	U220
Toluenediamine	Benzenediamine, ar-methyl-	25376-45-8	U221
Toluene-2,4-diamine	1,3-Benzenediamine, 4-methyl-	95-80-7	
Toluene-2,6-diamine	1,3-Benzenediamine, 2-methyl-	823-40-5	
Toluene-3,4-diamine	1,2-Benzenediamine, 4-methyl-	496-72-0	
Toluene diisocyanate	Benzene, 1,3-diisocyanatomethyl-	26471-62-5	U223
o-Toluidine	Benzenamine, 2-methyl-	95-53-4	U328
o-Toluidine hydrochloride	Benzenamine, 2-methyl-, hydrochloride	636-21-5	U222
p-Toluidine	Benzenamine, 4-methyl-	106-49-0	U353
Toxaphene	Same	8001-35-2	P123
1,2,4-Trichlorobenzene	Benzene, 1,2,4-trichloro	120-82-1	
1,1,2-Trichloroethane	Ethane, 1,1,3-trichloro-	79-00-5	U227
Trichloroethylene	Ethene, trichloro-	79-01-6	U228
Trichloromethanethiol	Methanethiol, trichloro-	75-70-7	P118
Trichloromonofluoromethane	Methane, trichlorofluoro-	75-69-4	U121
2,4,5-Trichlorophenol	Phenol, 2,4,5-trichloro-	95-95-4	See F027
2,4,6-Trichlorophenol	Phenol, 2,4,6-trichloro-	88-06-2	See F027
2,4,5-T	Acetic acid, (2,4,5-trichlorophenoxy)-	93-76-5	See F027
Trichloropropane, N.O.S. <sup>1</sup>		25735-29-9	
1,2,3-Trichloropropane	Propane, 1,2,3-trichloro-	96-18-4	
O,O,O-Triethyl phosphorothioate	Phosphorothioic acid, O,O,O-triethyl ester	126-68-1	
1,3,5-Trinitrobenzene	Benzene, 1,3,5-trinitro-	99-35-4	U234
Tris(1-aziridinyl)phosphine sulfide	Aziridine, 1,1',1''-phosphinothioylidynetris-		
Tris(2,3-dibromopropyl) phosphate	1-Propanol, 2,3-dibromo-, phosphate (3:1)	126-72-7	U235

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix B: Identification of Hazardous Waste Hazardous Constituents (40 CFR 261, Appendix VIII)**

Common Name	Chemical Abstracts Name	Chemical Abstract No.	Hazardous Waste No.
Trypan blue	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-di methyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]-bis[5-amino-4-hydroxy-, tetrasodium salt.	72-57-1	U236
Uracil mustard	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-.	66-75-1	U237
Vanadium pentoxide	Vanadium oxide V <sub>2</sub> O <sub>5</sub>	13-14-62-1	P120
Vinyl chloride	Ethene, chloro-	75-01-4	U043
Warfarin	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, when present at concentrations greater than 0.3%.	81-81-2	U248
Warfarin salts, when present at concentrations less than 0.3%.			U248
Warfarin salts, when present at concentrations greater than 0.3%			P001
Zinc cyanide	Zinc cyanide Zn(CN) <sub>2</sub>	557-21-1	P121
Zinc phosphide	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations greater than 10%.	1314-84-7	P122
Zinc phosphide	Zinc phosphide Zn <sub>3</sub> P <sub>2</sub> , when present at concentrations of 10% or less.	1314-84-7	U248

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**Protocol for Conducting Environmental Compliance Audits of  
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and Recovery Act**

**Appendix C:  
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**  
**Appendix C: 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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(COMMENT: 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.	Substance
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide (r,t)
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate (r)
P119	Ammonium vanadate
P099	Argebtate(1), bis(cyano-C)-, potassium
P010	Arsenic acid $H_3AsO_4$
P012	Arsenic oxide $As_2O_3$
P011	Arsenic oxide $As_2O_5$
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl
P036	Arsonous dichloride, phenyl
P054	Aziridine
P067	Aziridine, 2-methyl
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]- (r)

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix C: 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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Hazardous Waste No.	Substance
P046	Benzeneethanamine, alpha,alpha- dimethyl- (r)
P014	Benzenethiol
P001	2H-1-Benzopyran-2-one,4-hydroxy-3- (3-oxo-1-phenylbutyl)-, and salts when present at concentrations greater than 0.3%
P028	Benzyl chloride
P015	Beryllium powder
P016	Bis(chloromethyl)ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P021	Calcium cyanide $\text{Ca}(\text{CN})_2$
P022	Carbon disulfide
P095	Carbonic dichloride
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanide
P029	Copper cyanide $\text{Cu}(\text{CN})$
P030	Cyanides (soluble cyanide salts), n.o.s.
P031	Cyanogen
P033	Cyanogen chloride
P033	Cyanogen chloride $(\text{CN})\text{Cl}$
P034	2-Cyclohexyl-4,6-dinitrophenol
P016	Dichloromethyl ether
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate (DEP)

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix C: Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))**

Hazardous Waste No.	Substance
P004	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5alpha, 8alpha,8abeta)-
P060	1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha, 4alpha,4abeta,5beta, 8beta,8abeta)-
P037	2,7:3,6-Dimethanonaph[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3, 6,6a,7,7a-octahydro-, (1-aalpha, 2beta,2aalpha,3beta,6beta,6aalpha, 7beta,7aalpha)-
P051	2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro-, (1aalpha,2beta,2abeta, 3alpha,6alpha,6abeta,7beta,7aalpha)-
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl]oxime
P046	alpha,alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramidate,octamethyl-
P111	Diphosphoric acid, tetraethyl ester
P039	Disulfoton
P049	Dithiobiuret
P050	Endosulfan
P088	Endothall
P051	Endrin
P051	Endrin and metabolites
P042	Epinephrine
P031	Ethanedinitrile
P066	Ethanimidothioic acid, N-[[[(methylamino)carbonyl oxy]-, methyl ester
P101	Ethyl cyanide
P054	Ethyleneimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid,mercury(2+)-salt (r,t)
P059	Heptachlor

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix C: Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))**

Hazardous Waste No.	Substance
P062	Hexaethyl tetraphosphate
P116	Hydrazinecarbothioamide
P068	Hydrazine, methyl-
P063	Hydrocyanic acid
P063	Hydrogen cyanide
P096	Hydrogen phosphide
P064	Isocyanic acid, methyl ester
P060	Isodrin
P007	3(2H)-Isoxazolone, 5-(aminomethyl)-
P092	Mercury (acetato-O)phenyl-
P065	Mercury fulminate (r,t)
P082	Methanamine, N-methyl-N-nitroso
P064	Methane, isocyanato-
P016	Methane, oxybis[chloro-
P112	Methane, tetranitro- (r)
P118	Methanethiol, trichloro-
P050	6,9-Methano-2,4,3-benzodioxathlepen, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-,3-oxide
P059	4,7-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro-3a,4,7,7a-tetrahydro-
P066	Methomyl
P068	Methyl hydrazine
P064	Methyl isocyanate
P069	2-Methyl lactonitrile
P071	Methyl parathion
P072	alpha-Naphthylthiourea
P073	Nickel carbonyl
P073	Nickel carbonyl, (T-4)-
P074	Nickel cyanide
P074	Nickel cyanide Ni(CN) <sub>2</sub>
P075	Nicotine and salts
P076	Nitric oxide

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix C: Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste (40 CFR 261.33(a) through 261.33(e))**

Hazardous Waste No.	Substance
P077	p-Nitroaniline
P078	Nitrogen dioxide
P076	Nitrogen oxide NO
P078	Nitrogen oxide
P081	Nitroglycerine (r)
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P074	Nickel cyanide
P085	Octamethylpyrophosphoramidate
P087	Osmium oxide
P087	Osmium tetroxide
P088	7-Oxabicyclo[2.2.1]heptane-2,3- dicarboxylic acid
P089	Parathion
P034	Phenol, 2-cyclohexyl-4,6-dinitro
P048	Phenol, 2,4-dinitro
P047	Phenol, 2-methyl-4,6-dinitro- and salts
P020	Phenol, 2-(1-methylpropyl)-4,6-dinitro
P009	Phenol, 2,4,6-trinitro-, ammonium salt (r)
P092	Phenylmercury acetate
P093	Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P041	Phosphoric acid, diethyl 4- nitrophenyl ester
P039	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	Phosphorodithioic acid, O,O-dimethyl S[2-(methylamino)-2-oxoethyl] ester
P043	Phosphorofluoric acid, bis(1-methylethyl) -ester
P089	Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester
P040	Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester
P097	Phosphorothioic acid, O-[4-[(dimethylamino) sulfonyl]phenyl] O,O-dimethyl ester

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

Hazardous Waste No.	Substance
P071	Phosphorothioic acid, O,O-dimethyl O- (4-nitrophenyl) ester
P110	Plumbane, tetraethyl-
P098	Potassium cyanide
P098	Potassium cyanide K(CN)
P099	Potassium silver cyanide
P070	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	Propanenitrile
P027	Propanenitrile, 3-chloro-
P069	Propanenitrile, 2-hydroxy-2-methyl
P081	1,2,3-Propanetriol, trinitrate (r)
P017	2-Propanone, 1-bromo-
P102	Propargyl alcohol
P003	2-Propenal
P005	2-Propen- 1 -ol
P067	1,2-Propylenimine
P102	2-Propyn-1 -ol
P008	4-Pyridinamine
P075	Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-,(S)-, and salts
P103	Selenourea
P104	Silver cyanide
P104	Silver cyanide Ag(CN)
P105	Sodium azide
P106	Sodium cyanide
P106	Sodium cyanide Na(CN)
P108	Strychnidin-10-one, and salts
P018	Strychnidin 10-one, 2,3-dimethoxy-
P108	Strychnine and salts
P115	Sulfuric acid, dithallium(I) salt
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate



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**Appendix C: 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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Hazardous Waste No.	Substance
P112	Tetranitromethane (r)
P062	Tetraphosphoric acid, hexaethyl ester
P113	Thallic oxide
P113	Thallium(III) oxide
P114	Thallium(I) selenite
P115	Thallium(I) sulfate
P109	Thiodiphosphoric acid, tetraethyl ester
P045	Thiofanox
P049	Thiomidodicarbonic diamide
P014	Thiophenol
P116	Thiosemicarbazide
P026	Thiourea, (2-chlorophenyl)-
P072	Thiourea, 1-naphthalenyl-
P093	Thiourea, phenyl-
P123	Toxaphene
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium oxide $V_2O_3$
P120	Vanadium pentoxide
P084	Vinylamine, N-methyl-N-nitroso
P001	Warfarin and salts, when present at concentrations greater than 0.3%
P121	Zinc cyanide
P121	Zinc cyanide $Zn(CN)_2$
P122	Zinc phosphide $Zn_3P_2$ , when present at concentrations greater than 0.3%

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**Protocol for Conducting Environmental Compliance Audits of  
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**Appendix D:  
Potentially Incompatible Hazardous Wastes  
(40 CFR 264, Appendix V)**

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**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix D: Potentially Incompatible Hazardous Wastes (40 CFR 264, Appendix V)**

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Below are examples of potentially incompatible wastes and waste components along with the harmful consequences that result from mixing wastes in one group with wastes in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequences as noted.

Group 1-A	Group 1-B
Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid

**Potential Consequences: Heat generation, violent reaction.**

Group 2-A	Group 2-B
Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides	Any waste in Group 1-A or 1-B

**Potential Consequences: Fire or explosion; generation of flammable hydrogen gas.**

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix D: Potentially Incompatible Hazardous Wastes (40 CFR 264, Appendix V)**

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Group 3-A	Group 3-B
Alcohols Water	Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO <sub>2</sub> -Cl <sub>2</sub> , SOCl <sub>2</sub> , PCl <sub>3</sub> , CH <sub>3</sub> SiCl <sub>3</sub> Other water-reactive waste

**Potential Consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.**

Group 4-A	Group 4-B
Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Concentrated Group 1-A or Group 1-B wastes  Group 2-A wastes

**Potential Consequences: Fire, explosion, or violent reaction.**

Group 5-A	Group 5-B
Spent cyanide and sulfide solutions	Group 1-B wastes

**Potential Consequences: Generation of toxic hydrogen cyanide, or hydrogen sulfide gas.**

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**Appendix D: Potentially Incompatible Hazardous Wastes (40 CFR 264, Appendix V)**

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Group 6-A	Group 6-B
Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Acetic acid and other organic acids  Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes

**Potential Consequences: Fire, explosion, or violent reaction.**

“Law, Regulations, and Guidelines for Handling of Hazardous Waste,” California Department of Health, February 1975.

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**Appendix E:  
Land Disposal Restricted Wastes and Their Effective Dates  
(40 CFR 268, Appendix VII)**

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**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

**Table 1 - Land Disposal Restricted Wastes and Their Effective Dates**

Waste Code	Waste Category	Effective Date
California list	Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels.	8 July 1987
California list	Liquid (aqueous) hazardous wastes having a pH less than or equal to 2.	8 July 1987
California list	Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L.	8 July 1987
California list	Liquid hazardous waste containing PCBs greater than or equal to 50 ppm.	8 July 1987
California list	Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg.	8 Nov 1988
RCRA Hazardous Wastes	Those that contain naturally occurring radioactive materials.	8 May 1992
RCRA Listed Wastes	Mixed radioactive/hazardous wastes.	8 May 1992
D001	All	8 Aug 1990
D002	All	8 Aug 1990
D003	All	8 Aug 1990
D004	Wastewater	8 Aug 1990
D004	Nonwastewaters	8 May 1992
D005	Nonwastewater	8 May 1992
D006	All	8 Aug 1990
D007	All	8 Aug 1990
D007	All	8 Aug 1990
D008	Lead materials before secondary smelting	8 May 1992
D008	All others	8 Aug 1990
D009	Nonwastewater	8 May 1992
D010	All	8 Aug 1990
D011	All	8 Aug 1990
D012	All	8 Aug 1990
D013	All	8 Aug 1990
D014	All	8 Aug 1990
D015	All	8 Aug 1990
D016	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

Waste Code	Waste Category	Effective Date
D017	All	8 Aug 1990
F001	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F001	All others	8 Nov 1986
F002 (1,1,2 -trichloroethane)	Wastewater and Nonwastewater	8 Aug 1990
F002	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F002	All others	8 Nov 1986
F003	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F003	All others	8 Nov 1986
F004	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids.	8 Nov 1988
F004	All others	8 Nov 1986
F005 (benzene, 2-ethoxy ethanol, 2-nitropropane).	Wastewater and Nonwastewater	8 Aug 1990
F005	Small quantity generators, CERCLA response/RCRA corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils.	8 Nov 1988
F005	All others	8 Nov 1986
F006	Wastewater	8 Aug 1990
F006	Nonwastewater	8 Aug 1988
F006 (cyanides)	Nonwastewater	8 July 1989
F007	All	8 July 1989
F008	All	8 July 1989
F009	All	8 July 1989
F010	All	8 June 1989
F011 (cyanides)	Nonwastewater	8 Dec 1986
F011	All others	8 July 1989
F012 (cyanides)	Nonwastewater	8 Dec 1989
F012	All others	8 July 1989
F019	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
F020	All	8 Nov 1988
F021	All	8 Nov 1988
F022	All	8 Nov 1988
F023	All	8 Nov 1988
F024 (metals)	Wastewater	8 June 1989
F024 (metals)	Nonwastewater	8 Aug 1990
F024	All others	8 June 1989
F025	All	8 Aug 1990
F026	All	8 Nov 1988
F027	All	8 Nov 1988
F028	All	8 Nov 1988
F039	Wastewater	8 Aug 1990
F039	Nonwastewater	8 May 1992
K001 (organics) <sup>b</sup>	All	8 Aug 1988
K001	All others	8 Aug 1988
K002	All	8 Aug 1990
K003	All	8 Aug 1990
K004	Wastewater	8 Aug 1990
K004 <sup>c</sup>	Nonwastewater	8 Aug 1990
K005	Wastewater	8 Aug 1990
K005 <sup>c</sup>	Nonwastewater	8 June 1989
K006	All	8 Aug 1990
K007	Wastewater	8 Aug 1990
K007 <sup>c</sup>	Nonwastewater	8 June 1989
K008	Wastewater	8 Aug 1990
K008 <sup>c</sup>	Nonwastewater	8 Aug 1988
K009	All	8 June 1989
K010	All	8 June 1989
K011	Wastewater	8 Aug 1990
K011	Nonwastewater	8 June 1989
K013	Wastewater	8 Aug 1990

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**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
K013	Nonwastewater	8 June 1989
K014	Wastewater	8 Aug 1990
K014	Nonwastewater	8 June 1989
K015	Wastewater	8 Aug 1988
K015	Nonwastewater	8 Aug 1990
K016	All	8 Aug 1988
K017	All	8 Aug 1990
K018	All	8 Aug 1988
K019	All	8 Aug 1988
K020	All	8 Aug 1988
K021	Wastewater	8 Aug 1990
K021 <sup>c</sup>	Nonwastewater	8 Aug 1988
K022	Wastewater	8 Aug 1990
K022	Nonwastewater	8 Aug 1988
K023	All	8 June 1989
K024	All	8 Aug 1988
K025	Wastewater	8 Aug 1990
K025 <sup>c</sup>	Nonwastewater	8 Aug 1988
K026	All	8 Aug 1990
K027	All	8 June 1989
K028 (metals)	Nonwastewater	8 Aug 1990
K028	All others	8 June 1989
K029	Wastewater	8 Aug 1990
K029	Nonwastewater	8 June 1989
K030	All	8 Aug 1990
K031	Wastewater	8 Aug 1990
K031	Nonwastewater	8 May 1992
K032	All	8 Aug 1990
K033	All	8 Aug 1990
K034	All	8 Aug 1990
K035	All	8 Aug 1990

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Waste Code	Waste Category	Effective Date
K036	Wastewater	8 June 1989
K036c	Nonwastewater	8 Aug 1988
K037 <sup>b</sup>	Wastewater	8 Aug 1988
K037	Nonwastewater	8 Aug 1988
K038	All	8 June 1989
K039	All	8 June 1989
K040	All	8 June 1989
K041	All	8 Aug 1990
K042	All	8 Aug 1990
K043	All	8 June 1989
K044 <sup>c</sup>	All	8 Aug 1988
K045 <sup>c</sup>	all	8 Aug 1988
K046 (Nonreactive)	Nonwastewater	8 Aug 1988
K046	All others	8 Aug 1990
K047	All	8 Aug 1988
K048	Wastewater	8 Aug 1990
K048	Nonwastewater	8 Nov 1990
K049	Wastewater	8 Aug 1990
K049	Nonwastewater	8 Nov 1990
K050	Wastewater	8 Aug 1990
K050	Nonwastewater	8 Nov 1990
K051	Wastewater	8 Aug 1990
K051	Nonwastewater	8 Nov 1990
K052	Wastewater	8 Aug 1990
K052	Nonwastewater	8 Nov 1990
K060	Wastewater	8 Aug 1990
K060 <sup>c</sup>	Nonwastewater	8 Aug 1988
K061	Wastewater	8 Aug 1990
K061	Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 Aug 1991).	8 Aug 1988
K062	All	8 Aug 1988
K069 (Non-Calcium Sulfate) <sup>c</sup>	Nonwastewater	8 Aug 1988

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
K069	All others	8 Aug 1990
K071	All	8 Aug 1990
K073	All	8 Aug 1990
K083	All	8 Aug 1990
K084	Wastewater	8 Aug 1990
K084	Nonwastewater	8 May 1992
K085	All	8 Aug 1990
K086 (organics) <sup>b</sup>	All	8 Aug 1988
K086	All others	8 Aug 1988
K087	All	8 Aug 1988
K093	All	8 June 1989
K094	All	8 June 1989
K095	Wastewater	8 Aug 1990
K095	Nonwastewater	8 June 1989
K096	Wastewater	8 Aug 1990
K096	Nonwastewater	8 June 1989
K097	All	8 Aug 1990
K098	All	8 Aug 1990
K099	All	8 Aug 1988
K100	Wastewater	8 Aug 1990
K100 <sup>c</sup>	Nonwastewater	8 Aug 1988
K101 (organics)	Wastewater	8 Aug 1988
K101 (metals)	Wastewater	8 Aug 1990
K101 (organics)	Nonwastewater	8 Aug 1988
K101 (metals)	Nonwastewater	8 May 1992
K102 (organics)	Wastewater	8 Aug 1988
K102 (metals)	Wastewater	8 Aug 1990
K102 (organics)	Nonwastewater	8 Aug 1988
K102 (metals)	Nonwastewater	8 May 1992
K103	All	8 Aug 1988
K104	All	8 Aug 1988



**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
K105	All	8 Aug 1990
K106	Wastewater	8 Aug 1990
K106	Nonwastewater	8 May 1992
K113	All	8 June 1989
K114	All	8 June 1989
K115	All	8 June 1989
K116	All	8 June 1989
P001	All	8 Aug 1990
P002	All	8 Aug 1990
P003	All	8 Aug 1990
P004	All	8 Aug 1990
P005	All	8 Aug 1990
P006	All	8 Aug 1990
P007	All	8 Aug 1990
P008	All	8 Aug 1990
P009	All	8 Aug 1990
P010	Wastewater	8 Aug 1990
P010	Nonwastewater	8 May 1992
P011	Wastewater	8 Aug 1990
P011	Nonwastewater	8 May 1992
P012	Wastewater	8 Aug 1990
P012	Nonwastewater	8 May 1992
P013 (barium)	Nonwastewater	8 Aug 1990
P013	All others	8 June 1989
P014	All	8 Aug 1990
P015	All	8 Aug 1990
P016	All	8 Aug 1990
P017	All	8 Aug 1990
P018	All	8 Aug 1990
P020	All	8 Aug 1990
P021	All	8 June 1989

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
P022	All	8 Aug 1990
P023	All	8 Aug 1990
P024	All	8 Aug 1990
P026	All	8 Aug 1990
P027	All	8 Aug 1990
P028	All	8 Aug 1990
P029	All	8 June 1989
P030	All	8 June 1989
P031	All	8 Aug 1990
P033	All	8 Aug 1990
P034	All	8 Aug 1990
P036	Wastewater	8 Aug 1990
P036	Nonwastewater	8 May 1992
P037	All	8 Aug 1990
P038	Wastewater	8 Aug 1990
P038	Nonwastewater	8 May 1992
P039	All	8 June 1989
P040	All	8 June 1989
P041	All	8 June 1989
P042	All	8 Aug 1990
P043	All	8 June 1989
P044	All	8 June 1989
P045	All	8 Aug 1990
P046	All	8 Aug 1990
P047	All	8 Aug 1990
P048	All	8 Aug 1990
P049	All	8 Aug 1990
P050	All	8 Aug 1990
P051	All	8 Aug 1990
P054	All	8 Aug 1990
P056	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
P057	All	8 Aug 1990
P058	All	8 Aug 1990
P059	All	8 Aug 1990
P060	All	8 Aug 1990
P062	All	8 June 1989
P063	All	8 June 1989
P064	All	8 Aug 1990
P065	Wastewater	8 Aug 1990
P065	Nonwastewater	8 May 1992
P066	All	8 Aug 1990
P067	All	8 Aug 1990
P068	All	8 Aug 1990
P069	All	8 Aug 1990
P070	All	8 Aug 1990
P071	All	8 June 1989
P072	All	8 Aug 1990
P073	All	8 Aug 1990
P074	All	8 June 1989
P075	All	8 Aug 1990
P076	All	8 Aug 1990
P077	All	8 Aug 1990
P078	All	8 Aug 1990
P079	All	8 Aug 1990
P081	All	8 Aug 1990
P082	All	8 Aug 1990
P084	All	8 Aug 1990
P085	All	8 June 1989
P087	All	8 May 1992
P088	All	8 Aug 1990
P089	All	8 June 1989
P092	Wastewater	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
P092	Nonwastewater	8 May 1992
P093	All	8 Aug 1990
P094	All	8 June 1989
P095	All	8 Aug 1990
P096	All	8 Aug 1990
P099 (silver)	Wastewater	8 Aug 1990
P099	All others	8 June 1989
P101	All	8 Aug 1990
P102	All	8 Aug 1990
P103	All	8 Aug 1990
P104 (silver)	Wastewater	8 Aug 1990
P104	All others	8 June 1989
P105	All	8 Aug 1990
P106	All	8 June 1989
P108	All	8 Aug 1990
P109	All	8 June 1989
P110	All	8 Aug 1990
P111	All	8 June 1989
P112	All	8 Aug 1990
P113	All	8 Aug 1990
P114	All	8 Aug 1990
P115	All	8 Aug 1990
P116	All	8 Aug 1990
P118	All	8 Aug 1990
P119	All	8 Aug 1990
P120	All	8 Aug 1990
P121	All	8 June 1989
P122	All	8 Aug 1990
P123	All	8 Aug 1990
U001	All	8 Aug 1990
U002	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U003	All	8 Aug 1990
U004	All	8 Aug 1990
U005	All	8 Aug 1990
U006	All	8 Aug 1990
U007	All	8 Aug 1990
U008	All	8 Aug 1990
U009	All	8 Aug 1990
U010	All	8 Aug 1990
U011	All	8 Aug 1990
U012	All	8 Aug 1990
U014	All	8 Aug 1990
U015	All	8 Aug 1990
U016	All	8 Aug 1990
U017	All	8 Aug 1990
U018	All	8 Aug 1990
U019	All	8 Aug 1990
U020	All	8 Aug 1990
U021	All	8 Aug 1990
U022	All	8 Aug 1990
U023	All	8 Aug 1990
U024	All	8 Aug 1990
U025	All	8 Aug 1990
U026	All	8 Aug 1990
U027	All	8 Aug 1990
U028	All	8 June 1989
U029	All	8 Aug 1990
U030	All	8 Aug 1990
U031	All	8 Aug 1990
U032	All	8 Aug 1990
U033	All	8 Aug 1990
U034	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U035	All	8 Aug 1990
U036	All	8 Aug 1990
U037	All	8 Aug 1990
U038	All	8 Aug 1990
U039	All	8 Aug 1990
U041	All	8 Aug 1990
U042	All	8 Aug 1990
U043	All	8 Aug 1990
U044	All	8 Aug 1990
U045	All	8 Aug 1990
U046	All	8 Aug 1990
U047	All	8 Aug 1990
U048	All	8 Aug 1990
U049	All	8 Aug 1990
U050	All	8 Aug 1990
U051	All	8 Aug 1990
U052	All	8 Aug 1990
U053	All	8 Aug 1990
U055	All	8 Aug 1990
U056	All	8 Aug 1990
U057	All	8 Aug 1990
U058	All	8 June 1989
U059	All	8 Aug 1990
U060	All	8 Aug 1990
U061	All	8 Aug 1990
U062	All	8 Aug 1990
U063	All	8 Aug 1990
U064	All	8 Aug 1990
U066	All	8 Aug 1990
U067	All	8 Aug 1990
U068	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U069	All	8 June 1989
U070	All	8 Aug 1990
U071	All	8 Aug 1990
U072	All	8 Aug 1990
U073	All	8 Aug 1990
U074	All	8 Aug 1990
U075	All	8 Aug 1990
U076	All	8 Aug 1990
U077	All	8 Aug 1990
U078	All	8 Aug 1990
U079	All	8 Aug 1990
U080	All	8 Aug 1990
U081	All	8 Aug 1990
U082	All	8 Aug 1990
U083	All	8 Aug 1990
U084	All	8 Aug 1990
U084	All	8 Aug 1990
U085	All	8 Aug 1990
U086	All	8 Aug 1990
U087	All	8 June 1989
U088	All	8 June 1989
U089	All	8 Aug 1990
U090	All	8 Aug 1990
U091	All	8 Aug 1990
U092	All	8 Aug 1990
U093	All	8 Aug 1990
U094	All	8 Aug 1990
U095	All	8 Aug 1990
U096	All	8 Aug 1990
U097	All	8 Aug 1990
U098	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U099	All	8 Aug 1990
U101	All	8 Aug 1990
U101	All	8 June 1989
U103	All	8 Aug 1990
U105	All	8 Aug 1990
U106	All	8 Aug 1990
U107	All	8 June 1989
U108	All	8 Aug 1990
U109	All	8 Aug 1990
U110	All	8 Aug 1990
U111	All	8 Aug 1990
U112	All	8 Aug 1990
U113	All	8 Aug 1990
U114	All	8 Aug 1990
U115	All	8 Aug 1990
U116	All	8 Aug 1990
U117	All	8 Aug 1990
U118	All	8 Aug 1990
U119	All	8 Aug 1990
U120	All	8 Aug 1990
U121	All	8 Aug 1990
U122	All	8 Aug 1990
U123	All	8 Aug 1990
U124	All	8 Aug 1990
U125	All	8 Aug 1990
U126	All	8 Aug 1990
U127	All	8 Aug 1990
U128	All	8 Aug 1990
U129	All	8 Aug 1990
U130	All	8 Aug 1990
U131	All	8 Aug 1990



**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U132	All	8 Aug 1990
U133	All	8 Aug 1990
U134	All	8 Aug 1990
U135	All	8 Aug 1990
U136	Wastewater	8 Aug 1990
U136	Nonwastewater	8 May 1992
U137	All	8 Aug 1990
U138	All	8 Aug 1990
U140	All	8 Aug 1990
U141	All	8 Aug 1990
U142	All	8 Aug 1990
U143	All	8 Aug 1990
U144	All	8 Aug 1990
U145	All	8 Aug 1990
U146	All	8 Aug 1990
U147	All	8 Aug 1990
U148	All	8 Aug 1990
U149	All	8 Aug 1990
U150	All	8 Aug 1990
U151	Wastewater	8 Aug 1990
U151	Nonwastewater	8 May 1992
U152	All	8 Aug 1990
U153	All	8 Aug 1990
U154	All	8 Aug 1990
U155	All	8 Aug 1990
U156	All	8 Aug 1990
U157	All	8 Aug 1990
U158	All	8 Aug 1990
U159	All	8 Aug 1990
U160	All	8 Aug 1990
U161	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U162	All	8 Aug 1990
U163	All	8 Aug 1990
U164	All	8 Aug 1990
U165	All	8 Aug 1990
U166	All	8 Aug 1990
U167	All	8 Aug 1990
U168	All	8 Aug 1990
U169	All	8 Aug 1990
U170	All	8 Aug 1990
U171	All	8 Aug 1990
U172	All	8 Aug 1990
U173	All	8 Aug 1990
U174	All	8 Aug 1990
U176	All	8 Aug 1990
U177	All	8 Aug 1990
U178	All	8 Aug 1990
U179	All	8 Aug 1990
U180	All	8 Aug 1990
U181	All	8 Aug 1990
U182	All	8 Aug 1990
U183	All	8 Aug 1990
U184	All	8 Aug 1990
U185	All	8 Aug 1990
U186	All	8 Aug 1990
U187	All	8 Aug 1990
U188	All	8 Aug 1990
U189	All	8 Aug 1990
U190	All	8 June 1989
U191	All	8 Aug 1990
U192	All	8 Aug 1990
U193	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U194	All	8 Aug 1990
U196	All	8 Aug 1990
U197	All	8 Aug 1990
U200	All	8 Aug 1990
U201	All	8 Aug 1990
U202	All	8 Aug 1990
U203	All	8 Aug 1990
U204	All	8 Aug 1990
U205	All	8 Aug 1990
U206	All	8 Aug 1990
U207	All	8 Aug 1990
U208	All	8 Aug 1990
U209	All	8 Aug 1990
U210	All	8 Aug 1990
U211	All	8 Aug 1990
U212	All	8 Aug 1990
U213	All	8 Aug 1990
U214	All	8 Aug 1990
U215	All	8 Aug 1990
U216	All	8 Aug 1990
U217	All	8 Aug 1990
U218	All	8 Aug 1990
U219	All	8 Aug 1990
U220	All	8 Aug 1990
U221	All	8 June 1989
U222	All	8 Aug 1990
U223	All	8 June 1989
U225	All	8 Aug 1990
U226	All	8 Aug 1990
U227	All	8 Aug 1990
U228	All	8 Aug 1990

**Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA**  
**Appendix E: Land Disposal Restricted Wastes and Their Effective Dates (40 CFR 268, Appendix VII)**

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Waste Code	Waste Category	Effective Date
U234	All	8 Aug 1990
U235	All	8 June 1989
U236	All	8 Aug 1990
U237	All	8 Aug 1990
U238	All	8 Aug 1990
U239	All	8 Aug 1990
U240	All	8 Aug 1990
U243	All	8 Aug 1990
U244	All	8 Aug 1990
U246	All	8 Aug 1990
U247	All	8 Aug 1990
U248	All	8 Aug 1990
U249	All	8 Aug 1990

<sup>a</sup> This table also does not include contaminated soil and debris wastes.

<sup>b</sup> The standard has been revised in the Third Third Final Rule.

<sup>c</sup> No land disposal standard has been revised in the Third Third Final Rule.

**Table 2 - Summary of Effective Dates of Land Disposal Restrictions  
for Contaminated Soil and Debris (CSD)**

	<b>Restricted hazardous waste in CSD</b>	<b>Effective Date</b>
1.	Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from CERCLA response of RCRA corrective actions.	8 Nov 1990
2.	Soil and debris not from CERCLA response or RCRA corrective actions contaminated with less than 1% total solvents (F001-F005) or dioxins (F020-F023 and F026-F028).	8 Nov 1990
3.	Soil and debris contaminated with California list HOCs from CERCLA response or RCRA corrective actions.	8 Nov 1990
4.	Soil and debris contaminated with California list HOCs not from CERCLA response or RCRA corrective actions.	8 July 1989
5.	All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration.	8 Aug 1990
6.	All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration.	8 June 1991
7.	All soil and debris contaminated with Third Third wastes or, First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed RCRA/radioactive wastes.	8 May 1993
8.	Debris that is contaminated with wastes listed in 40 CFR 268.10, 268.11, and 268.12 (including such wastes that are mixed radioactive hazardous wastes), and debris that is contaminated with any characteristic waste for which treatment standards are established (including such wastes that are mixed radioactive hazardous wastes).	8 May 1993
9.	Hazardous soil having treatment standards based on incineration, mercury retorting or vitrification, and soils contaminated with hazardous wastes listed in 40 CFR 268.10, 268.11, 268.12 that are mixed radioactive hazardous wastes.	8 May 1993

**NOTE:**

1. Appendix VII is provided for the convenience of the reader.
2. Contaminated Soil and Debris Rule will be promulgated in the future.

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**Protocol for Conducting Environmental Compliance Audits of  
Hazardous Waste Generators under the Resource Conservation  
and Recovery Act**

**Appendix F:  
Constituent Concentrations in Waste Extract (40 CFR 268.41I)**

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**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix F: Constituent Concentrations in Waste Extract (40 CFR 268.411)**

Waste Code	Concentration (mg/L)	
	Wastewater	Non-Wastewater
D004* Arsenic (CAS 7440-38-2)	NA	5.0***
D005* Barium (CAS 7440-39-3)	NA	100
D006* Cadmium (CAS 7440-43-9)	NA	1.0
D007* Chromium (Total) (CAS 7440-47-32)	NA	5.0
D008* Lead (CAS 7439-92-1)	NA	5.0
D009** (Low Mercury Subcategory less than 260 mg/kg) Mercury (CAS 7439-97-6)	NA	0.20
D010* Selenium (CAS 7782-49-2)	NA	5.7
D011* Silver (CAS 7440-22-4)	NA	5.0
F001-F005** (spent solvents) Acetone (CAS 67-64-1) n-Butyl alcohol (CAS 71-36-3) Carbon disulfide (CAS 75-15-0) Carbon tetrachloride (CAS 56-23-5) Chlorobenzene (CAS 108-90-7) Cresols (and cresylic acid) Cyclohexanone (CAS 108-94-1) 1,2-Dichlorobenzene (CAS 95-50-1) Ethyl acetate (CAS 141-78-6) Ethylbenzene (CAS 100-41-4) Ethyl ether (CAS 60-29-7) Isobutanol (CAS 78-83-1) Methanol (CAS 67-56-1) Methylene chloride (CAS 75-9-2) Methyl ethyl ketone (CAS 78-93-3) Methyl isobutyl ketone (CAS 108-10-1) Nitrobenzene (CAS 98-95-3) Pyridine (CAS 110-86-1) Tetrachloroethylene (CAS 127-18-4) Toluene (CAS 108-88-3) 1,1,1-Trichloroethane (CAS 71-55-6) 1,1,2-Trichloro-1,2,2-Trifluoroethane (CAS 76-13-1) Trichloroethylene (CAS 79-01-6) Trichlorofluoromethane (CAS 75-69-4) Xylene	0.05 5.0 NA 0.05 0.15 2.82 NA 0.65 0.05 0.05 0.05 5.0 NA 0.20 0.05 0.05 0.66 1.12 0.079 1.12 1.05 1.05 0.062 0.05 0.05	0.59 5.0 4.8 0.96 0.05 0.75 0.75 0.125 0.75 0.053 0.75 5.0 0.75 0.96 0.75 0.33 0.125 0.33 0.05 0.33 0.41 0.96 0.091 0.96 0.15
F006* Cadmium (CAS 7440-43-9) Chromium (total) (CAS 7440-47-32) Lead (CAS 7439-92-1) Nickel (CAS 7440-02-0) Silver (CAS 7440-22-4)	NA NA NA NA NA	0.066 5.2 0.51 0.32 0.072

This document is intended solely for guidance. No statutory or regulatory requirements are in any way altered by any statement(s) contained herein.

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix F: Constituent Concentrations in Waste Extract (40 CFR 268.411)**

Waste Code	Concentration (mg/L)	
	Wastewater	Non-Wastewater
F007*, F008*, F009*, F011* and F012* Cadmium (CAS 7440-43-9) Chromium (total)(CAS 7440-47-32) Lead (CAS 7439-92-1) Nickel (CAS 7440-02-0) Silver (CAS 7440-22-4)	NA NA NA NA NA	0.066 5.2 0.51 0.32 0.072
F019* Chromium (Total) (CAS 7440-47-32)	NA	5.2
F020-F023 and F026-F026 dioxin containing wastes (same for wastewaters and non-wastewaters) HxCDD--All Hexachlorodibenzo-p-dioxins HxCDF--All Hexachlorodibenzofurans PeCDD--All Pentachlorodibenzo-p-dioxins PeCDF--All Pentachlorodibenzofurans TCDD--All Tetrachlorodibenzo-p-dioxins TCDF--All Tetrachlorodibenzofurans 2,4,5-Trichlorophenol (CAS 95-95-4) 2,4,6-Trichlorophenol (CAS 86-06-2) 2,3,4,6-Tetrachlorophenol (CAS 58-90-2) Pentachlorophenol (CAS 87-66-5)	< 1 ppb < 1 ppb < 1 ppb < 1 ppb < 1 ppb < 1 ppb < 1 ppm < 0.05 ppm < 0.05 ppm < 0.01 ppm	
F024* Chromium (total) (CAS 7440-47-32) Lead (CAS 7439-92-1) Nickel (CAS 7440-02-0)	NA NA NA	0.073 Reserved 0.088
F037* Chromium(total) Nickel	NA NA	1.7 0.20
F038* Chromium(total) Nickel	NA NA	1.7 0.20
F039* Antimony (CAS 7440-36-0) Arsenic (CAS 7440-38-2) Barium (CAS 7440-39-3) Cadmium (CAS 7440-43-9) Chromium (CAS 7440-47-32) Lead (CAS 7439-92-1) Mercury (CAS 7439-97-6) Nickel (CAS 7440-02-0) Selenium (CAS 7782-49-2) Silver (CAS 7440-22-4)	NA NA NA NA NA NA NA NA NA NA	0.23 5.0 52 0.066 5.2 0.51 0.025 0.32 5.7 0.072
K001* Lead (CAS 7439-92-1)	NA	0.51
K002*, K003*, K004*, and K005* Chromium(Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA	0.094 0.37
K006* (anhydrous) Chromium (Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA	0.094 0.37

This document is intended solely for guidance. No statutory or regulatory requirements are in any way altered by any statement(s) contained herein.

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix F: Constituent Concentrations in Waste Extract (40 CFR 268.41l)**

Waste Code	Concentration (mg/L)	
	Wastewater	Non-Wastewater
K006* (hydrated) Chromium (Total) (CAS 7440-47-32)	NA	5.2
K007* and K008* Chromium(Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA	0.094 0.37
K015* Chromium(Total) (CAS 7440-47-32) Nickel (CAS 7440-02-0)	NA NA	1.7 0.2
K021* Antimony (CAS 7440-36-0)	NA	0.23
K022* Chromium(Total) (CAS 7440-47-32) Nickel (CAS 7440-02-0)	NA NA	5.2 0.32
K028* Chromium(Total) (CAS 74440-47-32) Lead (CAS 7439-92-1) Nickel (CAS 7440-02-0)	NA NA NA	0.073 0.021 0.088
K031* Arsenic (CAS 7440-38-2)	NA	5.6*
K046* Lead (CAS 7439-92-1)	NA	0.18
K048*, K049*, K050*, K051*, and K052* Chromium(Total) (CAS 7440-47-32) Nickel (CAS 7440-02-0)	NA NA	1.7 0.20
K061* antimony arsenic barium beryllium cadmium chromium (total) lead mercury nickel selenium silver thallium zinc	NA NA NA NA NA NA NA NA NA NA NA NA NA NA	2.1 0.055 7.6 0.014 0.19 0.33 0.37 0.009 5. 0.16 0.3 0.078 5.3
K062* Chromium (Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA	0.094 0.37
K069** (Calcium Sulfate subcategory) Cadmium (CAS 7440-43-9) Lead (CAS 7439-92-1)	NA NA	0.1 40.24

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix F: Constituent Concentrations in Waste Extract (40 CFR 268.41I)**

Waste Code	Concentration (mg/L)	
	Wastewater	Non-Wastewater
K071* Mercury (CAS 7439-97-6)	NA	0.025
K083* Nickel (CAS 7440-02-2)	NA	0.088
K084* Arsenic (CAS 7440-38-2)	NA	5.6*
K086* Chromium(Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA	0.094 0.37
K087* Lead (CAS 7439-92-1)	NA	0.51
K100* Cadmium (CAS 7440-43-9) Chromium(Total) (CAS 7440-47-32) Lead (CAS 7439-92-1)	NA NA NA	0.066 5.2 0.51
K101* and K102* Arsenic (CAS 7440-38-2)	NA	5.6*
K106** (Low Mercury Subcategory--less than 260 mg/kg residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.020
K106** (Low Mercury Subcategory--less than 260 mg/kg that are not residues from RMERC) Mercury (CAS 7439-97-6)	NA	0.025
K115* Nickel (CAS 7440-02-0)	NA	0.32
P010* (Arsenic acid)** Arsenic (CAS 7440-38-2)	NA	5.6*
P011* (Arsenic pentoxide) Arsenic (CAS 7440-38-2)	NA	5.6*
P012* (Arsenic trioxide) Arsenic (CAS 7440-38-2)	NA	5.6*
P013* (Barium cyanide) Barium (CAS 7440-39-3)	NA	52
P036* (Dichlorophenylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P038* (Diethylarsine) Arsenic (CAS 7440-38-2)	NA	5.6*
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC) (mercury fulminate) Mercury (CAS 7439-97-6)	NA	0.20

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**Appendix F: Constituent Concentrations in Waste Extract (40 CFR 268.411)**

Waste Code	Concentration (mg/L)	
	Wastewater	Non-Wastewater
P065** (Low Mercury Subcategory--less than 260 mg/kg Mercury incinerator residues (not residues from RMERC) (Mercury fulminate) Mercury (CAS 7439-97-6)	NA	0.025
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	NA	0.32
P074* (Nickel cyanide) Nickel (CAS 7440-02-0)	NA	0.32
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury residues from RMERC)(Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.20
P092** (Low Mercury Subcategory--less than 260 mg/kg Mercury-incinerator residues(not residues from RMERC) (Phenyl mercury acetate) Mercury (CAS 7439-97-6)	NA	0.025
P099* (Potassium silver cyanide) Silver (CAS 7440-22-4)	NA	0.072
P103* (Selenourea) Selenium (CAS 7782-49-2)	NA	5.7
P104* (Silver cyanide) Silver (CAS 7440-22-4)	NA	0.072
P110* (Tetraethyl lead) Lead (CAS 7439-92-1)	NA	0.51
P114* (Thallium selenite) Selenium (CAS 7782-49-2)	NA	5.7
U032* (Calcium chromate) Chromium(Total) (CAS 7440-47-32)	NA	0.094
U051* (Creosote) Lead (CAS 7439-92-1)	NA	0.51
U136* (Cacodylic acid) Arsenic (CAS 7440-38-2)	NA	5.6*
U144* (Lead acetate) Lead (CAS 7439-92-1)	NA	0.51
U145* (Lead phosphate) Lead (CAS 7439-92-1)	NA	0.51
U146* (Lead subacetate) Lead (CAS 7439-92-1)	NA	0.51

\* See also Appendix 4-10, Table CCW in 40 CFR 268.43.

\*\* See also Appendix 4-9, Table 2 in 40 CFR 268.42.

\*\*\* These treatment standards have been based on EP Leachate analysis but this does not preclude the use of TCLP analysis.

**Protocol for Conducting Environmental Compliance Audits of  
Treatment, Storage and Disposal Facilities under the Resource  
Conservation and Recovery Act**

**Appendix G:  
Treatment Methods Expressed as Specific Technologies  
(40 CFR 268.42)**

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**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

**Table 1 - Technology Codes and Description of Technology-Based Standards**

<b>Technology Code</b>	<b>Description of Technology-Based Standards</b>
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)--venting can be accomplished through physical release utilizing valves/piping; physical penetration of the container; and/or penetration through detonation.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
BIODG	Biodegradation of organics or non-organics (i.e., degradable inorganics that contain the elements of phosphorus, nitrogen, and sulfur) in units operated under either aerobic or anaerobic conditions such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator parameter for the biodegradation of many organic constituents that cannot be directly analyzed in wastewater residues).
CARBN	Carbon adsorption (granulated or powered) of non-metallic inorganics, organo-metallics, and/or organic constituents, operated such that a surrogate compound or indicator parameter has not undergone breakthrough (e.g., Total Organic Carbon can often be used as an indicator parameter for absorption of many organic constituents that cannot be directly analyzed in wastewater residues). Breakthrough occurs when the carbon has become saturated with the constituent (or indicator parameter) and substantial change in adsorption rate associated with that constituent occurs.
CHOXD	Chemical or electrolytic oxidation utilizing the following oxidation reagents (or waste reagents) or combinations of reagents: (1) hypochlorite (e.g. bleach); (2) chlorine; (3) chlorine dioxide; (4) ozone or UV (ultraviolet light) assisted ozone; (5) peroxides; (6) persulfates; (7) perchlorates; (8) permanganates; and/or (9) other oxidizing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as indicator parameter for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues). Chemical oxidation specifically indicates what is commonly referred to as alkaline chlorination.
CHRED	Chemical reduction utilizing the following reducing reagents (or waste reagents) or combinations of reagents: (1) sulfur dioxide; (2) sodium, potassium, or alkali salts or sulfides, bisulfites, metabisulfites, and polyethylene glycols (e.g., NaPEG and KPEG); (3) sodium hydrosulfide; (4) ferrous salts; and/or (5) other reducing reagents of equivalent efficiency, performed in units operated such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Halogens can often be used as an indicator parameter for the reduction of many halogenated organic constituents that cannot be directly analyzed in wastewater residues). Chemical reduction is commonly used for the reduction of hexavalent chromium to the trivalent state.
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
HLVIT	Vitrification of high level mixed radioactive wastes in units in compliance with all applicable radioactive protection requirements under control of the Nuclear Regulatory Commission.
IMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR part 264 subpart O and part 265 subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
INCIN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR part 264 subpart O and part 265 subpart O.



**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

Technology Code	Description of Technology-Based Standards
LLEXT	Liquid-liquid extraction (often referred to as solvent extraction) of organics from liquid wastes into an immiscible solvent for which the hazardous constituents have a greater solvent affinity, resulting in an extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and a raffinate (extracted liquid waste) proportionately low in organics that must undergo further treatment as specified in the standard.
MACRO	Macroencapsulation with surface coating materials such as polymeric organic (e.g. resins and plastics) or with a jacket or inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.
NEUTRO	Neutralization with the following reagents (or waste reagents) or combination of reagents: (1) acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residuals.
NLDBR	No land disposal based on recycling.
PRECP	Chemical precipitation of metals and other inorganics as insoluble precipitates of oxides, hydroxides, carbonates, sulfates, chlorides, fluorides, or phosphates. The following reagents (or waste reagents) are typically used alone or in combination: (1) lime (i.e., containing oxides and/or hydroxides of calcium and/or magnesium); (2) caustic (i.e., sodium and/or potassium hydroxides); (3) soda ash (i.e., sodium carbonate); (4) sodium sulfide; (5) ferric sulfate or ferric chloride; (6) alum; or (7) sodium sulfate. Additional flocculating, coagulation or similar reagents/processes that enhance sludge dewatering characteristics are not precluded from use.
RBERY	Thermal recovery of Beryllium.
RCGAS	Recovery/reuse of compressed gases including techniques such as reprocessing of the gases for reuse/resale; filtering/adsorption of impurities; remixing for direct reuse or resale; and use of the gas as a fuel source.
RCORR	Recovery of acids or bases utilizing one or more of the following recovery technologies: (1) distillation (i.e., thermal concentration); (2) ion exchange; (3) resin or solid adsorption; (4) reverse osmosis; and/or (5) incineration for the recovery of acid--Note: this does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RLEAD	Thermal recovery of lead in secondary lead smelters.
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequent condensing the volatilized mercury for recovery. The retorting or roasting in a thermal unit (or facility) must be subject to one or more of the following: (a) a National Emissions Standard for Hazardous Air Pollutants (NESHAP) for mercury; (b) a Best Available Control Technology (BACT) or a Lowest Achievable Emission Rate (LAER) standard for mercury imposed pursuant to a Prevention of Significant Deterioration (PSD) permit; or (c) a state permit that establishes emission limitations (within meaning of section 302 of the Clean Air Act) for mercury. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories).
RMETL	Recovery of metals or inorganics utilizing one or more of the following direct physical/removal technologies: (1) ion exchange; (2) resin or solid (i.e., zeolites) adsorption; (3) reverse osmosis; (4) chelation/solvent extraction; (5) freeze crystallization; (6) ultrafiltration and/or (7) simple precipitation (i.e., crystallization)--Note: This does not preclude the use of other physical phase separation or concentration techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.

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**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

Technology Code	Description of Technology-Based Standards
RORGS	Recovery of organics utilizing one or more of the following technologies: (1) distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon adsorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals);--Note: this does not preclude the use of other physical phase separation techniques such as a decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
RTHRM	Thermal recovery of metals or inorganics from nonwastewaters in units identified as industrial furnaces according to 40:260.10 (1), (6), (7), (11), and (12) under the definition of "industrial furnaces".
RZINC	Resmelting in high temperature metal recovery units for the purpose of recovery of zinc.
STABL	Stabilization with the following reagents (or waste reagents) or combinations of reagents: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust)--this does not preclude the addition of reagents (e.g., iron slats, silicates, and clays) designed to enhance the set/cure time and/or compressive strength, or to overall reduce the leachability of the metal or inorganic.
SSTRP	Steam stripping of organics from liquid wastes utilizing direct application of steam to the wastes operated such that liquid and vapor flow rates, as well as, temperature and pressure ranges have been optimized, monitored, and maintained. These operating parameters are dependent upon the design parameters of the unit such as, the number of separation stages and the internal column design. Thus, resulting in a condensed extract high in organics that must undergo either incineration, reuse as a fuel, or other recovery/reuse and an extract wastewater that must undergo further treatment as specified in the standard.
WETOX	Wet air oxidation performed in units such that a surrogate compound or indicator parameter has been substantially reduced in concentration in the residuals (e.g., Total Organic Carbon can often be used as an indicator for the oxidation of many organic constituents that cannot be directly analyzed in wastewater residues).
WTRRX	Controlled reaction with water for highly reactive inorganic or organic chemicals with precautionary controls for protection of workers from potential violent reactions as well as precautionary controls for potential emissions of toxic/ignitable levels of gases released during the reaction.

Note 1: When a combination of these technologies (i.e., a treatment train) is specified as a single treatment standard, the order of application is specified in 268.42, Table 2 by the five letter technology code that must be applied first, then the designation "fb" (abbreviation for "followed by"), then the five letter technology code for the technology that must be applied next, and soon.

Note 2: When more than one technology (or treatment train) are specified as alternative treatment standards, the five letter technology codes (or the treatment trains) are separated by a semicolon (;) with the last technology preceded by the word "or". This indicates that any one of these BDAT technologies or treatment trains can be used for compliance with the standard.

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**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

**Table 2 - Technology-Based Standards by RCRA Waste Codes**

Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
D001 Ignitable liquids based on 261.21(a)(1) wastewaters	DEACT	NA
D001 Ignitable liquids based on 261.21(a)(1)Low TOC ignitable liquids subcategory Less than 10% TOC	NA	DEACT
D001 Ignitable Liquids based on 261.21(a)(1)High TOC ignitable liquids subcategory Greater than or equal to 10% TOC	NA	FSUBS; RORGS or INCIN
D001 Ignitable compressed gases based on 261.21(a)(2)	NA	DEACT***
D001 Ignitable reactives based on 261.21(a)(4)	NA	DEACT
D002 Acid subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Akaline subcategory based on 261.22(a)(1)	DEACT	DEACT
D002 Other corrosives based on 261.22(a)(2)	DEACT	DEACT
(NOTE: the following language under D003 reactive sulfides wastewater, "... but not including dilution as a substitute for adequate treatment," is suspended until 6-17-93; see FR 14319 3-17-93)		
D003 Reactive sulfides based on 261.23(a)(5) but not including dilution as a substitute for adequate treatment	DEACT	DEACT
D003 Explosives based on 261.23(a)(6--8)	DEACT	DEACT
D003 Water reactives based on 261.23(a)(2--4)	NA	DEACT
D003 Other reactives based on 261.23(a)(1)	DEACT	DEACT
D006 (CAS 7440-43-9) Cadmium containing batteries	NA	RTHRM
D008 (CAS 7439-92-1) Lead acid batteries that are identified as RCRA hazardous waste and that are not excluded from regulation (see 40:268.80)	NA	RLEAD
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury and organics (and are not incinerator residues))	NA	IMERC; or RMERC

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
D009*** (CAS 7439-97-6) Mercury (High Mercury subcategory--greater than or equal to 260 mg/kg total mercury inorganics (including incinerator residues and residues from RMERC))	NA	RMERC
D012** (CAS 72-20-8) Endrin	BIODG; or INCIN	NA
D013** (CAS 58-89-9) Lindane	CARBN; or INCIN	NA
D014** (CAS 72-43-5) Methoxychlor	WETOX; or INCIN	NA
D015** (CAS 8001-35-1) Toxaphene	BIODG; or INCIN	NA
D016** (CAS 94-75-7) 2,4-D	CHOXD; BIODG or INCIN	NA
D017** (CAS 93-72-1) 2,4,5-TP	CHOXD or INCIN	NA
F005*** (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
F005*** (CAS 110-80-5) 2-Ethoxyethanol	BIODG; or INCIN	INCIN
F024***	INCIN	INCIN
K025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene	LLEXT fb SSTRP fb CARBN; or INCIN	INCIN
K026 Stripping still tails form the production of methyl ethyl pyridines	INCIN	INCIN
K027 Centrifuge and distillation residues from toluene diisocyanate production	CARBN or INCIN	FSUBS or INCIN
K039 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate	CARBN or INCIN	FSUBS or INCIN
K044 Wastewater treatment sludges from the manufacturing and processing of explosives	DEACT	DEACT
K045 Spent carbon from the treatment of wastewater containing explosives	DEACT	DEACT
K047 Pink/red water from TNT operations	DEACT	DEACT

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
K069*** Emission control dust/sludge from secondary lead smelting: Non-Calcium Sulfate Subcategory	NA	RLEAD
K106*** Wastewater treatment sludge from the mercury cell process in chlorine production: (High mercury subcategory--greater than or equal to 260 mg/kg total mercury.)	NA	RMERC
K107 Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K108 Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethyl-hydrazine (UDMH) from carboxylic acid hydrazides.	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K109 Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHXOD fb CARBN; or BIODG fb CARBN	INCIN
K110 Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K112 Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene	INCIN; or CHOXD fb CARBN; or BIODG fb CARBN	INCIN
K113 Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K114 Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K115 Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene	CARBN; or INCIN	FSUBS; or INCIN
K116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine	CARBN; or INCIN	FSUBS; or INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
K123 Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenedisithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K124 Reactor vent scrubber water from the production of ethylenedisithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K125 Filtration, evaporation, and centrifugation solids from the production of ethylenedisithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
K126 Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylene bisdithiocarbamic acid and its salts	INCIN; or CHOXD fb (BIODG or CARBN)	INCIN
P001 (CAS 81-81-2) Warfarin (>0.3%)	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P002 (CAS 591-08-2) 1-Acetyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P003 (CAS 107-02-8) Aceolein	NA	FSUBS; or INCIN
P005 (CAS 107-18-6) Allyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P006 (CAS 20859-73-8) Aluminum phosphide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P007 (CAS 2763-96-4) 5-Aminoethyl 3-isoxazolol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P008 (CAS 504-24-5) 4-Aminopyridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P009 (CAS 131-74-8) Ammonium picrate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P014 (CAS 108-98-5) Thiophenol (Benzebe thiol)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P015 (CAS 7440-41-7) Beryllium powder	RMETL; or RTHRM	RMETL; or RTHRM
P016 (CAS 542-88-1) Bis(chloromethyl)ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P017 (CAS 598-31-2) Bromoacetone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P018 (CAS 357-57-3) Brucine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P022** (CAS 75-15-0) Carbon disulfide	NA	INCIN
P023 (CAS 107-20-0) Chloroacetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P026 (CAS 5344-82-1) 1-(o-Chlorophenyl) thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P027 (CAS 542-76-7) 3-Chloropropionitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P028 (CAS 100-44-7) Benzyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P031 (CAS 460-19-5) Cyanogen	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN
P033 (CAS 506-77-4) Cyanogen chloride	CHOXD; WETOX or INCIN	CHOXD; WETOX or INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P034 (CAS 131-89-5) 2-Cyclohexyl-4,6-dinitrophenol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P040 (CAS 297-97-2) O,O-Diethyl O-pyrzinyI phosphorothioate	CARBN; or INCIN	FSUBS; or INCIN
P041 (CAS 311-45-5) Diethyl-p-nitrophenyl phosphate	CARBN; or INCIN	FSUBS; or INCIN
P042 (CAS 51-43-4) Epinephrine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P043 (CAS 55-91-4) Diisopropyl florophosphate(DFP)	CARBN; or INCIN	FSUBS; or INCIN
P044 (CAS 60-51-5) Dimethoate	CARBN; or INCIN	FSUBS; or INCIN
P045 (CAS 39196-18-4) Thiofanox	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P046 (CAS 122-09-8) alpha, alpha-Dimethylphenethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P047 (CAS 534-52-1) 4,6-Dinitro-o-cresol salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P049 (CAS 541-53-7) 2,4-Dithlobluret	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P054 (CAS 151-56-4) Aziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P056** (CAS 7782-41-4) Fluorine	NA	ADGAS fb NEUTR
P057 (CAS 640-19-7) Fluoroacetamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN



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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P058 (CAS 62-74-8) Fluoroacetic acid, sodium salt	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P062 (CAS 757-58-4) Hexaethyltetraphosphate	CARBN; or INCIN	FSUBS; or INCIN
P064 (CAS 624-83-9) Isocyanic acid, ethyl ester	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P065*** (CAS 628-86-4) Mercury fulminate: (High Mercury Subcategory--greater than or equal to 260 mg/kg total Mercury either incinerator residues or residues from RMERC)	NA	RMERC
P065*** (CAS 628-86-4) Mercury fulminate: (All Nonwastewaters that are not incinerator residues from RMERC; regardless of Mercury content)	NA	IMERC
P066 (CAS 16752-77-5) Methomyl	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P067 (CAS 75-55-8) 2-Methylaziridine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P068 (CAS 60-34-4) Methyl hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P069 (CAS 75-86-5) Methylacetonitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P070 (CAS 116-06-3) Aldicarb	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P072 (CAS 86-88-4) 1-Naphthyl-2-thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P075 (CAS 54-11-5) Nicotine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P076 (CAS 10102-43-9) Nitric oxide	ADGAS	ADGAS
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P078 (CAS 10102-44-0) Nitrogen dioxide	ADGAS	ADGAS
P081 (CAS 55-63-0) Nitroglycerin	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P082** (CAS 62-75-9) N-Nitrosodimethylamine	NA	RMERC
P084 (CAS 4549-40-0) N-Nitrosomethylvinylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P085 (CAS 152-16-9) Octamethylpyrophosphoramide	CARBN; or INCIN	FSUBS; or INCIN
P087 (CAS 20816-12-0) Osmium tetroxide	RMETL; or RTHRM	RMETL; or RTHEM
P088 (CAS 145-73-3) Endothall	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P092*** (CAS 62-38-4) Phenyl mercury acetate: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury - either incinerator residues or residues from RMERC)	NA	REMEC
P092*** (CAS 62-38-4) Phenyl mercury acetate: (All nonwastewaters that are not incinerator residues and are not residues from RMERC: regardless of Mercury Content)	NA	IMERC; or RMERC
P093 (CAS 103-85-5) N-Phenylthiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P095 (CAS 75-44-5) Phosgene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P096 (CAS 7803-51-2) Phosphine	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
P102 (CAS 107-19-7) Propargyl alcohol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
P105 (CAS 26628-22-8) Sodium azide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; or INCIN
P108 (CAS 57-24-9) Strychnine and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P109 (CAS 3689-24-5) Tetraethyldithiopyrophosphate	CARBN; or INCIN	FSUBS; or INCIN
P112 (CAS 509-14-8) Tetranitromethane	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
P113** (CAS 1314-32-5) Thallic oxide	NA	RTHRM; or STABL
P115** (CAS 7446-18-6) Thallium (1) sulfate	NA	RTHRM; or STABL
P116 (CAS 79-19-6) Thiosemicarbazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P118 (CAS 75-70-7) Trichloromethanethiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
P119** (CAS 7803-55-8)	NA	STABL
P120** (CAS 1314-62-1) Vanadium pentoxide	NA	STABL

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
P122 (CAS 1314-84-7) Zinc Phosphide (>10%)	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U001 (CAS 75-07-0) Acetaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U003** (CAS 75-05-8) Acetonitrile	NA	INCIN
U006 (CAS 75-36-5) Acetyl Chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U007 (CAS 79-06-1) Acrylamide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U008 (CAS 79-10-7) Acrylic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U010 (CAS 50-07-7) Mitomycin C	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U011 (CAS 61-82-5) Amitrole	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U014 (CAS 492-80-8) Auramine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U015 (CAS 115-02-6) Azaserine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U016 (CAS 225-51-4) Benz(c)acridine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U017 (CAS 98-87-3) Benzal chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U020 (CAS 98-09-9) Benzenesulfonyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U021 (CAS 92-87-5) Benzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U023 (CAS 98-07-7) Benzotrichloride	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U026 (CAS 494-03-1) Chlomaphazin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U033 (CAS 353-50-4) Carbonyl fluoride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U034 (CAS 75-87-6) Trichloroacetaldehyde (Chloral)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U035 (CAS 305-03-3) Chlorambucil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U038** (CAS 510-15-6) Chlorobenzilate	NA	INCIN
U041 (CAS 106-89-8) 1-Chloro-2,3-epoxypropane (Epichlorohydrin)	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U042** (CAS 110-75-8) 2-Chloroethyl vinyl ether	NA	INCIN
U046 (CAS 107-39-2) Chloromethyl methyl ether	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U049 (CAS 3165-93-3) 4-Chloro-o-toluidine hydrochloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U053 (CAS 4170-30-3) Crotonaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U055 (CAS 98-82-8) Cumene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U056 (CAS 110-82-7) Cyclohexane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U057** (CAS 108-94-1) Cyclohexanone	NA	FSUBS; or INCIN
U058 (CAS 50-18-0) Cyclophosphamide	CARBN; or INCIN	FSUBS; or INCIN
U059 (CAS 20830-81-3) Daunomycin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U062 (CAS 2303-16-4) Diallate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U064 (CAS 189-55-9) 1,2,7,8-Dibenzopyrene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS;
U073 (CAS 91-94-1) 3,3'-Dichlorobenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U074 (CAS 1476-11-5) cis-1,4-Dichloro-2-butylene trans-1,4-Dichloro-2-butylene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U085 (CAS 1464-53-5) 1,2:3,4-Diepoxybutane	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U086 (CAS 1615-80-1) N,N-Diethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U087 (CAS 3288-58-2) O,O-Diethy S-methyldithiophosphate	CARBN; or INCIN	FSUBS; or INCIN
U089 (CAS 56-53-1) Diethy stilbestrol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U090 (CAS 94-58-6) Dihydrosafrole	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U091 (CAS 119-9-4) 3,3'-Dimethoxybenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U092 (CAS 124-40-3) Dimethylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U093** (CAS 621-90-9) p-Dimethylaminoazobenzene	NA	INCIN
U094 (CAS 57-97-6) 7,12-Dimethy benz(a)anthracene	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U095 (CAS 119-93-7) 3,3'-Dimethylbenzidine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U096 (CAS 80-15-9) a,a-Dimethyl benzyl hydroperoxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U097 (CAS 79-44-7) Dimethylcarbomyl chloride	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U098 (CAS 57-14-7) 1,1-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U099 (CAS 540-73-8) 1,2-Dimethylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U103 (CAS 77-78-1) Dimethyl sulfate	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U109 (CAS 122-66-7) 1,2-Diphenylhydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U110 (CAS 142-84-7) Dipropylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U113 (CAS 140-88-5) Ethyl acrylate	(WETOX or CHOXD) fb CARBN; or INCIN	FUSBS; or INCIN
U114 (CAS 111-54-6) Ethylene bis-dithiocarbamic acid	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U115 (CAS 75-21-8) Ethylene oxide	(WETOX or CHOXD) fb CARBN; or INCIN	CHOXD; or INCIN
U116 (CAS 96-45-7) Ethylene thiourea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U119 (CAS 62-50-0) Ethyl methane sulfonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U122 (CAS 50-00-0) Formaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U123 (CAS 64-18-6) Formic acid	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN



**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U124 (CAS 110-00-9) Furan	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U125 (CAS 98-01-1) Furfural	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U126 (CAS 765-34-4) Glycidaldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U132 (CAS 70-30-4) Hexachlorophenene	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U133 (CAS 302-01-2) Hydrazine	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U134** (CAS 7664-39-3) Hydrogen Flouride	NA	ADGAS fb NEUTR; or NEUTR
U135 (CAS 7783-06-4) Hydrogen Sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U143 (CAS 303-34-4) Lasiocarpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U147 (CAS 108-31-6) Malaic anhydride	(WETOX or CHOXD) fb	CARBN; or INCIN FSUBS; or INCIN
U148 (CAS 123-33-1) Maleic hydrazide	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U149 (CAS 109-77-3) Malononitrile	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U150 (CAS 148-82-3) Melphalan	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U151*** (CAS 7439-97-6) Mercury: (High Mercury Subcategory - greater than or equal to 260 mg/kg total Mercury)	NA	RMERC
U153 (CAS 74-93-1) Methane thiol	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U154 (CAS 67-56-1) Methanol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U156 (CAS 79-22-1) Methyl chlorocarbonate	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U160 (CAS 1338-23-4) Methyl ethyl ketone peroxide	CHOXD; CHRED; CARBN; BIODG; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U163 (CAS 70-25-7) N-Methyl N'-nitro N-Nitrosoguanidine	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; CHOXD; CHRED; or INCIN
U164 (CAS 56-04-2) Methylthiouracil	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U166 (CAS 130-15-4) 1,4-Naphthoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U167 (CAS 134-32-7) 1-Naphthylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U168** (CAS 91-59-8) 2-Naphthylamine	NA	INCIN
U171 (CAS 79-46-9) 2-Nitropropane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U173 (CAS 1116-54-7) N-Nitroso-di-n-ethanolamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U176 (CAS 759-73-9) N-Nitroso-N-ethylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U177 (CAS 684-93-5) N-Nitroso-N-methylurea	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U178 (CAS 615-53-2) N-Nitroso-N-methylurethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U182 (CAS 123-63-7) Peraldehyde	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U184 (CAS 76-01-7) Pentachloroethane	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U186 (CAS 504-60-9) 1,3-Pentadiene	(WETOX or CHOXD) fb	FSUBS; or INCIN
U189 (CAS 1314-80-3) Phosphorus sulfide	CHOXD; CHRED; or INCIN	CHOXD; CHRED; or INCIN
U191 (CAS 109-06-8) 2-Picoline	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U193 (CAS 1120-71-4) 1,3-Propane sultone	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U194 (CAS 107-10-8) n-Propylamine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U197 (CAS 106-51-4) p-Benzoquinone	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U200 (CAS 50-55-5) Reserpine	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
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Waste Code	Technology Code	
	Wastewaters	Non-Wastewaters
U201 (CAS 108-46-3) Resorcinol	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U202 **** (CAS 81-07-2) Saccharin and salts	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U206 (CAS 18883-66-4) Steptozatocin	(WETOX or CHOXD) fb CARBN; or INCIN	INCIN
U213 (CAS 109-99-9) Tetrahydrofuran	(WETOX or CHOXD) fb CARBN; or INCIN	FSUBS; or INCIN
U214** (CAS 563-68-8) Thallium (1) acetate	NA	RTHRM; or STABL
U215** (CAS 6533-73-9) Thallium (1) carbonate	NA	RTHRM; or STABL
U216** (CAS 7791-12-0) Thallium (1) chloride	NA	RTHRM; or STABL

\* See also Table CCWE in 268.41 (see accession number 8807).

\*\* See also Table CCW in 268.43 (see accession number 8808).

\*\*\* See also Tables CCWE in 268.41 (see accession number 8807) and CCW in 268.43 (see accession number 8808).

\*\*\*\* CAS Number given for parent compound only.

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix G: Treatment Methods Expressed as Specific Technologies (40 CFR 268.42)**

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**Table 3 - Technology-Based Standards for Specific Radioactive Hazardous Mixed Waste**

Waste Code with Waste Description and/or Treatment Category	Wastewaters	Non Wastewaters
D002, D004, D005, D006, and D007 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D008 (CAS 7439-92-1) Radioactive lead solids subcategory*	NA	MACRO
D008 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
D009 (CAS 7439-97-6) Elemental mercury contaminated with radioactive materials	NA	AMLGM
D009 (CAS 7439-97-6) Hydraulic oil contaminated with mercury; radioactive materials subcategory	NA	IMERC
D009, D010, D011 Radioactive high level wastes generated during the reprocessing of fuel rods subcategory	NA	HLVIT
U151 (CAS 7439-97-6) Mercury: Elemental mercury contaminated with radioactive materials	NA	AMLGM

\* These lead solids include, but are not limited to, all forms of lead shielding, and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and stabilized as ash.

**Protocol for Conducting Environmental Compliance Audits of  
Treatment, Storage and Disposal Facilities under the Resource  
Conservation and Recovery Act**

**Appendix H:  
Constituent Concentrations in Wastes (40 CFR 268.43(a))**

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**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix H: Constituent Concentrations in Wastes (CCW) (40 CFR 268.43(a))**

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
D003 (CAS 57-12-5) (reactive cyanides category--based on 261.23(a)(5))		
Cyanides (Total)	Reserved	590 (3)
Cyanides (Amenable)	0.86	30
D004* (CAS 7440-38-2) Arsenic	5.0	NA
D005* (CAS 7440-39-2) Barium	100	NA
D006* (CAS 7440-43-9) Cadmium	1.0	NA
D007* (CAS 7440-47-32) Chromium (Total)	5.0	NA
D008* (CAS 7439-92-1) Lead	5.0	NA
D009* (CAS 7439-97-6) Mercury	0.20	NA
D010* (CAS 7782-49-2) Selenium	1.0	NA
D011* (CAS 7440-22-4) Silver	5.0	NA
D012** (CAS 720-20-8) Endrin	NA	0.13 (1)
D013** (CAS 58-89-9) Lindane	NA	0.066 (1)
D014** (CAS 72-43-5) Methoxychlor	NA	0.18 (1)
D015** (CAS 8001-35-1) Toxaphene	NA	1.3 (1)
D016** (CAS 94-75-7) 2,4-D	NA	10.0 (1)
D017** (CAS 93-76-5) 2,4,5-TP Silvex	NA	7.9 (1)
F001-F005 spent solvents*** 1,1,2-Trichloroethane (CAS 71-55-6)	0.030	7.6 (1)
Benzene (CAS 71-43-2)	0.070	3.7 (1)
F001-F005 spent solvents (Pharmaceutical industry wastewater subcategory)		
Methylene chloride (CAS 75-09-2)	0.44	NA
F006* Cyanides (Total) (CAS 57-12-5)	1.2	590
Cyanides (Amenable) (CAS 57-12-5)	0.86	30



**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix H: Constituent Concentrations in Wastes (CCW) (40 CFR 268.43(a))**

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.040	NA
Nickel (CAS 7440-02-0)	0.44	NA
F007* Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F008* Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7439-92-1)	0.44	NA
F009* Cyanides (total) (CAS 57-12-5)	1.9	590
Cyanides (amenable) (CAS 57-12-5)	0.1	30
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F010 Cyanides (total) (CAS 57-12-5)	1.9	1.5
Cyanides (amenable) (CAS 57-12-5)	0.1	NA
F011* Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA

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**Appendix H: Constituent Concentrations in Wastes (CCW) (40 CFR 268.43(a))**

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
F012* Cyanides (total) (CAS 57-12-5)	1.9	110
Cyanides (amenable) (CAS 57-12-5)	0.1	9.1
Chromium (total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA
F019* Cyanides (total) (CAS 57-12-5)	1.2	590 (3)
Cyanides (amenable) (CAS 57-12-5)	0.86	30 (3)
Chromium (total) (CAS 7440-47-32)	0.32	NA
F024** Note: F024 organic standards must be treated via incineration (INCIN) 2-Chloro-1,3-butadiene (CAS 126-99-6)	0.28 (1)	0.28 (1)
3-Chloropropene (CAS 107-05- )	0.28 (1)	0.28 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.014 (1)	0.014 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.014 (1)	0.014 (1)
1,2-Dichloropropane (CAS 78-87-5)	0.014 (1)	0.014 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.014 (1)	0.014 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.014 (1)	0.014 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.036 (1)	1.8 (1)
Hexachloroethane (CAS 67-72-1)	0.036 (1)	1.8 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA
F025 (light ends subcategory) Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	6.2 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)

**Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA**  
**Appendix H: Constituent Concentrations in Wastes (CCW) (40 CFR 268.43(a))**

Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
F025 (spent filters/aids and desiccants subcategory) Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Methylene chloride (CAS 75-9-2)	0.089 (2)	31 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	6.2 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
F039** (and D001 and D002 wastes prohibited by 268.37) Acetone (CAS 67-64-1)	0.28 (2)	160 (1)
Acenaphthylene (CAS 208-96-8)	0.059 (2)	3.4 (1)
Acenaphthene (CAS 83-32-9)	0.059 (2)	4.0 (1)
Acetonitrile (CAS 75-05-8)	0.17 (2)	NA
Acetophenone (CAS 96-86-2)	0.010 (2)	9.7 (1)
2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
Acrolein		
Acrylonitrile (CAS 107-02-8)	0.29 (2)	NA
Aldrin (CAS 107-13-1)	0.24 (2)	84 (1)
(CAS 309-00-2)	0.021 (2)	0.066 (1)
4-Aminobiphenyl (CAS 92-67-1)	0.13 (2)	NA
Aniline (CAS 62-53-3)	0.81 (2)	14 (1)
Anthracene (CAS 120-12-7)	0.059 (2)	4.0 (1)
Aramite (CAS 140-57-8)	0.36 (2)	NA
Aroclor 1016 (CAS 12674-11-2)	0.013 (2)	0.92 (1)
Aroclor 1221 (CAS 11104-28-2)	0.014 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.0172	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
alpha-BHC (CAS 319-84-6)	0.00014 (2)	0.066 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)	0.066 (1)
delta-BHC (CAS 319-86-8)	0.023 (2)	0.066 (1)
gamma-BHC (CAS 58-89-9)	0.0017 (2)	0.066 (1)
Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
Benzo(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2
Benzo(b)fluoranthene (CAS 205-99-2)	0.055 (2)	3.4 (1)
Benzo(k)fluoranthene (CAS 207-08-9)	0.059 (2)	3.4 (1)
Benzo(g,h,i)perylene (CAS 191-24-2)	0.0055 (2)	1.5 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.061 (2)	8.2 (1)
Bromodichloromethane (CAS 75-27-4)	0.35 (2)	15 (1)
Bromoform (CAS 72-25-2) (Tribromomethane)	0.63 (2)	15 (1)
Bromomethane (CAS 74-83-9) (methyl bromide)	0.11 (2)	15 (1)
4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (2)	15 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6 (2)	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7)	0.066 (2)	2.5 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	5.6 (1)
Carbon disulfide (CAS 75-15-0)	0.014 (2)	NA
Chlordane (CAS 57-74-9)	0.0033 (2)	0.13 (1)
p-Chloroaniline (CAS 106-47-8)	0.46 (2)	16 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)
Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
2-Chloro-1,3-butadiene (CAS 126-99-8)	0.057 (2)	NA
Chlorodibromomethane (CAS 124-48-1)	0.057 (2)	15 (1)
Chloroethane (CAS 75-00-3)	0.27 (2)	6.0 (1)
bis(2-Chloroethoxy) methane (CAS 111-91-1)	0.036 (2)	7.2 (1)
bis(2-Chloroethyl) ether (CAS 111-44-4)	0.033 (2)	7.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
bis(2-Chloroisopropyl) ether(CAS 39638-32-9)	0.055 (2)	7.2 (1)
p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
Chloromethane (Methyl chloride)(CAS 74-87-3)	0.19 (2)	33 (1)
2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
3-Chloropropylene (CAS 107-05-1)	0.036 (2)	28 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresol (m- and p-isomers)	0.77 (2)	3.2 (1)
Cyclohexanone (CAS 108-94-1)	0.36 (2)	NA
1,2-Dibromo-3-chloropane (CAS 96-12-8)	0.11 (2)	15 (1)
1,2-Dibromoethane (CAS 106-93-4) (Ethylene dibromide)	0.028 (2)	15 (1)
Dibromomethane (CAS 74-95-3)	0.11 (2)	15 (1)
2,4-Dichlorophenoxyacetic acid (2,4-D) (CAS 94-75-7)	0.72 (2)	10 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
p,p'-DDE (CAS 72-55-9)	0.031 (2)	0.087 (1)
o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
Dibenzo(a,e)pyrene (CAS 192-65-4)	0.061 (2)	NA
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	6.2 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	6.2 (1)
Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
1,1-Dichloroethylene (CAS 75-35-4) trans-1,2-Dichloroethene	0.025 (2)	33 (1)
2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)
1,2-Dichloropropane	0.85 (2)	18 (1)
cis-1,3-Dichloropropene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropene (CAS 10061-02-6)	0.036 (2)	18 (1)
Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
2,4-Dimethyl phenol (CAS 105-67-9)	0.036 (2)	14 (1)
Dimethyl phthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.057 (2)	28 (1)
1,4-Dinitrobenzene (CAS 100-25-4)	0.32 (2)	2.3 (1)
4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28 (2)	160 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
Di-n-octyl phthalate (CAS 117-84-0)	0.017 (2)	28 (1)
Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (2)	14 (1)
Diphenylamine (CAS 122-39-4)	0.52 (2)	NA
1,2-Diphenyl hydrazine (CAS 122-66-7)	0.087 (2)	NA
Diphenylnitrosamine (CAS 621-64-7)	0.40 (2)	NA
1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
Disulfoton (CAS 298-04-4)	0.017 (2)	6.2 (1)
Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethyl cyanide (CAS 107-12-0)	0.24 (2)	360 (1)
Ethyl benzene (CAS 100-41-4)	0.057 (2)	6.0 (1)
Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
bis(2-Ethylhexyl) phthalate (CAS 117-81-7)	0.28 (2)	28 (1)
Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
Ethylene oxide (CAS 75-21-8)	0.12 (2)	NA
Famphur (CAS 52-85-7)	0.017 (2)	15 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
Fluorene (CAS 86-73-7)	0.059 (2)	4.0 (1)
Fluorotrichloromethane (CAS 75-69-4)	0.020 (2)	33 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	37 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	3.6 (1)
Hexachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Hexachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Hexchloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
Hexachloropropene (CAS 1888-71-7)	0.035 (2)	28 (1)
Indeno(1,2,3,-c,d)pyrene (CAS 193-39-5)	0.0055 (2)	8.2 (1)
Iodomethane (CAS 74-88-4)	0.019 (2)	65 (1)
Isobutanol (CAS 78-83-1)	5.6 (2)	170 (1)
Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)
Isosafrole (CAS 120-58-1)	0.081 (2)	2.6 (1)
Kepone (CAS 143-50-8)	0.0011 (2)	0.13 (1)
Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methapyrilene (CAS 91-80-5)	0.081 (2)	1.5 (1)
Methoxychlor (CAS 72-43-5)	0.25 (2)	0.18 (1)
3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
4,4-Methylene-bis-(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28 (2)	36 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Methyl isobutyl ketone (CAS 108-10-1)	0.14 (2)	33 (1)
Methyl methacrylate (CAS 80-62-6)	0.14 (2)	160 (1)
Methyl methanesulfonate (CAS 66-27-3)	0.018 (2)	NA
Methyl parathion (CAS 298-00-0)	0.014 (2)	4.6 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
Nitrobenzene (CAS 96-95-3)	0.068 (2)	14 (1)
5-Nitro-o-toluidine (CAS 99-55-8)	0.32 (2)	28 (1)
4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)
N-Nitrosodiethylamine (CAS 55-18-5)	0.40 (2)	28 (1)
N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
N-Nitroso-di-n-butylamine (CAS 924-16-3)	0.40 (2)	17 (1)
N-Nitrosomethylethylamine (CAS 10595-95-6)	0.40 (2)	2.3 (1)
N-Nitrosomorpholine (CAS 59-89-2)	0.40 (2)	2.3 (1)
N-Nitrosopiperidine (CAS 100-75-4)	0.013 (2)	35 (1)
N-Nitrosopyrrolidine (CAS 930-55-2)	0.013 (2)	35 (1)
Parathion (CAS 56-38-2)	0.014 (2)	4.6 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	37 (1)
Pentachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
Pentachloronitrobenzene (CAS 82-68-8)	0.055 (2)	4.8 (1)
Pentachlorophenol (CAS 87-86-5)	0.089 (2)	7.4 (1)
Phenacetin (CAS 62-44-2)	0.081 (2)	16 (1)
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.1 (1)
Phenol (CAS 108-95-2)	0.039 (2)	6.2 (1)
Phorate (CAS 298-02-2)	0.021 (2)	4.6 (1)
Phthalic anhydride (CAS 85-44-9)	0.069 (2)	NA
Pronamide (CAS 23950-58-5)	0.093 (2)	1.5 (1)
Pyrene (CAS 129-00-0)	0.067 (2)	8.2 (1)



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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Pyridine (CAS 110-86-1)	0.014 (2)	16 (1)
Safrole (CAS 94-59-7)	0.081 (2)	22 (1)
Silvex (2,4,5-TP) (CAS 93-72-1)	0.72 (2)	7.9 (1)
2,4,5-T (CAS 93-76-5)	0.72 (2)	7.9 (1)
1,2,4,5,-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	19 (1)
Tetrachlorodibenzo-furans	0.000063 (2)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.000063 (2)	0.001 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057 (2)	42 (1)
1,1,2,2-Tetrachloroethane (CAS 70-34-6)	0.057 (2)	42 (1)
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	5.6 (1)
2,3,4,6-Tetrachlorophenol (CAS 58-90-2)	0.030 (2)	37 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18 (2)	37 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035 (2)37 (1)	
1,2,3-Trichloropropane (CAS 96-18-4)	0.85 (2)	28 (1)
1,1,2-Trichloro-1,2,2-trifluoro-ethane (CAS 76-13-1)	0.057 (2)	28 (1)
Tris(2,3-dibromopropyl (CAS 126-72-7)	0.11 (2)	NA
Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
Xylene(s)	0.32 (2)	28 (1)
Cyanides (total) (CAS 57-12-5)	1.2 (2)	1.8 (1)
Fluoride (CAS 16964-48-8)	35 (2)	NA
Sulfide (CAS 8496-25-8)	14 (2)	NA
Antimony (CAS 7440-36-0)	1.9 (2)	NA
Arsenic (CAS 7440-38-2)	1.4 (2)	NA
Barium (CAS 7440-39-3)	1.2 (2)	NA

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Beryllium (CAS 7440-41-7)	0.82 (2)	NA
Cadmium (CAS 7440-43-9)	0.20 (2)	NA
Chromium (total) (CAS 7440-47-32)	0.37	NA
Copper (CAS 7440-50-8)	1.3 (2)	NA
Lead (CAS 7439-92-1)	0.28 (2)	NA
Mercury (CAS 7439-97-6)	0.15 (2)	NA
Nickel (CAS 7440-02-0)	0.55 (2)	NA
Selenium (CAS 7782-49-2)	0.82 (2)	NA
Silver (CAS 7440-22-4)	0.29 (2)	NA
Thallium (CAS 7440-28-0)	1.4 (2)	NA
Vanadium (CAS 7440-62-2)	0.042 (2)	NA
Zinc (CAS 7440-66-6)	1.0 (2)	NA
K001* Naphthalene (CAS 91-20-3)	0.031 (1)	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18 (1)	7.4 (1)
Penanthrene (CAS 85-01-8)	0.031 (1)	1.5 (1)
Pyrene (CAS 129-99-0)	0.028 (1)	1.5 (1)
Toluene (CAS 108-88-3)	0.028 (1)	28 (1)
Xylenes (total)	0.032 (1)	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
K002*, K003*, and K004* Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K005* Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
Cyanides(total) (CAS 57-12-5)	0.74 (2)	Reserved
K006* Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K007* Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Cyanides (total) (CAS 57-12-5)	0.74 (2)	
K008* Chromium (total) (CAS 7440-47-32)	0.9 (2)	NA
Lead (CAS 7439-92-1)	3.4 (2)	NA
K009 Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K010 Chloroform (CAS 67-66-3)	0.1	6.0 (1)
K011, K013, and K014 Acetonitrile (CAS 75-05-8)	38	1.8 (1)
Acrylonitrile (CAS 107-13-1)	0.06	1.4 (1)
Acrylamide (CAS 79-06-1)	19	23 (1)
Benzene (CAS 71-34-2)	0.02	0.03 (1)
Cyanide(total) (CAS 57-12-5)	21	57
K015* Anthracene (CAS 120-12-7)	1.0	3.4 (1)
Benzal chloride (CAS 98-87-3)	0.28	6.2 (1)
Sum of Benzo(b) fluoranthene (CAS 205-99-2) and Benzo(k)fluoranthene (CAS 207-08-9)	0.029	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.27	3.4 (1)
Toluene (CAS 108-88-3)	0.15	6.0 (1)
Chromium (total) (CAS 7440-47-32)	0.32	NA
Nickel (CAS 7440-02-0)	0.44	NA
K016 Hexachlorobenzene (CAS 118-74-1)	0.033 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachlorocyclopentadiene (CAS 77-47-4). 0.007 (1)	5.6 (1)	
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
K017 1,2-Dichloropropane (CAS 78-87-5)	0.85 (1,2)	18 (1)
1,2,3-Trichloropropane (CAS 96-16-4)	0.85 (1,2)	28 (1)
Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033 (1,2)	7.2 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
K018 Chloroethane (CAS 75-00-3)	0.007 (1)	6.0 (1)
Chloromethane (CAS 74-87-3)	0.007 (1)	NA
1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Hexachlorobenzene (CAS 118-74-1)	0.033 (1)	28 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
K019 Bis(2-chloroethyl)ether (CAS 111-44-4).	0.007 (1)	5.6 (1)
Chlorobenzene (CAS 108-90-7)	0.006 (1)	6.0 (1)
Chloroform (CAS 67-66-3)	0.007 (1)	6.0 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
Fluorene (CAS 86-73-7)	0.007 (1)	NA
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Naphthalene (CAS 91-20-3)	0.007 (1)	5.6 (1)
Phenanthrene (CAS 85-01-8)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.017 (1)	NA
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
K020 1,2-Dichloroethane (CAS 107-06-2)	0.007 (1)	6.0 (1)
1,1,1,2-Tetrachloroethane (CAS 79-34-6)	0.007 (1)	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.007 (1)	6.0 (1)
K021* Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Antimony (CAS 7440-36-0)	0.60 (2)	NA (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
K022* Toluene (CAS 108-88-3)	0.080 (2)	0.034 (1)
Acetophenone (CAS 96-86-2)	0.010	19 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-60)	0.40 (2)	NA
Sum of Diphenylamine and Diphenylnitrosamine	NA	13 (1)
Phenol (CAS 108-95-2)	0.039	12 (1)
Chromium (total) (CAS 7440-47-32)	0.35	NA
Nickel (CAS 7440-02-0)	0.47	NA
K023 and K024 Phthalic anhydride (measured as Phthalic acid) (CAS 85-44-9)	0.54 (1)	28 (1)
K028* 1,1-Dichloroethane (CAS 75-34-3)	0.007 (1)	6.0 (1)
trans-1,2-Dichloroethane	0.033 (1)	6.0 (1)
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Pentachloroethane (CAS 76-01-7)	0.033 (1)	5.6 (1)
1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.007 (1)	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.007 (1)	5.6 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.007 (1)	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.007 (1)	6.0 (1)
Tetrachloroethylene (CAS 127-18-4)	0.007 (1)	6.0 (1)
Cadmium (CAS 7440-43-9)	6.4	NA
Chromium (total) (CAS 7440-47-32)	0.35	NA
Lead (CAS 7439-92-1)	0.037	NA
Nickel (CAS 7440-02-0)	0.47	NA
K029 Chloroform (CAS 67-66-3)	0.046	6.0 (1)
1,2-Dichloroethane (CAS 107-06-2)	0.21	6.0 (1)
1,1-Dichloroethylene (CAS 75-35-4)	0.025	6.0 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054	6.0 (1)
Vinyl chloride (CAS 75-01-4)	0.27	6.0 (1)

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	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
K030 o-Dichlorobenzene (CAS 95-50-1)	0.008 (1)	NA
p-Dichlorobenzene (CAS 106-46-7)	0.008 (1)	NA
Hexachlorobutadiene (CAS 87-68-3)	0.007 (1)	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.033 (1)	28 (1)
Hexachloropropene (CAS 1888-71-7)	NA	19 (1)
Pentachlorobenzene (CAS 608-93-5)	NA	28 (1)
Pentachloroethane (CAS 76-01-7)	0.007 (1)	5.6 (1)
1,2,4,5-Tetrachlorobenzene (CAS 76-01-7)	0.017	14 (1)
Tetrachloroethane (CAS 127-18-4)	0.007 (1)	6.0 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.023 (1)	19 (1)
K031* Arsenic (CAS 7440-38-2)	0.79	NA
K032 Hexachloropentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
K033 and K034 Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
K035 Acenaphthene (CAS 83-32-9)	NA	3.4 (1)
Anthracene (CAS 120-12-7)	NA	3.4 (1)
Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	3.4 (1)
Benzo(a)pyrene (CAS 5-32-8)	NA	3.4 (1)
Chrysene (CAS 218-01-9)	0.059 (2)	3.4 (1)
Dibenz(a,h)anthracene (CAS 53-70-3)	NA	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.068 (2)	3.4 (1)
Fluorene (CAS 86-73-7)	NA	3.4 (1)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5)	NA	3.4 (1)
Cresols (m-and p-isomers)	0.77 (2)	NA
Naphthalene (CAS 91-20-3)	0.059 (2)	3.4 (1)
o-cresol (CAS 95-48-7)	0.11 (2)	NA

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Phenanthrene (CAS 85-01-8)	0.059 (2)	3.4 (1)
Phenol (CAS 108-95-2)	0.039	NA
Pyrene (CAS 129-00-0)	0.067 (2)	8-2 (1)
K036 Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
K037 Disulfoton (CAS 298-04-4)	0.025 (2)	0.1 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
K038 Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
K040 Phorate (CAS 298-02-2)	0.025 (2)	0.1 (1)
K041 Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
K042 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1).	0.055 (2)	4.4 (1)
K043 2,4-Dichlorophenol (CAS 120-83-2)	0.049 (1)	0.38 (1)
2,6-Dichlorophenol (CAS 87-65-0)	0.013 (1)	0.34 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.016 (1)	8.2 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.039 (1)	7.6 (1)
Tetrachlorophenols (total)	0.018 (1)	0.68 (1)
Pentachlorophenol (CAS 87-86-5)	0.22 (1)	1.9 (1)
Tetrachloroethene (CAS 79-01-6)	0.006 (1)	1.7 (1)
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzo-furans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzo-furans	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Tetrachlorodibenzo-furans	0.001 (1)	0.001 (1)
K046* Lead (CAS 7439-92-1)	0.037	NA
K048* Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexy)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Chrysene (CAS 218-01-9)	0.043 (1)	15 (1)
Di-n-butyl phthalate (CAS 84-74-2)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Fluorene (CAS 86-73-7)	0.005 (1)	NA
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K049* Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 5-32-8)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.043 (1)	7.3 (1)
Carbon disulfide (CAS 75-15-0)	0.011 (1)	NA
Chrysene (CAS 2218-01-9)	0.043 (1)	15 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)



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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Pyrene (CAS 129-00-0)	0.045 (1)	36 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylene(s)	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037 (1)	NA
K050* Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K051* Acenaphthene (CAS 208-96-8)	0.05 (1)	NA
Anthracene (CAS 120-12-7)	0.039 (1)	28 (1)
Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)anthracene (CAS 50-32-8)	0.043 (1)	20 (1)
Benzo(a)pyrene (CAS 117-81-7)	0.047 (1)	12 (1)
Bis(2-ethylhexyl)phthalate (CAS 75-15-0)	0.043 (1)	7.3 (1)
Chrysene (CAS 2218-01-09)		
Di-n-butyl phthalate (CAS 105-67-9)	0.06 (1)	3.6 (1)
Ethylbenzene (CAS 100-41-4)		
Fluorene (CAS 86-73-7)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.05 (1)	
Phenanthrene (CAS 85-01-8)	0.033 (1)	42 (1)
Phenol (CAS 108-95-2)	0.039 (1)	34 (1)
Pyrene (CAS 129-00-0)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.045 (1)	36 (1)
Xylene(s)	0.011 (1)	14 (1)
Cyanides(total) (CAS 57-12-5)	0.011 (1)	22 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Chromium(total) (CAS 7440-47-32)	0.028 (1)	1.8 (1)
Lead (CAS 7439-92-1)	0.2	NA
K052* Benzene (CAS 71-43-2)	0.011 (1)	14 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.047 (1)	12 (1)
o-Cresol (CAS 95-48-7)	0.011 (1)	6.2 (1)
p-Cresol (CAS 106-44-5)	0.011 (1)	6.2 (1)
2,4-Dimethylphenol (CAS 105-67-9)	0.033 (1)	NA
Ethylbenzene (CAS 100-41-4)	0.011 (1)	14 (1)
Naphthalene (CAS 91-20-3)	0.033 (1)	42 (1)
Phenanthrene (CAS 85-01-8)	0.039 (1)	34 (1)
Phenol (CAS 108-95-2)	0.047 (1)	3.6 (1)
Toluene (CAS 108-88-3)	0.011 (1)	14 (1)
Xylenes	0.011 (1)	22 (1)
Cyanides(total) (CAS 57-12-5)	0.028 (1)	1.8 (1)
Chromium(total) (CAS 7440-47-32)	0.2	NA
Lead (CAS 7439-92-1)	0.037	NA
K060 Benzene (CAS 71-43-2)	0.17 (1,2)	0.071 (1)
Benzo(a)pyrene (CAS 50-32-8)	0.035 (1,2)	3.6 (1)
Naphthalene (CAS 91-20-3)	0.028 (1,2)	3.4 (1)
Phenol (CAS 108-95-2)	0.042 (1,2)	3.4 (1)
Cyanides(total) (CAS 57-12-5)	1.9	1.2
K061* Cadmium (CAS 7440-43-9)	1.61	NA
Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
Nickel (CAS 7440-02-0)	0.44	NA
K062* Chromium(total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.04	NA
Nickel (CAS 7440-02-0)	0.44	NA

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
K069*** Cadmium (CAS 7440-43-9)	1.6	NA
Lead (CAS 7439-92-1)	0.51	NA
K071* Mercury (CAS 7439-97-6)	0.030	NA
K073 Carbon tetrachloride (CAS 56-23-5)	0.057 (2)	6.2 (1)
Chloroform (CAS 67-66-3)	0.046 (2)	6.2 (1)
Hexachloroethane (CAS 67-72-1)	0.055 (2)	30 (1)
Tetrachloroethene (CAS 127-18-4)	0.056 (2)	6.2 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	6.2 (1)
K083* Benzene (CAS 71-34-2)	0.14 (2)	6.6 (1)
Aniline (CAS 62-53-3)	0.81	14 (1)
Diphenylamine (CAS 22-39-4)	0.52 (2)	NA
Diphenylnitrosamine (CAS 86-30-6)	0.40 (2)	NA
Sum of diphenylamine and Diphenyl- nitrosamine	NA	14 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Phenol (CAS 108-95-2)	0.039 (2)	5.6 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
Nickel (CAS 7440-02-0)	0.47	NA
K084 Arsenic (CAS 7440-38-2)	0.79	NA
K085 Benzene (CAS 71-43-2)	0.14 (2)	4.4 (1)
Chlorobenzene (CAS 108-90-7)	0.057 (2)	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	4.4 (1)
m-Dichlorobenzene (CAS 541-73-1)	0.036 (2)	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090 (2)	4.4 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055 (2)	4.4 (1)
1,2,4,5-Tetrachlorobenzene (CAS 95-94-3)	0.055 (2)	4.4 (1)
Pentachlorobenzene (CAS 608-93-5)	0.055 (2)	4.4 (1)
Hexachlorobenzene (CAS 118-74-1)	0.055 (2)	4.4 (1)
Aroclor 1016 (CAS 12674-11-2)	0.013 (2)	0.92 (1)

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	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Aroclor 1221 (CAS 11104-28-2)	0.014 (2)	0.92 (1)
Aroclor 1232 (CAS 11141-16-5)	0.013 (2)	0.92 (1)
Aroclor 1242 (CAS 53469-21-9)	0.017 (2)	0.92 (1)
Aroclor 1248 (CAS 12672-29-6)	0.013 (2)	0.92 (1)
Aroclor 1254 (CAS 11097-69-1)	0.014 (2)	1.8 (1)
Aroclor 1260 (CAS 11096-82-5)	0.014 (2)	1.8 (1)
K086* Acetone (CAS 67-64-1)	0.28	160 (1)
Acetophenone (CAS 96-86-2)	0.010	9.7 (1)
Bis(2-ethylhexyl)phthalate	0.28 (2)	28 (1)
n-Butyl alcohol (CAS 71-36-3)	5.6	2.6 (1)
Butyl benzyl phthalate (CAS 85-68-7)	0.017 (2)	7.9 (1)
Cyclohexanone (CAS 108-94-1)	0.36	NA
1,2-Dichlorobenzene (CAS 95-50-1)	0.088	6.2 (1)
Diethyl phthalate (CAS 84-66-2)	0.20 (2)	28 (1)
Dimethylphthalate (CAS 131-11-3)	0.047 (2)	28 (1)
Di-n-butylphthalate (CAS 84-74-2)	0.057 (2)	28 (1)
Di-n-octylphthalate (CAS 117-84-0)	0.017 (2)	28 (1)
Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
Ethylbenzene (CAS 100-41-4)	0.057 (2)	6.0
Methanol (CAS 67-56-1)	5.6 (2)	NA
Methyl isobutyl ketone (CAS 108-10-1)	0.14	33 (1)
Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
Nitrobenzene (CAS 98-95-3)	0.068 (2)	14 (1)
Toluene (CAS 108-88-3)	0.080 (2)	28 (1)
1,1,1-Trichloroethane (CAS 71-55-6)	0.054 (2)	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054 (2)	5.6 (1)
Xylenes (Total)	0.32 (2)	28 (1)
Cyanides (Total) (CAS 57-12-5)	1.91.5	

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Chromium (Total) (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.037	NA
K087* Acenaphthylene (CAS 208-96-8)	0.028 (1)	3.4 (1)
Benzene (CAS 71-43-2)	0.014 (1)	0.071 (1)
Chrysene (CAS 218-01-9)	0.028 (1)	3.4 (1)
Fluoranthene (CAS 206-44-0)	0.028 (1)	3.4 (1)
Indeno(1,2,3-cd)pyrene (CAS 193-39-5)	0.028 (1)	3.4 (1)
Naphthalene (CAS 91-20-3)	0.028 (1)	3.4 (1)
Phenanthrene (CAS 85-01-8)	0.028 (1)	3.4 (1)
Toluene (CAS 85-01-8)	0.008 (1)	0.65 (1)
Xylenes	0.014 (1)	0.07 (1)
Lead (CAS 7439-92-1)	0.037	NA
K093 and K094 Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid)	0.54 (1)	28 (1)
K095 1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
Hexachloroethane (CAS 67-72-1)	0.055	28 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
K096 1,1,1,2-Tetrachloroethane (CAS 630-20-6)	0.057	5.6 (1)
1,1,2,2-Tetrachloroethane (CAS 79-34-6)	0.057	5.6 (1)
Tetrachloroethene (CAS 127-18-4)	0.056	6.0 (1)
1,1,2-Trichloroethane (CAS 79-00-5)	0.054	6.0 (1)
Trichloroethene (CAS 79-01-6)	0.054	5.6 (1)
Trichloroethylene (CAS 79-01-6)	0.054	5.6 (1)
1,3-Dichlorobenzene (CAS 541-73-1)	0.036	5.6 (1)
Pentachloroethane (CAS 76-01-7)	0.055	5.6 (1)
1,2,4-Trichlorobenzene (CAS 120-82-1)	0.055	19 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
K097 Hexachlorocyclopentadiene (CAS 77-47-4)	0.057 (2)	2.4 (1)
Chlordane (CAS 57-74-9)	0.0033 (2)	0.26 (1)
Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
K098 Toxaphene (CAS 8001-35-1)	0.0095 (2)	2.6 (1)
K099 2,4-Dichlorophenoxyacetic acid (CAS 94-75-7)	1.0 (1)	1.0 (1)
Hexachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Hexachlorodibenzofurans	0.001 (1)	0.001 (1)
Pentachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Pentachlorodibenzofurans	0.001 (1)	0.001 (1)
Tetrachlorodibenzo-p-dioxins	0.001 (1)	0.001 (1)
Tetrachlorodibenzofurans	0.001 (1)	0.001 (1)
K100* Cadmium (CAS 7440-43-9)	1.6	NA
Chromium (CAS 7440-47-32)	0.32	NA
Lead (CAS 7439-92-1)	0.51	NA
K101 o-Nitroaniline	0.27 (1)	14 (1)
Arsenic (CAS 7440-38-2)	0.79	NA
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
K102* o-Nitrophenol	0.028 (1)	13 (1)
Arsenic (CAS 7440-38-2)	0.79	NA
Cadmium (CAS 7440-43-9)	0.24	NA
Lead (CAS 7439-92-1)	0.17	NA
Mercury (CAS 7439-97-6)	0.082	NA
K103 Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-34-2)	0.15	6.0 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
K104 Aniline (CAS 62-53-3)	4.5	5.6 (1)
Benzene (CAS 71-43-2)	0.15	6.0 (1)
2,4-Dinitrophenol (CAS 51-28-5)	0.61	5.6 (1)
Nitrobenzene (CAS 98-95-3)	0.073	5.6 (1)
Phenol (CAS 108-95-2)	1.4	5.6 (1)
Cyanides (Total) (CAS 57-12-5)	2.7	1.8 (1)
K105 Benzene (CAS 71-43-2)	0.14	4.4 (1)
Chlorobenzene (CAS 108-90-7)	0.057	4.4 (1)
o-Dichlorobenzene (CAS 95-50-1)	0.088	4.4 (1)
p-Dichlorobenzene (CAS 106-46-7)	0.090	4.4 (1)
2,4,5-Trichlorophenol (CAS 95-95-4)	0.18	4.4 (1)
2,4,6-Trichlorophenol (CAS 88-06-2)	0.035	4.4 (1)
2-Chlorophenol (CAS 95-57-8)	0.044	4.4 (1)
Phenol (CAS 108-95-2)	0.039	4.4 (1)
K106*** Mercury (CAS 7439-97-6)	0.030	NA
K115* Nickel (CAS 7440-02-0)	0.47	NA
P004 (Aldrin) Aldrin (CAS 309-00-2)	0.21 (2)	0.066 (1)
P010* (Arsenic acid) Arsenic (CAS 7440-38-2)	0.79	NA
P011* (Arsenic pentoxide) Arsenic (CAS 7440-38-2)	0.79	NA
P012* (Arsenic trioxide) Arsenic (CAS 7440-38-2)	0.79	NA
P013* (Barium cyanide) Cyanides (Total)	1.9	110
Cyanides (Amenable)	0.1	9.1
P020 (Dinoseb) 2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7)	0.066	2.5 (1)

This document is intended solely for guidance. No statutory or regulatory requirements are in any way altered by any statement(s) contained herein.

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
P021 (Calcium cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P022** (Carbon disulfide) Carbon disulfide (CAS 75-15-0)	0.014	NA
P024 (p-Chloroaniline) p-Chloroaniline (CAS 106-47-8)	0.46	16 (1)
P029 (Copper cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
P030 (Cyanides (soluble salts and complexes) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amendable) (CAS 57-12-5)	0.1	9.1
P036* (Dichlorophenylarsine) Arsenic (CAS 7440-38-2)	0.79	NA
P037 Dieldrin (CAS 60-57-1)	0.017 (2)	0.13 (1)
P038* (Diethylarsine) Arsenic (CAS 7440-38-2)	0.79	NA
P039 Disulfoton (CAS 298-04-4)	0.017	0.1 (1)
P047 4,6-Dinitro-o-cresol (CAS 534-52-1)	0.28	160 (1)
P048 2,4-Dinitrophenol (CAS 51-28-5)	0.12 (2)	160 (1)
P050 Endosulfan I (CAS 939-98-8)	0.023 (2)	0.066 (1)
Endosulfan II (CAS 33213-6-5)	0.029 (2)	0.13 (1)
Endosulfan sulfate (CAS 1031-07-8)	0.029 (2)	0.13 (1)
P051 Endrin (CAS 72-20-8)	0.0028 (2)	0.13 (1)
Endrin aldehyde (CAS 7421-93-4)	0.025 (2)	0.13 (1)
P056** Fluoride (CAS 16964-48-8)	35	NA
P059 Heptachlor (CAS 76-44-8)	0.0012 (2)	0.066 (1)
Heptachlor epoxide (CAS 1024-57-3)	0.016 (2)	0.066 (1)
P060 Isodrin (CAS 465-73-6)	0.021 (2)	0.066 (1)



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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
P063 (Hydrogen cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P065*** (Mercury fulminate) Mercury (CAS 7439-97-6)	0.030	NA
P071 Methyl parathion (CAS 298-00-0)	0.025	0.1 (1)
P073* (Nickel carbonyl) Nickel (CAS 7440-02-0)	0.32	NA
P074* (Nickel cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (Cas 57-12-5)	0.10	9.1
Nickel (CAS 7440-02-0)	0.44	NA
P077 p-Nitroaniline (CAS 100-01-6)	0.028 (2)	28 (1)
P082** N-Nitrosodimethylamine (CAS 62-75-9)	0.40 (2)	NA
P089 Parathion (CAS 56-38-2)	0.025	0.1 (1)
P092*** (Phenylmercury acetate) Mercury (CAS 7439-97-6)	0.030	NA
P094 Phorate (CAS 298-02-2)	0.025	0.1 (1)
P097 Famphur (CAS 52-85-7)	0.025	0.1 (1)
P098 (Potassium cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P099* (Potassium silver cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.1	9.1
Silver (CAS 7440-22-4)	0.29	NA
P101 Ethyl cyanide (Propanenitrite) (CAS 107-12-0)	0.24 (2)	360 (1)
P103* (Selenourea) Selenium (CAS 7782-49-2)	1.0 (2)	NA
P104* (Silver cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Cyanides (Amendable) (CAS 57-12-5)	0.10	9.1
Silver (CAS 7440-22-4)	0.29	NA
P106 (Sodium cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P110*** (Tetraethyl lead) Lead (CAS 7439-92-1)	0.040	NA
P113** (Thallic oxide) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P114* (Thallium selenite) Selenium (CAS 7782-49-2)	1.0	NA
P115** (Thallium(1)sulfate) Thallium (CAS 7440-28-0)	0.14 (2)	NA
P119** (Ammonia vanadate) Vanadium (CAS 7440-62-2)	28 (2)	NA
P120** (Vanadium pentoxide) Vanadium (CAS 7440-62-2)	28 (2)	NA
P121 (Zinc cyanide) Cyanides (Total) (CAS 57-12-5)	1.9	110
Cyanides (Amenable) (CAS 57-12-5)	0.10	9.1
P123 Toxaphene (CAS 8001-35-1)	0.0095 (2)	1.3 (1)
U002 Acetone (CAS 67-64-1)	0.28	160 (1)
U003** Acetonitrile (CAS 75-05-8)	0.17	0.17
U004 Acetophenone (CAS 98-86-2)	0.010 (1)	9.7 (1)
U005 2-Acetylaminofluorene (CAS 53-96-3)	0.059 (2)	140 (1)
U009 Acrylonitrile (CAS 107-13-1)	0.24 (2)	84 (1)
U012 Aniline (CAS 62-53-3)	0.81	14 (1)
U018 Benz(a)anthracene (CAS 56-55-3)	0.059 (2)	8.2 (1)
U019 Benzene (CAS 71-34-2)	0.14 (2)	36 (1)
U022 Benzo(a)pyrene (CAS 50-32-8)	0.061 (2)	8.2 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
U024 Bis(2-chloroethoxy)methane (CAS 111-91-1).	0.036	7.2 (1)
U025 Bis(2-chloroethyl)ether (CAS 111-44-4)	0.033	7.2 (1)
U027 Bis(2-chloroisopropyl)ether (CAS 39638-32-9)	0.055 (2)	7.2 (1)
U028 Bis(2-ethylhexyl)phthalate (CAS 117-81-7)	0.54 (1)	28 (1)
U029 Bromomethane (Methyl bromide) (CAS 74-83-9)	0.11 (1)	15 (1)
U030 4-Bromophenyl phenyl ether (CAS 101-55-3)	0.055 (1)	15 (1)
U031 n-Butyl alcohol (CAS 71-36-3)	5.6	2.6
U032* (Calcium chromate) Chromium (Total) (CAS 7440-47-32)	0.32	NA
U036 Chlordane (alpha and gamma)(CAS 57-74-9)	0.033 (2)	0.13 (1)
U037 Chlorobenzene (CAS 108-90-7)	0.057 (2)	5.7 (1)
U038** Chlorobenzilate (CAS 510-15-6)	0.10 (2)	NA
U039 p-Chloro-m-cresol (CAS 59-50-7)	0.018 (2)	14 (1)
U042** 2-Chloroethylvinyl (CAS 110-75-8)	0.057	NA
U043 Vinyl chloride (CAS 75-01-4)	0.27 (2)	33 (1)
U044 Chloroform (CAS 67-66-3)	0.046 (2)	5.6 (1)
U045 Chloromethane (Methyl chloride) (CAS 74-87-3).	0.19 (2)	33 (1)
U047 2-Chloronaphthalene (CAS 91-58-7)	0.055 (2)	5.6 (1)
U048 2-Chlorophenol (CAS 95-57-8)	0.044 (2)	5.7 (1)
U050 Chrysene (CAS 218-01-9)	0.059 (2)	8.2 (1)
U051* (Creosote) Naphthalene (CAS 91-20-3)	0.031	1.5 (1)
Pentachlorophenol (CAS 87-86-5)	0.18	7.4 (1)
Phenanthrene (CAS 85-01-8)	0.031	1.5 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
Pyrene (CAS 129-00-0)	0.028	1.5 (1)
Toluene (CAS 108-88-3)	0.028	28 (1)
Xylenes (Total)	0.032	33 (1)
Lead (CAS 7439-92-1)	0.037	NA
U052 (Cresols--Cresylic acid) o-Cresol (CAS 95-48-7)	0.11 (2)	5.6 (1)
Cresols (m- and p- isomers)	0.77 (2)	3.2 (1)
U057** Cyclohexanone (CAS 108-94-1)	0.36	NA
U060 (DDD) o,p'-DDD (CAS 53-19-0)	0.023	0.087 (1)
o,p'-DDD (CAS 72-54-8)	0.023	0.087 (1)
U061 (DDT) o,p'-DDT (CAS 780-02-6)	0.0039 (2)	0.087 (1)
p,p'-DDT (CAS 50-29-3)	0.0039 (2)	0.087 (1)
o,p'-DDD (CAS 53-19-0)	0.023 (2)	0.087 (1)
p,p'-DDD (CAS 72-54-8)	0.023 (2)	0.087 (1)
o,p'-DDE (CAS 3424-82-6)	0.031 (2)	0.087 (1)
U063 Dibenzo(a,h)anthracene (CAS 53-70-3)	0.055 (2)	8.2 (1)
U066 1,2-Dibromo-3-chloropropane (CAS 96-12-8)	0.11 (2)	15 (1)
U067 1,2-Dibromo ethane (Ethylene dibromide) (CAS 106-93-4)	0.028 (2)	15 (1)
U068 Dibromomethane (CAS 74-95-3)	0.11 (2)	15 (1)
U069 Di-n-butyl phthalate (CAS 84-74-2)	0.54 (1)	28 (1)
U070 o-Dichlorobenzene (CAS 95-50-1)	0.088 (2)	6.2 (1)
U071 m-Dichlorobenzene (CAS 541-73-1)	0.036	6.2 (1)
U072 p-Dichlorobenzene (CAS 104-46-7)	0.090 (2)	6.2 (2)
U075 Dichlorodifluoromethane (CAS 75-71-8)	0.23 (2)	7.2 (1)
U076 1,1-Dichloroethane (CAS 75-34-3)	0.059 (2)	7.2 (1)
U077 1,2-Dichloroethane (CAS 107-06-2)	0.21 (2)	7.2 (1)
U078 1,1-Dichloroethylene (CAS 75-35-4)	0.025 (2)	33 (1)
U079 (1,2-Dichloroethylene) trans-1,2-Dichloroethylene (CAS 156-60-5)	0.054 (2)	33 (1)
U080 Methylene chloride (CAS 75-09-2)	0.089 (2)	33 (1)
U081 2,4-Dichlorophenol (CAS 120-83-2)	0.044 (2)	14 (1)
U082 2,6-Dichlorophenol (CAS 87-65-0)	0.044 (2)	14 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
U083 1,2-Dichloropropane (CAS 78-87-5)	0.85 (2)	18 (1)
U084 (1,3-Dichloropropene) cis-1,3-Dichloropropylene (CAS 10061-01-5)	0.036 (2)	18 (1)
trans-1,3-Dichloropropylene (CAS 10061-02-6)	0.036 (2)	18 (1)
U088 Diethyl phthalate (CAS 84-66-2)	0.54 (2)	28 (1)
U093** p-Dimethylaminoazobenzene (CAS 60-11-7)	0.13 (2)	NA
U101 2,4-Dimethylphenol (CAS 105-67-9)	0.036 (2)	14 (1)
U102 Dimethyl phthalate (CAS 131-11-3)	0.54 (1)	28 (1)
U105 2,4-Dinitrotoluene (CAS 121-14-2)	0.32 (2)	140 (1)
U106 2,6-Dinitrotoluene (CAS 606-20-2)	0.55 (2)	28 (1)
U107 Di-n-octyl phthalate (CAS 117-84-0)	0.54 (1)	28 (1)
U108 1,4-Dioxane (CAS 123-91-1)	0.12 (2)	170 (1)
U111 Di-n-propylnitrosamine (CAS 621-64-7)	0.40 (20)	14 (1)
U112 Ethyl acetate (CAS 141-78-6)	0.34 (2)	33 (1)
U117 Ethyl ether (CAS 60-29-7)	0.12 (2)	160 (1)
U118 Ethyl methacrylate (CAS 97-63-2)	0.14 (2)	160 (1)
U120 Fluoranthene (CAS 206-44-0)	0.068 (2)	8.2 (1)
U121 trichloromonofluoromethane (CAS 75-69-4)	0.020 (2)	33 (1)
U127 Hexachlorobutadiene (CAS 118-74-1)	0.055 (2)	37 (1)
U128 Hexachlorobutadiene (CAS 87-68-3)	0.055 (2)	28 (1)
U129 (Lindane) alpha-BHC (CAS 319-84-6)	0.00014 (2)	0.66 (1)
beta-BHC (CAS 319-85-7)	0.00014 (2)	0.66 (1)
delta-BHC (CAS 319-86-8)	0.023 (2)	0.66 (1)
gamma-BHC (Lindane) (CAS 58-89-9)	0.0017 (2)	0.66 (1)
U130 Hexachlorocyclopentadiene (CAS 77-47-7)	0.057 (2)	3.6 (1)
U131 Hexachloroethane (CAS 67-72-1)	0.055 (2)	28 (1)
U134** (Hydrogen fluoride) Fluoride (CAS 16964-48-8)	35	NA
U136* (Cacodylic acid) Arsenic (CAS 7440-38-2)	0.79	NA
U137* Indeno(1,2,3-c,d)pyrene (CAS 193-39-5)	0.0055 (2)	6.2 (1)
U138 Iodomethane (CAS 74-88-4)	0.19 (2)	65 (1)
U140 Isobutyl alcohol (CAS 78-83-1)	5.6	170 (1)

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Waste Codes Regulated Hazardous Constituent with Applicable CAS Numbers	Concentrations	
	Wastewaters (mg/L) Notes	Non-Wastewaters (mg/kg) Notes
U141 Isosafrole (CAS 120-58-1)	0.081	2.6 (1)
U142 Kepone (CAS 143-50-8)	0.0011	0.13 (1)
U144* (Lead acetate) Lead (CAS 7439-92-1)	0.040	NA
U145* (Lead phosphate) Lead (CAS 7439-92-1)	0.040	NA
U146* (Lead subacetate) Lead (CAS 7439-92-1)	0.040	NA
U151*** Mercury (CAS 7439-97-6)	0.030	NA
U152 Methacrylonitrile (CAS 126-98-7)	0.24 (2)	84 (1)
U154 Methanol (CAS 67-56-1)	5.6	NA
U155 Methapyrilene (CAS 91-80-5)	0.081	1.5 (1)
U157 3-Methylcholanthrene (CAS 56-49-5)	0.0055 (2)	15 (1)
U158 4,4'-Methylenebis(2-chloroaniline) (CAS 101-14-4)	0.50 (2)	35 (1)
U159 Methyl ethyl ketone (CAS 78-93-3)	0.28	36 (1)
U162 Methyl methacrylate (CAS 60-62-6)	0.14	160 (1)
U165 Naphthalene (CAS 91-20-3)	0.059 (2)	3.1 (1)
U168** 2-Naphthylamine (CAS 91-59-8)	0.52 (2)	NA
U169 Nitrobenzene (CAS 98-95-3)	0.068 (2)	14
U170 4-Nitrophenol (CAS 100-02-7)	0.12 (2)	29 (1)

\* See also Appendix 4-8, Table CCWE in 40 CFR 268.41

\*\* See also Appendix 4-9, Table 2 in 40 CFR 268.42

\*\*\* See also Appendix 4-8, Table CCWE in 40 CFR 268.41 and Table 2 in 268.42

- (1) Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR Part 264 Subpart O or Part 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR Part 268.7.
- (2) Based on analysis of composite samples.
- (3) As analyzed using SW-846 Method 9010 or 9012; sample size 10 gram; distillation time: one hour and fifteen minutes.