

ENFORCING HAZARDOUS WASTES RULES IN INDIA

Strategies and Techniques for Achieving
Increased Compliance



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ABBREVIATIONS

AECEN	Asian Environmental Compliance and Enforcement Network
CCG	Central Crisis Group
CETP	Common Effluent Treatment Plant
CPCB	Central Pollution Control Board
DCG	District Crisis Group
EA	Environmental Audit
EAR	Environmental Audit Report
EPA	Environment (Protection) Act
GPCB	Gujarat Pollution Control Board
HCE	Health Care Establishment
LCG	Local Crisis Group
MOEF	Ministry of Environment and Forests
NIP	National Implementation Plan for the Stockholm Convention
NIOH	National Institute of Occupational Health
OECD	Organization for Economic Co-operation and Development
PCC	Pollution Control Committee
POPs	Persistent Organic Pollutants
SCG	State Crisis Group
SPCB	State Pollution Control Board
RCRA	Resource Conservation and Recovery Act
TSDF	Treatment Storage And Disposal Facility
USEPA	U.S. Environmental Protection Agency

CHAPTER 1

Introduction

Hazardous Waste in India

As a rapidly developing nation, India is struggling with the growing challenge of managing its hazardous waste. In 2009, the Central Pollution Control Board (CPCB) released a report that provided a national inventory of industries producing hazardous waste, as well as a review of hazardous waste management in India. The report was based on information provided from state pollution control boards (SPCBs) and pollution control committees (PCCs) for the years 2007 to 2008. That report found that there was a total of 36,165 industries generating hazardous waste in India, and that those industries produce a total of 6,232,507 metric tons of hazardous waste each year.¹

Improper disposal of hazardous waste may pose serious risks to human health and the environment. For example, waste that is disposed of improperly may leach into the groundwater, where they may cause long-term contamination of a region's water supply. This may have particularly serious consequences in agricultural communities, which depend on groundwater aquifers for irrigation and personal consumption.² Contamination due to improper disposal of hazardous waste can also be harmful in urban areas, especially slums, if untreated waste flows into open drains and enters water distribution systems.³ At the same time, exposure to hazardous waste through consumption, inhalation of polluted air, or through direct contact with skin may cause many acute and long-term health risks.⁴ These threats vary greatly depending on the type of hazardous waste at issue, but may include carcinogenesis, reproductive abnormalities, and central nervous system disorders.⁵ Some examples of hazardous waste and their potential health effects are listed in Appendix A.

¹ Central Pollution Control Board. National Inventory of Hazardous Waste Generation Industries & Hazardous Waste Management in India. Delhi: Central Pollution Control Board Hazardous Waste Management Division, Feb. 2009 [National Inventory].

² Kaur, Ravleen. "Toxics in Your Background." Down to Earth 15 Jan. 2008. Reproduced in: Environmental Law Institute and National Law School of India University. Environmental and Occupational Safety & Health Compliance Workshop Handbook. 2009.

³ Barah, B.C., Vandana Sipahimalani, and Purnamita Dhar. "Urban Water Supply and Sanitation." Economic Instruments for Environment Sustainability. Ed. U. Sankar and O.M. Prakash Mathur. National Institute of Public Finance and Policy & Madras School of Economics. New Delhi: Ashish Printers and Publication, 1998. 53.

⁴ "Scope of the 'Harmful substances and hazardous wastes' sub-programme." Harmful Substances. United Nations Environment Program. 27 Sept. 2013.
<<http://www.unep.org/hazardoussubstances/Introduction/tabid/258/Default.aspx>>.

⁵ Misra, Virendra, and S.D. Pandey. "Hazardous Waste, Impact on Health and Environment for Development of Better Waste Management Strategies in Future in India." Environmental International. 31 (2005) 417-431.

Most hazardous wastes in India are generated by highly polluting industries that fall into 17 major categories.⁶ These categories are listed below in Table 1.1 along with the main hazardous wastes they produce⁷:

Table 1.1: Categories of highly polluting industries, with the main hazardous wastes they produce.

Industry	Main Hazardous Wastes Produced
<ul style="list-style-type: none"> Aluminum Smelter 	<ul style="list-style-type: none"> Sludges from off-gas treatment; cathode residues including pot-lining wastes; tar containing wastes; flue gas and other particulates; wastes from the treatment of salt slags and black drosses
<ul style="list-style-type: none"> Caustic Soda 	<ul style="list-style-type: none"> Mercury bearing sludge; residues/sludges and filter cakes/ brine sludge containing mercury
<ul style="list-style-type: none"> Cement 	<ul style="list-style-type: none"> Wastes/residues; metal compound emissions from cement kilns and use of waste materials as fuel⁸
<ul style="list-style-type: none"> Copper Smelter 	<ul style="list-style-type: none"> Flue gas dust from roasting; process residues; arsenic-bearing sludge; non-ferrous metal bearing sludge and residue; sludge from scrubbers; spent electrolytic solutions; sludges and filter cakes
<ul style="list-style-type: none"> Distilleries 	<ul style="list-style-type: none"> Sludge from wet scrubbers; ash from incineration of hazardous waste; flue gas cleaning residues; spent acid from batteries; distillation residues from contaminated organic solvents
<ul style="list-style-type: none"> Drugs & Pharmaceuticals 	<ul style="list-style-type: none"> Process residues and wastes; spent catalyst/spent carbon; off specification products; date-expired, discarded and off-specification drugs/medicines; spent organic solvents
<ul style="list-style-type: none"> Dyes and Dye Intermediates 	<ul style="list-style-type: none"> Process waste sludge/residues containing acid or other toxic metals or organic complexes; dust from air filtration system
<ul style="list-style-type: none"> Fertilizer 	<ul style="list-style-type: none"> Spent catalyst; spent carbon; sludge/residue containing arsenic; chromium sludge from water cooling tower
<ul style="list-style-type: none"> Integrated Iron and Steel 	<ul style="list-style-type: none"> Sludge from acid recovery unit; benzol acid sludge; decanter tank tar sludge; tar storage tank residue

⁶ National Inventory, *supra* note 1.

⁷ India. Ministry of Environment and Forests. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 Schedule I. Ministry of Environment and Forests Notification S.O. 2265(E). New Delhi: 24 Sept. 2008 <<http://www.cpcb.nic.in/divisionsofheadoffice/hwmd/mhtrules2008.pdf>>.

⁸ Confederation of Indian Industry (CII). Case Study Manual on Alternative Fuels & Raw Materials Utilization in Indian Cement Industry.Hyderabad. May 2011.

<ul style="list-style-type: none"> Leather Processing including Tanneries 	<ul style="list-style-type: none"> Chromium bearing residues and sludges
<ul style="list-style-type: none"> Oil Refineries 	<ul style="list-style-type: none"> Oily sludge/emulsion; spent catalyst; slop oil; organic residues from process; spent clay containing oil
<ul style="list-style-type: none"> Pesticides 	<ul style="list-style-type: none"> Process wastes/residues; chemical sludge containing residue pesticides; date-expired and off-specification pesticides
<ul style="list-style-type: none"> Petrochemicals 	<ul style="list-style-type: none"> Furnace/reactor residue and debris; tarry residues; oily sludge emulsion; organic residues; residues from alkali wash of fuels; still bottoms from distillation process; spent catalyst and molecular sieves; slop oil from wastewater; drill cuttings containing oil; sludge containing oil ; drilling mud and other drilling wastes; oil-containing cargo residue; washing water and sludge; chemical-containing cargo residue and sludge; ballast water containing oil from ships; oily sludge/emulsion; spent catalyst; slop oil; spent clay containing oil
<ul style="list-style-type: none"> Pulp & Paper 	<ul style="list-style-type: none"> Spent chemicals, corrosive wastes arising from use of strong acid and bases; process sludge containing adsorbable organic halides (AOx)
<ul style="list-style-type: none"> Sugar 	<ul style="list-style-type: none"> Sugar processing wastewater with a high content of organic material and high biochemical oxygen demand (BOD)⁹¹⁰
<ul style="list-style-type: none"> Thermal Power Plants 	<ul style="list-style-type: none"> Condenser cooling waters, chlorine, boil blowdowns (oil and grease copper, iron), cooling tower blowdown (chlorine, zinc, chromium, phosphate, corrosion inhibiting materials), ash pond effluent (pH), suspended solids, oil and grease¹¹
<ul style="list-style-type: none"> Zinc Smelter 	<ul style="list-style-type: none"> Sludge and filter press cake arising out of production of zinc sulphate and other zinc compounds; Zinc fines/dust/ash/skimmings (dispersible form); other residues from processing of zinc ash/skimmings; flue gas and other particulates

⁹ International Finance Corporation. "Environmental, Health, and Safety Guidelines for Sugar Manufacturing." *Environmental, Health, and Safety Guidelines*. 30 April 2007
<http://www1.ifc.org/wps/wcm/connect/ec1c6e0048855352ae84fe6a6515bb18/Final%2B-%2BSugar%2BManufacturing.pdf?MOD=AJPERES>.

¹⁰ India. Parliament. *The Environment (Protection) Rules Rule 2*. G.S.R.176(E) Delhi: 1986
<http://www.cpcb.nic.in/Industry-Specific-Standards/Effluent/411.pdf> [Environment Protection].

¹¹ Environment Protection, *supra* note 10.

The Enforcement Challenge in India

There is a fairly comprehensive legal and regulatory framework in place in India to address its hazardous waste management. Indeed, it has been remarked that, if the number of laws were any measure of their effectiveness, India would have one of the cleanest environments in the world: India has “over 200 laws relating to environmental protection,”¹² including several laws relating to hazardous waste management. India is nonetheless facing several challenges in ensuring compliance and effectively enforcing its hazardous waste laws. Some of these challenges include a lack of financial resources, a shortage of staff, a lack of standardized protocols, and a lack of legal authority. In light of the various human health and environmental issues associated with improper hazardous waste disposal, it is critical that India overcome these challenges and ensure its hazardous waste is properly managed.

Purpose of the Handbook

The purpose of this handbook is to provide tools to SPCBs to assist in their day-to-day enforcement duties. To do so, Chapter 2 begins with an overview of the main hazardous waste laws in India, including some comparisons with U.S. law. Chapter 3 provides an overview of the key components of an effective enforcement program and identifies the steps that need to be taken in order to establish and implement such a program. It then reviews the enforcement system in India including brief comparisons to the U.S. system. Chapter 4 addresses some of the main challenges facing SPCBs and illustrates some techniques and strategies that have been used in India and the United States to achieve increased compliance.

What are the Grey Boxes?

In the handbook, you will see a number of grey boxes. We will be providing case studies of innovative enforcement techniques from India and the United States in Chapter 4 of the handbook. In order to provide proper context for the U.S. case studies, we have included comparisons of the U.S. and Indian systems in grey boxes throughout the handbook.

¹² Organisation for Economic Co-operation and Development (OECD). Environmental Compliance and Enforcement in India: Rapid Assessment. 2006 <<http://www.oecd.org/environment/outreach/37838061.pdf>>, 9 [OECD].

CHAPTER 2

The Legal Framework in India

Hazardous Wastes Rules

The **Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008** (the “Hazardous Wastes Rules”) are the primary regulations addressing the management of hazardous waste in India. These rules were established under the Environment (Protection) Act, 1989 (the “EPA”), which gives the Central Government the power to “take all such measures as it deems necessary or expedient for the purpose of protection and improving the quality of the environment and preventing, controlling and abating environmental pollution.”¹³ This includes making rules related to hazardous wastes.¹⁴ The first set of hazardous wastes rules was released in 1989. These rules were amended extensively over the years and, in 2008, were replaced by the Hazardous Wastes Rules.

In the United States, the primary law addressing the management of hazardous waste is the Resource Conservation and Recovery Act (RCRA). The U.S. Environmental Protection Agency (USEPA), the federal agency charged with writing and enforcing regulations to protect human health and the environment in the United States, is responsible for implementing RCRA at the federal level. The agency creates legally enforceable requirements for RCRA and regularly provides guidance documents to direct the conduct of regulators and facilities. States are authorized by the U.S. EPA to implement the USEPA’s regulations at the state level, and work cooperatively with the USEPA regional offices (equivalent to the zonal offices in India) in carrying out this responsibility.¹⁵

¹³ India. Parliament. The Environment (Protection) Act §3(1). 37th Year of the Republic, No. 29. Delhi: 1986

<<http://envfor.nic.in/legis/env/env1.html>>.

¹⁴ Specifically, the EPA provides that the Central Government may make rules that, among other things, address “the procedures and safeguards for the handling of hazardous substances” (EPA, §6(2)(c)); “the maximum allowable limits of concentration of various environmental pollutants...for different areas” (EPA, §6(2)(b)); and “the prohibition and restrictions on the handling of hazardous substances in different areas” (EPA, §6(2)(d)).

¹⁵ United States. Environmental Protection Agency. RCRA Orientation Manual 2011: Resource Conservation and Recovery Act. Washington: 2011 <<http://www.epa.gov/osw/inforesources/pubs/orientat/rom.pdf>>, 8 [RCRA Orientation Manual].

The Definition of “Hazardous Waste”

Box 2.1. Examples of Hazardous Waste

- Furnace residue and debris
- Drilling mud and other drilling wastes
- Used or spent oil

Box 2.2. Examples of characteristics that would make waste hazardous

- Explosive
- Benzene concentration ≥ 50 mg/kg
- Flammable
- Lead concentration ≥ 5000 mg/kg
- Sulphides $\geq 20,000$ mg/kg
- Toxic

The Hazardous Wastes Rules apply to all “hazardous waste.” Hazardous waste is defined broadly under the rules to include any waste that, by virtue of its characteristics, “causes danger or is likely to cause danger to health or [the] environment, whether alone or when in contact with other wastes or substances.”¹⁶ In addition to this broad definition, the rules identify certain wastes and wastes with certain characteristics as hazardous. These are set out in Schedules I through III of the rules, which are reproduced in Appendix B. See Boxes 2.1 and 2.2 for some examples of what has been identified as hazardous waste in those schedules.

It is important to note that there are certain wastes that are excluded from the definition of hazardous waste. These include wastes covered under the Water Act, Air Act, Municipal Solid Wastes (Management & Handling) Rules, Batteries (Management and Handling) Rules, Bio-Medical Waste (Management and Handling) Rules, and Merchant Shipping Act.

Under RCRA, hazardous waste is defined as “solid waste” that either causes or increases deaths or serious illnesses, or poses a substantial threat to human health or the environment. Solid waste includes liquids and contained gases, in addition to solids, that a generator has discarded. Some types of hazardous waste include: (1) substances or constituents that can be found in one of four lists in the regulations; (2) wastes that are one or more of the following: ignitable, corrosive, reactive, or toxic; or (3) substances that are determined through testing by the generator to possess dangerous characteristics. A number of types of waste are also excluded from being hazardous waste such as household hazardous waste and certain recycled materials.¹⁷

¹⁶ India. Ministry of Environment and Forests. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 Rule 3(1)(I). Ministry of Environment and Forests Notification S.O. 2265(E). New Delhi: 24 Sept. 2008 <<http://www.cpcb.nic.in/divisionsofheadoffice/hwmd/mhtrules2008.pdf>>.

¹⁷ RCRA Orientation Manual, *supra* note 15 at 34.

Role of Different Actors under the Hazardous Wastes Rules

The Hazardous Wastes Rules set out the powers, duties, and functions of different actors at various stages in a facility's operations. These stages can be grouped into three main categories: (1) establishment of the facility; (2) operation of the facility; and (3) disposal and transport of hazardous waste. The powers, duties, and functions of the different actors at each of these stages are described below.

Establishment of a Facility. The Hazardous Wastes Rules set out various requirements that must be met before a person or facility handles hazardous waste. To start, any person who is involved in handling hazardous waste must apply to an SPCB for a **grant of authorization**. This includes any person involved in the "generation, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of...hazardous waste."¹⁸

After receiving an application, an SPCB may grant or deny an authorization. An SPCB may grant an authorization if it is satisfied that the applicant has: (1) "appropriate facilities"; (2) "technical capabilities"; and (3) "equipment to handle hazardous waste safely."¹⁹ If an SPCB grants an authorization, it may set out conditions for the applicant to follow in the authorization. Authorizations must be granted within 120 days of the application, and are valid for five years.

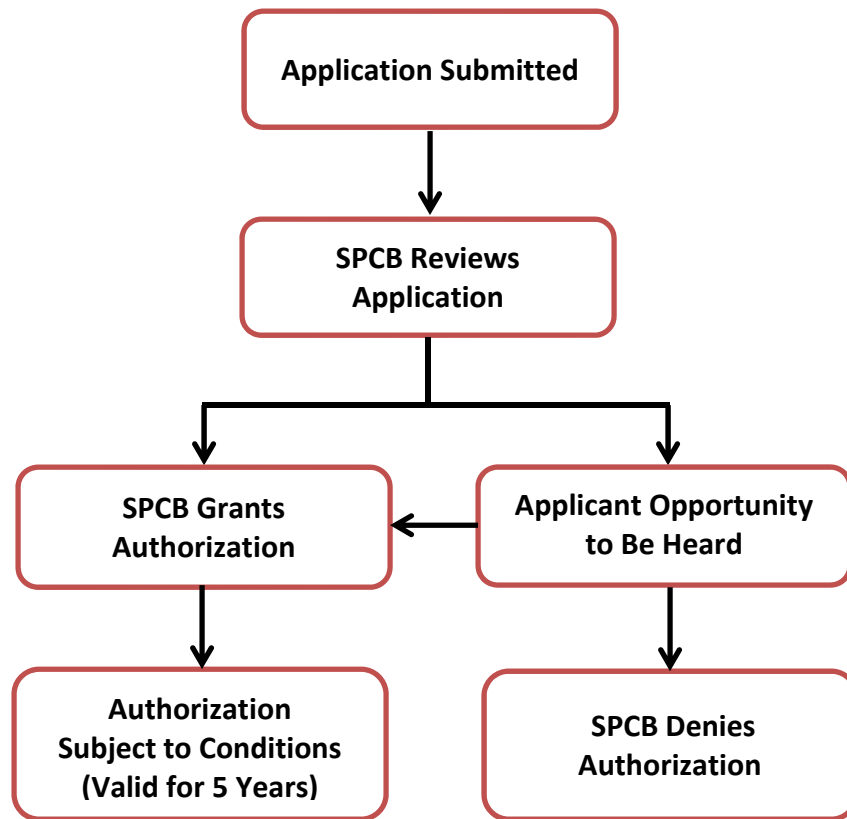
An SPCB may also deny an authorization. Before an SPCB does so, it must first give an applicant a "reasonable opportunity to be heard."²⁰ An overview for the procedure for a grant of authorization is set out in Figure 2.1 below.

¹⁸ Rule 5(1), *supra* note 16.

¹⁹ Rule 5(4), *supra* note 16.

²⁰ Rule 5(5), *supra* note 16.

Figure 2.1. Procedure for a Grant of Authorization



In addition to persons handling hazardous waste, persons that recycle or reprocess hazardous waste must apply to the State Pollution Control Board (SPCB) for a **grant of registration**. The SPCB may grant registration if it is satisfied that the applicant is: (1) “utilizing environmentally sound technologies”; and (2) possesses (a) “adequate technical capabilities”; (b) “requisite facilities”; and (c) “equipment to recycle, reprocess or reuse hazardous wastes.”

The SPCB may grant or deny the registration. If the SPCB grants registration, it may set out conditions for the applicant to follow.²¹ Registration must be granted within 120 days of the application, and is valid for five years.

RCRA Permits for Treatment, Storage, and Disposal Facilities (TSDFs)

- Permits authorize TSDFs to treat, store, or dispose of hazardous waste
- Permits include the details of what a facility must do to comply with RCRA’s regulations
- USEPA and authorized states can issue or deny permits, and must verify facilities are meeting the requirements of the permits²²

²¹ Rule 8(2), *supra* note 16.

²² RCRA Orientation Manual, *supra* note 15 at 85.

Before the CPCB denies a registration, it must first give an applicant a “reasonable opportunity of being heard.”²³

Facilities must also meet various requirements before they are allowed to handle hazardous waste. For example, “[t]he State Government, occupier, operator of a facility or any association of occupiers” are responsible “individually or jointly or severally” for identifying sites to establish facilities that treat, store, and dispose hazardous waste.²⁴ These facilities must also **receive approval from an SPCB on their design and layout.**²⁵ The SPCB is also responsible for regularly monitoring the “setting up” of the facility.²⁶

At the same time, all facilities that intend to convert hazardous waste to energy must obtain approval from the CPCB first.²⁷

Operation of the Facility. The Hazardous Wastes Rules set out responsibilities for different actors after initial approval to handle the hazardous waste is granted. The rules set out some **general responsibilities** for an occupier²⁸ in handling hazardous wastes. These include:

- Handling generated hazardous waste in a safe and “environmentally sound” manner;
- Taking all adequate steps to contain contamination and prevent accidents; and
- Providing employees with training, equipment and information for their safety.²⁹

Responsibilities of a Generator under RCRA

While generators do not need a permit to produce hazardous waste, they have other responsibilities under RCRA. These include:

- Obtaining an **EPA Identification (ID) number**, which the USEPA uses to monitor them (as well as transporters and TSDFs)
- Identifying hazardous waste generated, and keeping track of the weight of hazardous waste generated each month
- Complying with accumulation and storage requirements (e.g. maximum storage times, spill containment, training, and emergency arrangements)³⁰

The operator³¹ of a TSDF is responsible for its “safe and environmentally sound operation.”³² In addition, both occupiers and operators have the general responsibility to “take all the steps,

²³ Rule 8(6), *supra* note 16.

²⁴ Rule 18(1), *supra* note 16.

²⁵ Rule 18(2), *supra* note 16.

²⁶ Rule 18(3), *supra* note 16.

²⁷ Rule 11, *supra* note 16.

²⁸ An “occupier” is defined as “a person who has[] control over the affairs of the factory or the premises and includes...the person in possession of the hazardous waste.” Rule 3(1)(q), *supra* note 16.

²⁹ Rule 4, *supra* note 16.

³⁰ RCRA Orientation Manual, *supra* note 15 at 70.

wherever required, for reduction and prevention of the waste generated or for recycling or reuse..." They must also comply with all the conditions set out in their authorization.³³

Aside from these general responsibilities, the Hazardous Wastes Rules also set out specific responsibilities in handling hazardous waste. This includes responsibilities regarding **packaging and labeling hazardous waste**: occupiers, operators, and recyclers must ensure that hazardous wastes are properly packaged and labeled for their safe handling and storage.³⁴ "[O]ccupiers, recyclers, re-processors, re-users, and operators of facilities" may only **store hazardous waste** for 90 days.³⁵ Any **accidents** involving hazardous waste must be reported "immediately" to the relevant SPCB.³⁶

Manifests and Required Records under RCRA

All regulated parties must use "Uniform Hazardous Waste Manifests" to track hazardous waste as it is transferred from generators, to transporters, and finally to TSDFs. Specific packaging and labeling requirements are also enforced under RCRA.

As part of RCRA's record retention requirements, generators must keep copies of biennial reports, manifests, exception reports, and waste analyses for at least three years from the due date of the report.³⁷

At the same time, **records** on hazardous waste must be maintained. Persons who have received authorization must maintain records on handling hazardous waste, and submit an annual return.³⁸ Recyclers, re-processors, and operators of TSDFs must also maintain similar records and file annual returns with the SPCB.³⁹ SPCBs use the information filed in annual returns to inventory hazardous wastes, and "compile other related information including, e.g., the details of the disposable waste received by the TSDF, details of co-processed hazardous waste, and the details of hazardous waste recycled by registered recyclers.

In addition, grants of authorization must be **renewed** every five years. SPCBs may renew an authorization if there has been "no report of violation" of the EPA or related rules (including the Hazardous Wastes Rules), or any violation of the conditions set forth in the original grant of

³¹ An "operator of disposal facility" is defined as "a person who owns or operates a facility for collection, reception, treatment, storage, or disposal of hazardous wastes." Rule 3(1)(r), *supra* note 16.

³² Rule 18(4), *supra* note 16.

³³ Rule 5(8), *supra* note 16.

³⁴ Rule 19, *supra* note 16.

³⁵ The SPCB may extend this period in certain circumstances as outlined in Rule 7(1), *supra* note 16.

³⁶ Rule 24, *supra* note 16.

³⁷ RCRA Orientation Manual, *supra* note 15 at 81.

³⁸ Rule 5(6); see also Rule 22(1), *supra* note 16.

³⁹ Rules 8(7), 18(5), and 22(1), *supra* note 16.

authorization.⁴⁰ While an SPCB has the discretion not to renew an authorization in circumstances where there have been no reported violations, in practice, it is expected that renewals will be granted under these circumstances. The CPCB may renew a registration.⁴¹

SPCBs are also in charge of **monitoring compliance** with the conditions set forth in the grant of authorization, as well as the Hazardous Wastes Rules.⁴² SPCBs can take actions against those that fail to abide by the conditions in a grant of authorization or by the Hazardous Wastes Rules more generally. Monitoring and enforcement are addressed in more detail in Chapter 3.

Disposal and Transport. The Hazardous Wastes Rules set out responsibilities for various actors in the disposal and transport of hazardous waste. These include some **general responsibilities** for occupiers, who must:

- Send or sell hazardous waste only to a registered recycler or an authorized disposal facility;
- Transport hazardous waste in accordance with the rules; and
- Provide required information to an operator of a TSDF.⁴³

Responsibilities of a Transporter

- Obtain an EPA ID number
- Comply with the manifest system requirements
- Appropriately address any hazardous waste discharges
- Only take hazardous wastes to TSDFs designated by the generator⁴⁴

Aside from these general responsibilities, the rules also set out specific responsibilities with respect to the disposal and transport of hazardous waste. As a general matter, hazardous waste may only be “collected, treated, re-cycled, re-processed, stored or disposed of” at facilities authorized by an SPCB.⁴⁵

The Hazardous Wastes Rules address transport: (1) within a state; (2) across state lines; and (3) across country lines. For the **transport of hazardous waste within a state**, the rules set out particular procedures that must be followed. These procedures include properly packaging and labeling hazardous wastes before they are transported.⁴⁶ Hazardous waste must then be transported in accordance with all relevant rules.⁴⁷ This includes preparing a manifest, which

⁴⁰ Rule 5(7), *supra* note 16.

⁴¹ Rule 8(1), *supra* note 16.

⁴² See e.g., Rule 18(3) (requiring SPCB to regularly monitor the operations of a TSDF), *supra* note 16.

⁴³ Rules 4 and 9, *supra* note 16.

⁴⁴ RCRA Orientation Manual, *supra* note 15 at 81.

⁴⁵ Rule 5(2), *supra* note 16.

⁴⁶ Rule 19, *supra* note 16.

⁴⁷ Rule 20(1), *supra* note 16.

must be forwarded to – among others – the SPCB(s).⁴⁸ See Box 2.3 for additional details about manifests. All accidents that occur during the transport of hazardous waste must be reported “immediately” to the SPCB.⁴⁹

For the **transport of hazardous waste across state lines**, the procedures for transporting hazardous waste within a state must be followed. In addition to these procedures, the person intending to dispose of hazardous waste must obtain a “No Objection Certificate” from the SPCB where the waste was generated and from the SPCB where the waste will be disposed.⁵⁰ That person must also inform the relevant SPCB if hazardous waste will be transported through the state but not disposed there.⁵¹

For the **transport of hazardous waste across country lines**, the rules set out specific procedures that must be followed.⁵² These procedures were put in place in order to meet India’s obligations under the Basel Convention, an international treaty that addresses the transport and disposal of hazardous waste across country lines. The Ministry of Environment and Forests (“MOEF”) is the principal government agency dealing with these procedures,⁵³ though other entities play a role. This includes SPCBs. For example, for the import of hazardous waste, an importer must send a copy of the import application to, among others, the relevant SPCB. The SPCB may then “send [its] comments and observations, if any, to the [MOEF] within a period of thirty days.”⁵⁴ If the MOEF permits the import or export of any hazardous waste, it must send any permission granted to the relevant SPCB to “ensur[e] compliance of the conditions...and safe handling of the hazardous waste.”⁵⁵ An importer must also inform the relevant SPCB of “the date and time of the arrival” of the hazardous waste ten days before it arrives.⁵⁶ To the extent any hazardous waste is imported illegally, the SPCB must ensure that it is “re-export[ed].”⁵⁷

⁴⁸ Rule 21, *supra* note 16.

⁴⁹ Rule 24, *supra* note 16.

⁵⁰ Rule 20(3), *supra* note 16.

⁵¹ Rule 20(4), *supra* note 16.

⁵² See Rules 13-16, *supra* note 16.

⁵³ Rule 12, *supra* note 16.

⁵⁴ Rule 16(1), *supra* note 16.

⁵⁵ Rule 15(3); see also Rule 16(3), *supra* note 16.

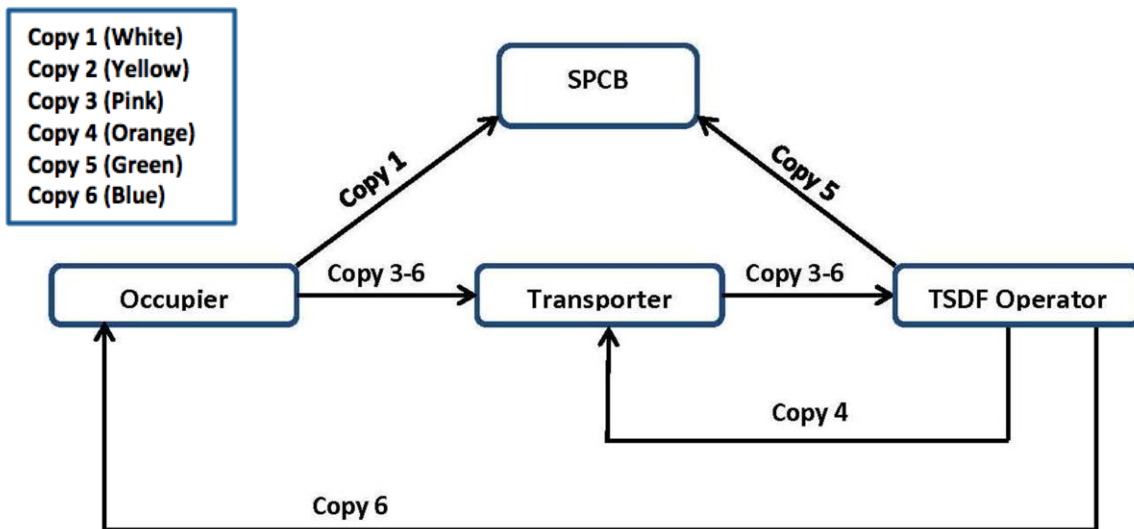
⁵⁶ Rule 16(8), *supra* note 16.

⁵⁷ Rule 17(2), *supra* note 16.

Box. 2.3. Hazardous Waste Manifests

A hazardous waste manifest must accompany most hazardous waste that is shipped offsite. A “Uniform Hazardous Waste Manifest” is the document that accompanies hazardous waste from the point of generation until it reaches the TSDF. Each party in the chain of transport must sign and keep one copy of the manifest. The process is as follows:

- The occupier must prepare six copies of the manifest, all of which must be signed by the transporter.
- The occupier must forward copy 1 (white) to the SPCB of the state in which the waste was generated and, where the hazardous wastes are likely to be transported through a state, the occupier must prepare an additional copy for that state and forward it to the relevant SPCB before the waste is turned over to the transporter. The occupier keeps Copy 2 (yellow).
- No transporter can accept hazardous wastes from an occupier unless it is accompanied by copies 3 to 6 of the manifest.
- The transporter must provide copies 3 to 6 of the manifest to the TSDF operator. After it accepts the waste, the TSDF operator will return copy 4 (orange) to the transporter.
- After the hazardous waste is treated and disposed, the operator of the TSDF must forward copy 5 (green) to the SPCB and copy 6 (blue) to the occupier. Copy 3 (pink) is retained by the TSDF operator.



An overview of the role of SPCBs under each stage of a facility's operations is set out in Figure 2.2 below. The responsibilities of an occupier are summarized in Figure 2.3, the responsibilities of a transporter are summarized in Figure 2.4, and the responsibilities of a generator are summarized in Figure 2.5.

Figure 2.2. Role of SPCBs at various stages of a facility's operations

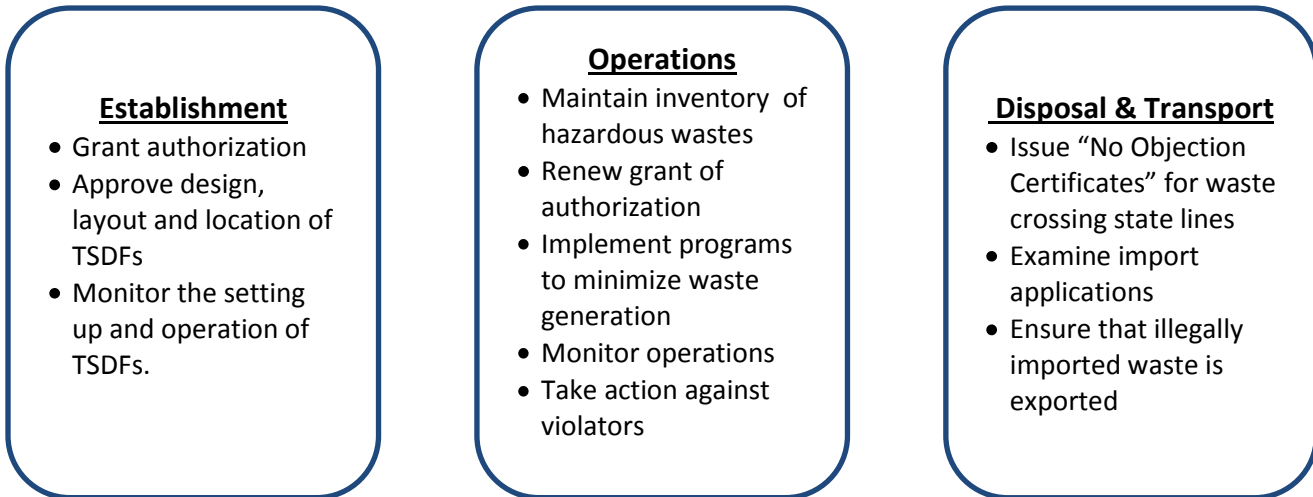


Figure 2.3. Responsibilities of an occupier under the Hazardous Wastes Rules

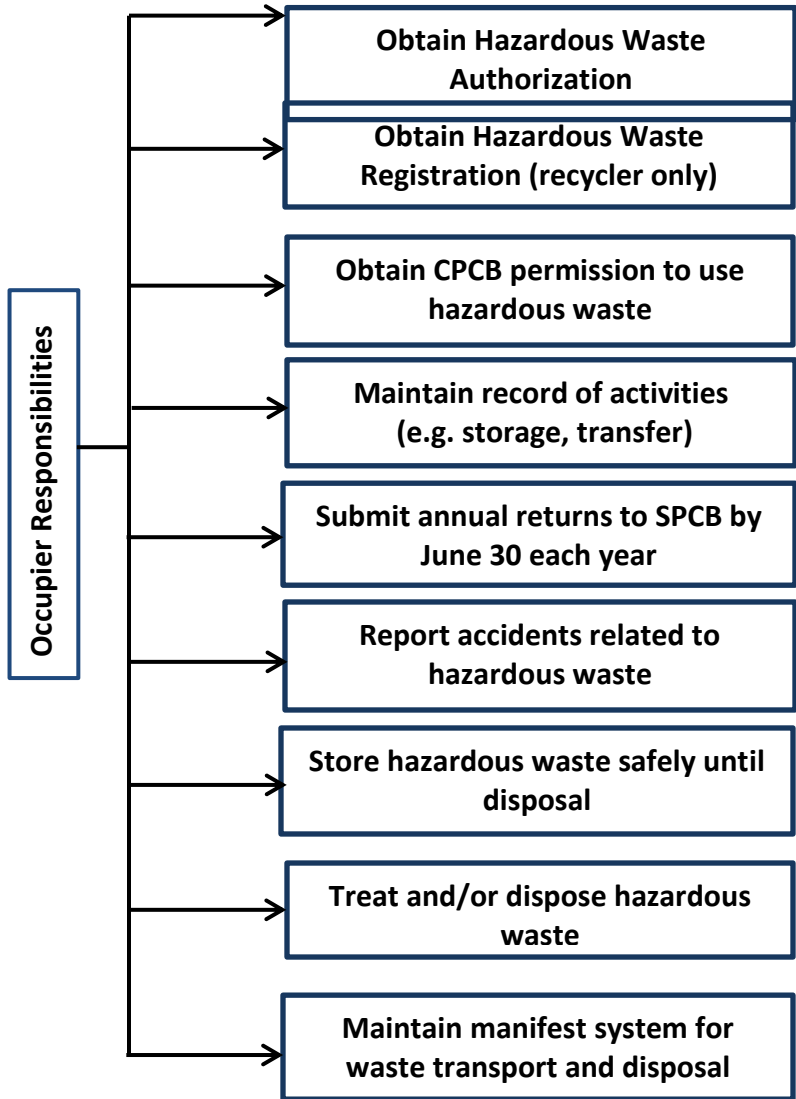


Figure 2.4. Responsibilities of a transporter under the Hazardous Wastes Rules

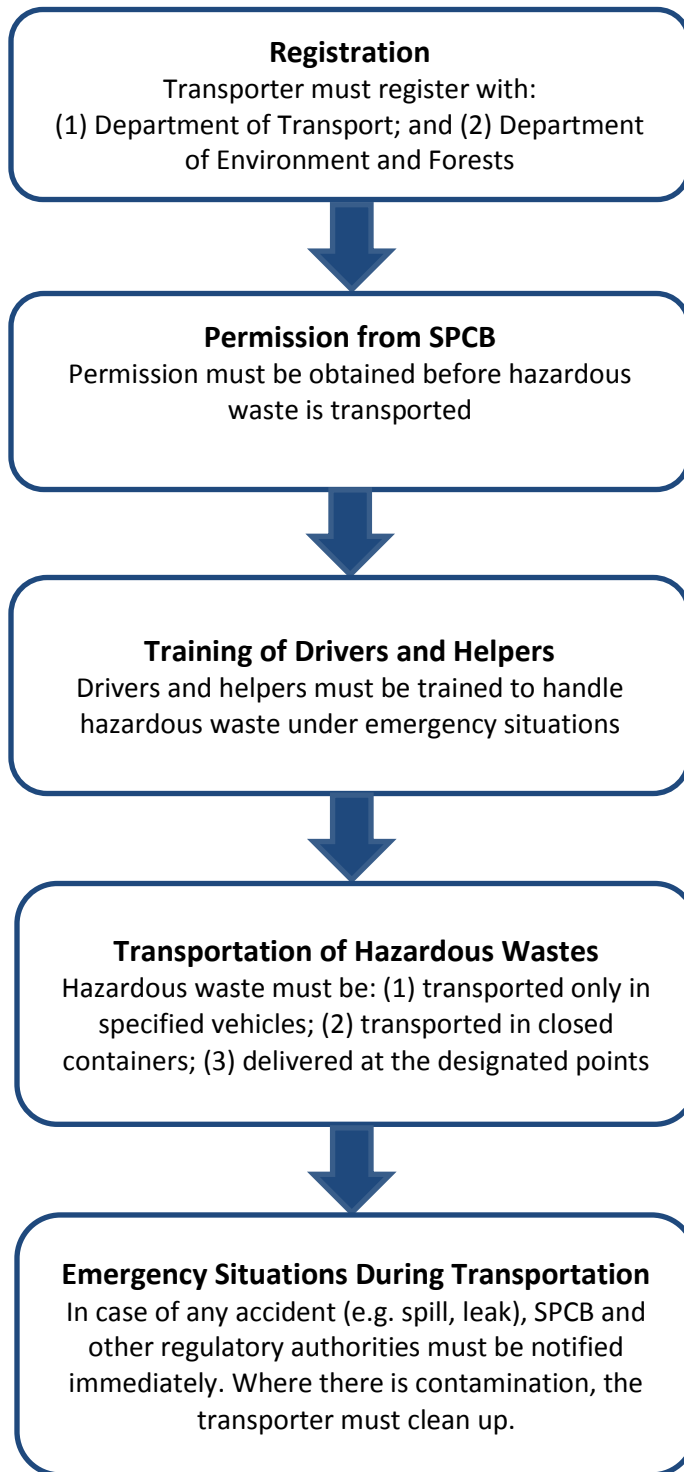
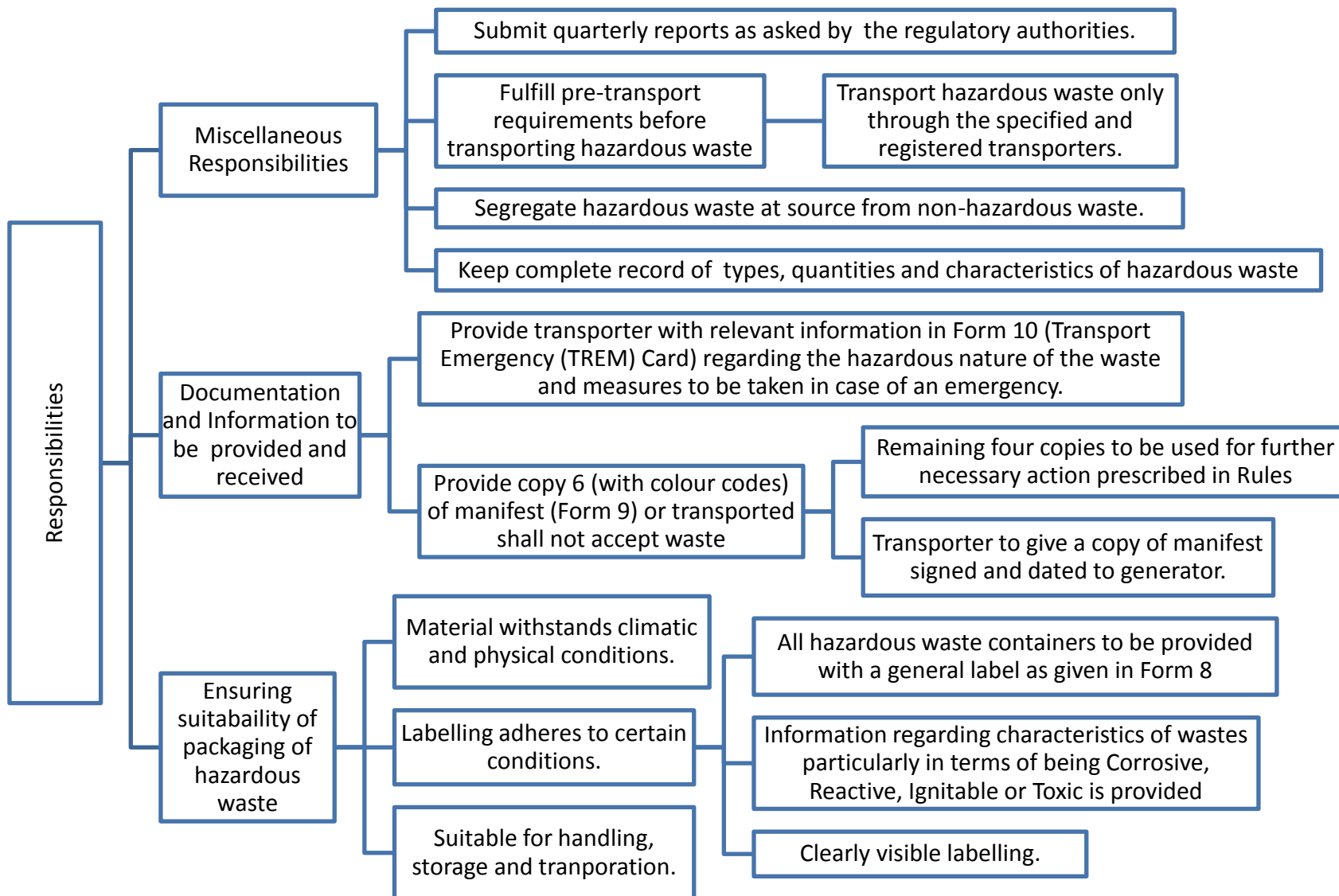


Figure 2.5. Responsibilities of a generator under the Hazardous Wastes Rules



Other Rules

In addition to the Hazardous Wastes Rules, there are other rules and plans that address the management of hazardous waste. These include: (1) Manufacture, Storage and Import of Hazardous Chemical Rules, 1989; (2) Batteries (Management and Handling) Rules, 2001; (3) Chemical Accidents (Emergency Planning, Preparedness and Response Rules); (4) E-Waste (Management and Handling) Rules, 2010; (5) Bio-Medical Waste (Management and Handling) Rules, 1998; and (6) National Implementation Plan for Stockholm Convention on Persistent Organic Pollutants. Below we provide a brief description of these rules and the role that SPCBs play under each of these rules.

Manufacture, Storage and Import of Hazardous Chemical Rules

The **Manufacture, Storage and Import of Hazardous Chemical Rules, 1989** (the “MSIHC Rules”) apply to the manufacture, storage, and import of hazardous chemicals. The term “hazardous chemicals” is defined under the rules by reference to the rules’ schedules. For example, the definition indicates that “hazardous chemicals” includes chemicals that meet certain criteria (e.g. toxic) and are listed in part 1 of Schedule 1 and the second column of the second part of that Schedule. In addition, chemicals listed in the second column of Schedules 2 and the third column of Schedule 3 are also included in the definition, as are chemicals stored above certain threshold quantities described in the rules. Schedules 1, 2, 3, and 5 are available in Appendix C.

The main purpose of the MSIHC Rules is to establish requirements for occupiers to identify, prevent, and limit the impacts of potential major accidents.⁵⁸ Occupiers must prepare and maintain emergency plans, provide reports regarding intended activities before they start operations, provide detailed reports following any major accidents, and maintain accurate labels on containers of hazardous chemicals.⁵⁹

There are a number of authorities tasked with different functions under these rules. The powers and responsibilities of each authority are detailed in Schedule 5 of the Rules. To start, the concerned authority must work with an occupier to develop an off-site emergency plan that sets out how any emergencies related to a possible major accident on a particular site will be addressed. This plan must be kept up-to-date. The concerned authority may request any necessary information to develop the plan from the occupier, including the nature, extent, and likely off-site effects of any potential major accidents. The authority will then provide the occupier with information from the plan relating to his or her duties under the rules. The authority must prepare the plan before operations begin and – in the case of existing activities – within six months of the Rules coming into force.

⁵⁸ India. Ministry of Environment and Forests. Manufacture, Storage, and Import of Hazardous Chemical Rules, 1989 Rule 4(2)(b)(i). Ministry of Environment and Forests Notification S.O. 966(E). New Delhi: 1989 <<http://www.scribd.com/doc/128699553.Manufacture-Storage-and-Import-of-Hazardous-Chemicals-Rules-1989>>.

⁵⁹ Rule 13, Rule 7, Rule 5(1), and Rule 17(4), *supra* note 58.

There are different kinds of reports to be submitted by the occupier to the authorities mentioned in Schedule 5. When receiving a report from occupiers producing certain substances specifically mentioned in Column 4 of Schedule 2, in excess of the specified quantities in Column 4 of that Schedule, the concerned authority may, by notice, request that the occupier provide additional information within a given timeframe.⁶⁰ Following an accident, a concerned authority must receive relevant information and will complete a full analysis. The State Crisis Group shall continuously monitor the situation following a major chemical accident in their state and send a report to the Central Crisis Group. The chairman of the State Crisis Group (the Chief Secretary of the State Government) will forward a report to the Chairman of the Central Crisis Group (Secretary of the MOEF).

If the concerned authority discloses any information listed under Rules 5 or 7-15, (e.g., information related to safety reports, lay out of the facility, management of a major accident) this information may not be used for any purpose other than that for which it was disclosed. The authority must notify the person to whom they are disclosing the information of this obligation.⁶¹

If a state-level authority believes an imported chemical was the likely cause of a major accident, it may direct the importer to take appropriate steps, which may include halting the import of the chemical.⁶² The authority must simultaneously inform the concerned Port Authority to take appropriate steps regarding the safe handling and storage of hazardous chemicals while off-loading the consignment within the port premises.

If the concerned authority finds that a person has violated a provision of the rules, the authority will serve a notice requiring the violation to be remedied within a given timeframe. The notice must specify the measures to be taken by the occupier to achieve compliance.⁶³

Batteries (Management and Handling) Rules

The **Batteries (Management and Handling) Rules, 2001** (the “Batteries Rules”) apply to the handling of batteries and their components. Batteries are defined under the rules to include lead acid batteries that contain metal and are a source of electrical energy.⁶⁴ Manufacturers, importers, assemblers, and re-conditioners have specific responsibilities under the rules including stated procedures for collection, recycling, and transportation.⁶⁵

⁶⁰ Rule 12, *supra* note 58.

⁶¹ Rule 16, *supra* note 58.

⁶² Rule 18(2), *supra* note 58.

⁶³ Rule 19(1), *supra* note 58.

⁶⁴ India. Ministry of Environment and Forests. Batteries (Management and Handling) Rules, 2001 Rule 2(e). Ministry of Environment and Forests Notification S.O. 432(E). New Delhi: 2001 <<http://envfor.nic.in/legis/hsm/leadbat.html>>.

⁶⁵ Rule 2(l), Rule 2(k), Rule 2(b), Rule 2(n), Rule 4, *supra* note 64.

Under the Batteries Rules, SPCBs are responsible for ensuring that regulated parties comply with the rules and with the conditions imposed by their registrations. SPCBs must file annual compliance status reports to the CPCB by April 30 each year.⁶⁶ The Joint Secretary, Ministry of Environment and Forests (or any officer designated by the Ministry or other agency) will ensure that recyclers possess appropriate facilities, technical capabilities, and equipment to recycle used batteries and dispose of any hazardous wastes generated during the recycling process.

A recycler must register with an SPCB for a five-year license. To obtain a registration as a battery recycler, an applicant must possess consents under the Air and Water Act, valid authorization under the Hazardous Wastes Rules, registration with their District Industries Centre, and documentation of their installed capacity. Under the Rules, registration is granted by the joint secretary of the MOEF, while the SPCBs are responsible for ensuring compliance with the Hazardous Wastes Rules and the Air and Water Acts, as well as certifying installed capacity. A registration may be cancelled by an SPCB if it is found that a registered recycler has failed to comply with any of the conditions of his or her registration, or with any provision of the Act or Rules. However, a cancellation may only occur after a hearing of the regulated party.

Renewal of registration will depend on the recycler's compliance status. Recyclers must also submit annual returns to the SPCB using a specific form set out in the rules, along with all records relating to the receipt of used batteries. These records include a list of sources, quantities, and metal yield. SPCBs are also responsible for inspecting records produced by other regulated parties, including bulk consumers (which must file biannual returns) and auctioneers (which must make their auction records available to SPCBs for inspection).

Chemical Accidents (Emergency Planning, Preparedness and Response) Rules

The **Chemical Accidents (Emergency Planning, Preparedness and Response) Rules** (the "CA Rules") address accidents "involving a fortuitous, or [s]udden or unintended occurrence while handling any hazardous chemicals resulting in continuous, intermittent or repeated exposure to death, or injury to, any person or damage to any property." They do not address accidents that involve radioactivity or war.⁶⁷

The Central Crisis Group (CCG) is the lead organization for dealing with chemical accidents.⁶⁸ The CCG provides expert guidance, as well as assistance with funding and infrastructure in the event of an accident.⁶⁹ The State Crisis Group (SCG) is the second-highest authority, and is the lead organization within the state where an accident occurs.⁷⁰ The State Government will also

⁶⁶ Rule 12, *supra* note 64.

⁶⁷ India. Ministry of Environment and Forests. The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996 Rule 2(a). Ministry of Environment and Forests Notification G.S.R.347(E). New Delhi: 1996 <<http://www.scribd.com/doc/128700829/The-Chemical-Accidents-Emergency-Planning-Preparedness-And-Response-Rules-1996>>.

⁶⁸ Rule 3, *supra* note 67.

⁶⁹ Rule 5, *supra* note 67.

⁷⁰ Rule 7, *supra* note 67.

establish District and Local Crisis Groups (DCG and LCG) to handle all major chemical accidents at the local level and prepare coordinated emergency plans.⁷¹ The chairman of the SPCB is a member of the crisis groups envisaged under these rules.

E-Waste (Management and Handling) Rules

The **E-Waste (Management and Handling) Rules, 2010** (the “E-Waste Rules”) apply to the disposal of electronics, either in whole or part.⁷² Under the E-Waste Rules, producers of equipment listed in the rules, collection centers, recyclers, and dismantlers must all obtain authorization from the relevant SPCB before commencing their activities. The application must be made with a form included in the rules, and submitted to the relevant SPCB or PCC. Following an inspection and investigation, the SPCB or PCC may grant the authorization. A decision must be given within 90 days of submission of the application. An authorization may only be refused after the applicant has had a hearing. Any regulated party that has been granted an authorization must maintain records of all wastes handled, and file an annual return detailing the information in those records. Any application for renewal of the authorization must be made 60 days before the expiration of the current authorization.⁷³

Applications for registrations of dismantlers or recyclers may be made by submitting Form 4 to either the SPCB or PCC. Registrations are valid for two years. Dismantlers or recyclers that are granted registration must maintain records of all wastes handled, and file annual returns with the SPCB (or PCC as the case may be).

Bio-Medical Waste (Management and Handling) Rules, 1998

The **Bio-Medical Waste (Management and Handling) Rules, 1998** (the “Bio-Medical Rules”) apply to the generation, collection, receipt, storage, transport, treatment, disposal, or handling of biomedical waste.⁷⁴ Bio-medical wastes are defined under the rules to include wastes that are “generated during (1) the diagnosis, treatment, or immunisation of human beings or animals”; (2) related research activities; or (3) “the production or testing of biologicals.”⁷⁵ The rules also list categories that will be

Box 2.4. Examples of Categories of Bio-Medical Waste

- Human anatomical waste (e.g. human tissues, organs)
- Animal waste (e.g. animal tissues, organs)
- Waste sharps (e.g. needles, syringes)

⁷¹ Rule 9, *supra* note 67.

⁷² India. Ministry of Environment & Forests. The E-Waste (Management and Handling) Rules, 2010 Rule 3(k). Ministry of Environment and Forests. New Delhi: 2010 < <http://www.cpcb.nic.in/TEXT/AS/Final-Ewaste-Documents/full-text.pdf>>.

⁷³ Rule 9, *supra* note 72.

⁷⁴ India. Ministry of Environment and Forests. Bio-Medical Waste (Management and Handling) Rules, 1998 Rule 2. Ministry of Environment and Forests Notification S.O. 630(E). New Delhi: 1998. <<http://www.scribd.com/doc/128698726/Bio-Medical-Waste-Management-and-Handling-Rules-1998>>.

⁷⁵ Rule 3(5), *supra* note 74.

considered biological waste.⁷⁶ Some examples are listed in Box 2.4.

Under these Rules, the State Government shall establish a prescribed authority for granting authorization and implementing these rules. The duties of such a prescribed authority include granting authorizations to Health Care Establishments (HCEs) to handle bio-medical wastes and renewal of authorizations. To the extent HCEs violate any of the rules, the prescribed authority may issue directions or take necessary legal actions. The prescribed authority may also cancel or suspend an authorization after hearing the occupier/operator. In addition, the prescribed authority is required to compile annual reports submitted from HCEs, which include the categories and quantities of biomedical wastes that the HCE handled during the year. These reports must then be forwarded to the CPCB.

National Implementation Plan for Stockholm Convention on Persistent Organic Pollutants

India ratified the Stockholm Convention on January 13, 2006. Under the convention, parties are required to develop a national implementation plan to show how they will implement their obligations under the convention. To meet this requirement, the MOEF drafted the National Implementation Plan for the Stockholm Convention (“NIP”) in 2011. The NIP takes a comprehensive approach to handling issues related to persistent organic pollutants (“POPs”), and sets out certain priorities. These priorities are divided into three phases: (1) immediate priorities; (2) medium-term priorities; and (3) long-term priorities. These priorities are to be achieved by 2022.

Under the NIP, SPCBs have several responsibilities. These include:

- Monitoring emission levels of POPs
- Ensuring multi-sectoral compliance with the NIP, including by the industrial and agricultural sectors
- Advising state governments on prevention, control and abatement of water and air pollution in establishing industries. This would also involve advising the state governments on the dangers posed by POPs and how to respond to them
- Providing consents to establish industries, operations or processes
- Providing consents to industries to manufacture, use or store chemicals
- Advising industries on pollution prevention

The NIP also requires SPCBs to establish certain bodies, including: (1) bodies to provide authorization to facilities that process, dispose, and/or handle hazardous waste, and oversee compliance with the Hazardous Wastes Rules; and (2) emergency response centers to manage chemical disasters in coordination with the CPCB. Currently, the SPCBs are revising the inventory of generated hazardous wastes, in light of the shortcomings of an earlier inventory.⁷⁷

⁷⁶Schedule I, *supra* note 74.

⁷⁷ India. Government of India. National Implementation Plan: Stockholm Convention on Persistent Organic Pollutants. Ministry of Environment and Forests. New Delhi: 2011 < <http://nipindia.gov.in/pdf/NIP.pdf>>.

CHAPTER 3

Enforcement and Compliance

An effective enforcement program is critical to the success of any law. This chapter starts with an overview of the key components of an effective enforcement program, and then identifies the steps that need to be taken in order to establish and implement such a program. It then reviews the system in place in India to enforce its hazardous waste laws, providing some comparisons to the U.S. system.

The Goals of an Enforcement Program

Before examining the enforcement program in place in India, this section starts with an overview of an effective enforcement program. To be successful, an enforcement program should focus on three main goals: (1) effectively and consistently detect violations; (2) compel the timely correction of all detected violations; and (3) deter violations by all regulated entities.⁷⁸

An effective enforcement program will allow the regulatory body to constrain the behavior of regulated parties and compel their compliance with existing laws and regulations. The regulatory body should aim to achieve these goals at the lowest possible cost over time through innovative but low-cost enforcement techniques.⁷⁹

Planning an Enforcement Program

Several principles should guide the development of a successful enforcement program. During the planning process, the regulatory body should carefully define the goals of its enforcement program, along with the relevant timelines for how to achieve them. Some goals will be long term, while others may be achieved quickly by current regulatory body staff.

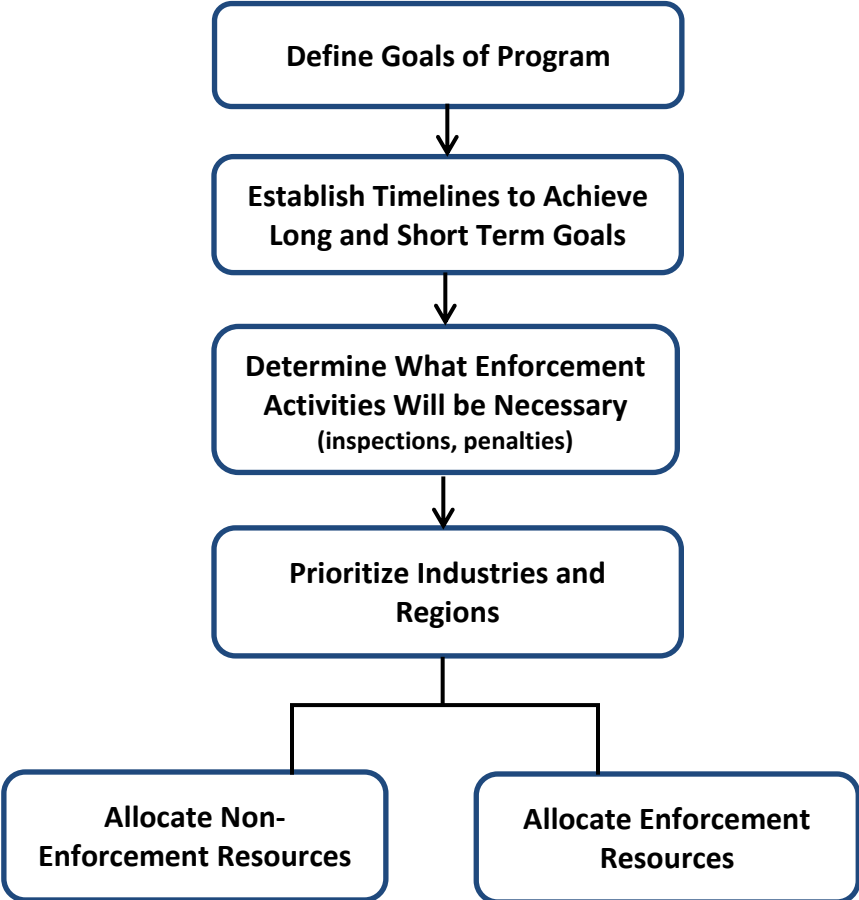
Next, the regulatory body should identify what enforcement activities will be necessary for achieving their goals and how best to target their enforcement efforts. A regulatory body should begin by prioritizing specific sectors and geographic areas by risk level. The body should then carefully coordinate their other routine activities to support their enforcement-specific actions. Enforcement resources, including financial and human resources, should be strategically allocated to have the maximum impact at the lowest possible cost.

⁷⁸ Adapted from Keiner, Suellen, and Lee Paddock. Beyond Enforcement? Environment, Compliance Assistance, and Corporate Leadership Programs in Five Midwest States. Washington, DC: Environmental Law Institute. 2003 [Beyond Enforcement].

⁷⁹ Environmental Law Institute. Toward a More Effective Superfund Enforcement Program. 1989; National Academy of Public Administration, ELI, and the Tellus Institute, Beyond Enforcement. 2003. See also Environmental Law Institute. DDOE Environmental Enforcement Strategy Report. 2011.

Finally, an enforcement plan should be developed which provides for the maintenance of the regulatory body's core obligations beyond just enforcement. An overview of the planning process is set out in Figure 3.1.

Figure 3.1. Planning an enforcement program



Enforcement of Hazardous Waste Laws in India

SPCBs are largely in charge of enforcing the hazardous waste laws in India.⁸⁰ While they are “no uniform policies or procedures at the national or state levels” to guide the SPCBs’ enforcement activities the Secretariat of the Asian Environmental Compliance and Enforcement Network (AECEN) surveyed several Indian states and, based on the results of that survey, identified a “general enforcement sequence” that takes place. This sequence is set out in Figure 3.2 below.⁸¹ SPCBs are given several powers to carry out this enforcement sequence. These are examined in more detail in the following section.

Power to enter and inspect. Under the EPA, SPCBs are given broad powers to enter “any place” for several purposes set out in the act.⁸² These include:

- Determining whether there is compliance with “any provision[] of [the EPA] or the rules made thereunder” (this includes the Hazardous Wastes Rules) or with “any notice, order, direction or authorization served...under [the EPA].”
- Examining any records or items, or searching any building where an SPCB official “has reason to believe” that there has been or will be an offence committed under the EPA or the rules made pursuant to the act. An SPCB official also has the power to seize any records or items if there is “reason[] to believe” that they may provide evidence of an offense, or if the “seizure is necessary to prevent or mitigate environmental pollution.”
- Carrying out any function required by the Central Government.⁸³

Inspections under RCRA

Representatives of USEPA or authorized states may inspect any facility that handles hazardous waste. Department of Transportation officials may also inspect facilities involved in the transport of waste. It is important to note that:

- Inspections may take place whether or not a violation is suspected
- Representatives may visit facilities, examine records, sample wastes, and observe operations
- All TSDFs must be inspected at least once every two years⁸⁴

⁸⁰ India. Ministry of Environment and Forests. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 Schedule VII. Ministry of Environment and Forests Notification S.O. 2265(E). New Delhi: 24 Sept. 2008 <<http://www.cpcb.nic.in/divisionsofheadoffice/hwmd/mhtrules2008.pdf>>.

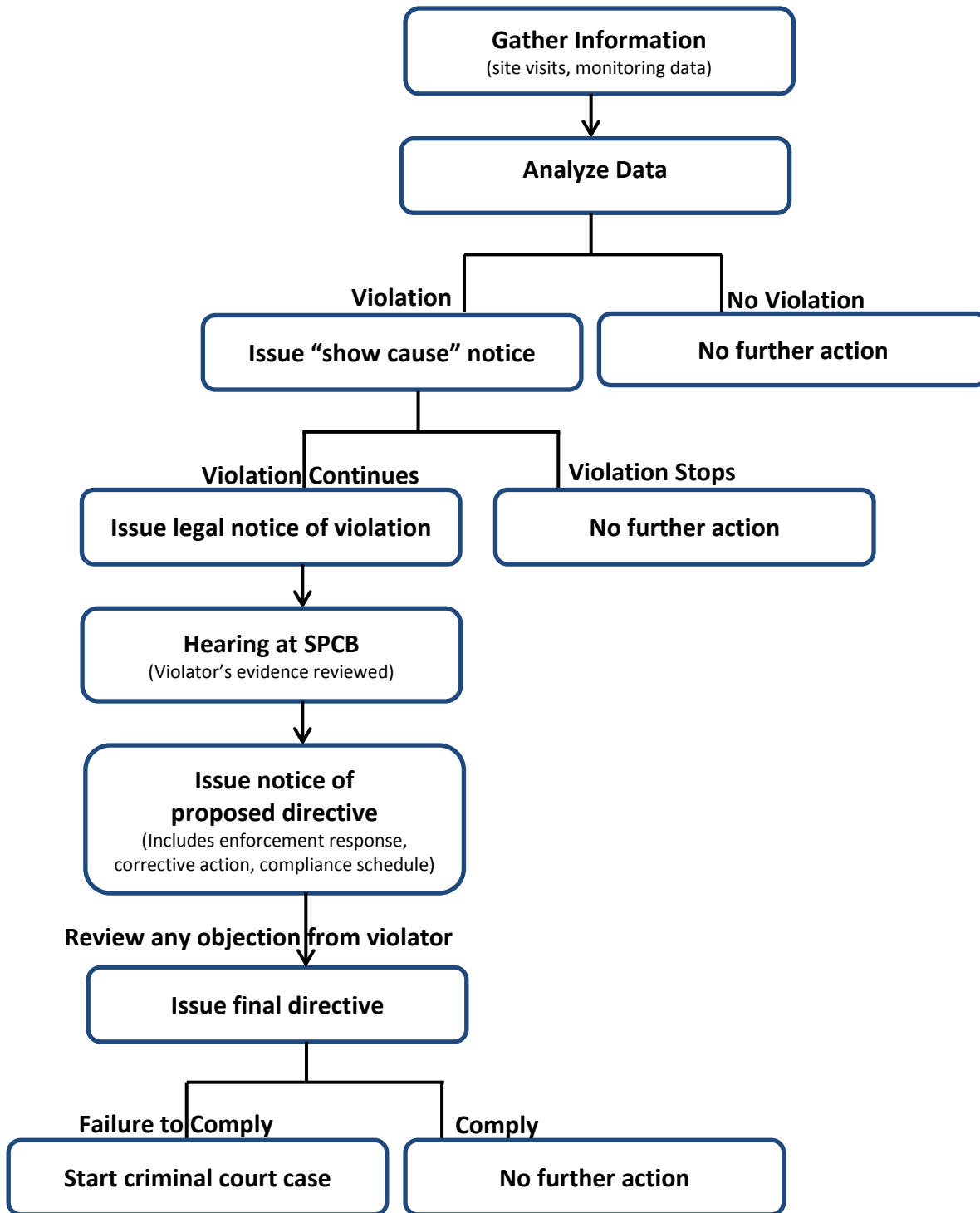
⁸¹ OECD, *supra* note 12 at 19.

⁸² India. Parliament. The Environment (Protection) Act §10(1). 37th Year of the Republic, No. 29. Delhi: 1986 <<http://envfor.nic.in/legis/env/env1.html>>.

⁸³ §10(1)(b), *supra* note 82.

⁸⁴ RCRA Orientation Manual, *supra* note 15 at 88.

Figure 3.2. Enforcement sequence, as adapted from the AECEN study.⁸⁵



⁸⁵ OECD, *supra* note 12 at 13.

The frequency at which an SPCB must inspect a facility depends on “the pollution potential (red/orange/green) and size (based on the value of capital investment) of the industry. The CPCB has issued a guidance manual on the frequency of...inspections.”⁸⁶ Parts of this manual are included in Appendix D.

Power to take samples. Under the EPA, a SPCB official has the “power to take, for the purpose of analysis, samples of air, water, soil or other substance from any factory, premises or other place.”⁸⁷ A specific procedure, which is set out in the EPA, must be followed in order for the samples to be “admissible in evidence in any legal proceeding.”⁸⁸ See Box 3.1 for an overview of this procedure.

Box 3.1 - Procedure for Taking Samples

An SPCB official taking samples must:

- First serve a notice on the person in charge
- Collect samples with the person in charge present
- Put samples in marked and sealed containers that are signed by both the official and person in charge
- Send the containers to a laboratory established or recognized by the Central Government

Power to cancel or suspend authorization. Under the Hazardous Wastes Rules, an SPCB may “cancel or suspend” an authorization to handle hazardous waste. An SPCB may do so “if[,] in its opinion[,] the holder of the authorization has failed to comply with any of the conditions of the authorization or with any provisions of the [EPA] or [the Hazardous Wastes Rules].”⁸⁹

Before an SPCB may cancel or suspend an authorization, it must first:

- Provide the holder a “reasonable opportunity of being heard;” and
- Explain in writing the reasons for canceling or suspending the authorization.

If an authorization is canceled or suspended, the SPCB can do so for any period “it considers necessary in the public interest.”⁹⁰ An SPCB may also “give directions...for the safe storage of the hazardous wastes” after an authorization is canceled or suspended.⁹¹

⁸⁶ Centre for Science and Environment. Turnaround: Reform Agenda for India’s Environmental Regulators. New Delhi: CSE, 2009 <<http://www.cseindia.org/node/479>> [Turnaround].

⁸⁷ §11(1), *supra* note 82.

⁸⁸ §11(2), *supra* note 82.

⁸⁹ §6(1), *supra* note 82.

⁹⁰ §6(1), *supra* note 82.

⁹¹ §6(2), *supra* note 82.

At the same time, the SPCB has the power to “cancel or suspend” any registration to recycle or reprocess hazardous waste. The SPCB may do so “if it has reasons to believe that the recycler or re-processor has failed to comply with any of the conditions of the registration, or with any provision of the [EPA] or rules made thereunder.”⁹²

Power to issue directions. Under the EPA, an SPCB official has the power to “issue directions... to any person, officer or any authority,” who must comply with the directions. These directions may include the authority to order clean-up or corrective actions similar those authorized under RCRA, but this authority has yet to be exercised in India.⁹³ Some of the directions that an SPCB may issue include directing:

- An industry, operation or process be closed, prohibited or regulated.
- The supply of any service, including electricity or water, be stopped.⁹⁴

The AECEN has found that the SPCBs’ use of “emergency orders” to stop the supply of power or water to a facility “in violation of an effluent or emission standard has proved to be an effective deterrent.”⁹⁵ For example, the Maharashtra PCB was found to have “disconnected services for 858 [facilities] for violations of the Water Act, and 145 for violation of the Air Act” from 1997 to 2002. And, “West Bengal PCB disconnected the electricity for 373 facilities” from January 2005 to September 2006, though it “reconnected 257 [of them] over the same time period.”⁹⁶

⁹² §8(5), *supra* note 82.

⁹³ §5, *supra* note 82.

⁹⁴ §5(a-b), *supra* note 82.

⁹⁵ OECD, *supra* note 12 at 19.

⁹⁶ *Ibid.*

Enforcement Options under RCRA

There are three types of enforcement actions which may be implemented by USEPA or authorized state representatives, depending on the nature of the violation detected:

- **Administrative Actions**
 - Informal Action: USEPA or an authorized state notify regulated facility of a violation
 - Formal Actions: Facility ordered to implement corrective measures, come into compliance, conduct self-monitoring, or stop actions causing substantial endangerment
 - Administrative penalties up to \$37,500 per day, per violation may be assessed pursuant to established enforcement response policies
- **Civil Judicial Actions**
 - USEPA or authorized state may request that the Department of Justice or a state attorney general file a lawsuit in court when a statutory or regulatory requirement, or administrative order is violated
 - Used to correct repeated or serious violations
 - There are four main types of actions: (1) compliance actions; (2) corrective actions; (3) injunctions to conduct monitoring; and (4) injunctions to stop substantial endangerment
 - Courts may impose penalties up to \$37,500 per day, per violation and/or order actions to force compliance if a facility has violations or has previously failed to comply with an administrative order
- **Criminal Actions**
 - Authorized for seven activities (e.g. transporting waste without a manifest)
 - Must establish there has been a “knowing and willful” violation
 - Penalties of up to \$50,000 (2,964,500 rupees) per day and up to five years in jail⁹⁷

The AECEN also found that closure orders were “used fairly often in some states.” As an example, AECEN points out that “West Bengal PCB issued 74 closure orders” in March 2006. Few of these orders were, however, permanent.⁹⁸ It is important to keep in mind that SPCBs must follow a particular procedure before issuing a direction. This includes, among other things, giving a violator the opportunity to be heard. See Figure 3.2 for an overview of these procedures, and Box 3.2 for more details.

⁹⁷ RCRA Orientation Manual, *supra* note 15 at 154.

⁹⁸ OECD, *supra* note 11 at 10.

Box 3.2 - Procedure for Issuing Directions*

Requirements - a direction must:

- Be in writing
- Explain the actions a violator must take
- Provide a deadline for taking those actions

Process - the process for issuing a direction is as follows:

- A violator must be served with a copy of the proposed direction
- A violator has 15 days to file an objection
- Within 45 days of the earlier of (1) receiving an objection; or (2) the time to file an objection, SPCB may in writing confirm, modify, or decide not to issue the proposed direction
- Directions may be issued without an opportunity to object if, after recording its reasons in writing, an SPCB is of the opinion that there is likely to be grave injury to the environment

* Under the EPA, the power to issue directions is given to the Central Government but, in most cases, this power is delegated to the SPCBs. For simplicity, we refer to SPCBs when discussing issuing directions.

Power to impose penalties. Both the EPA and the Hazardous Wastes Rules give SPCBs the power to impose penalties. These are criminal penalties under the EPA: anyone who “fails to comply with...any provision of [the EPA], or the rules made or orders or directions issued thereunder” is subject to fines (up to one lakh rupees), imprisonment (up to five years), or both for each failure. Additional fines may be imposed (up to 5,000 rupees per day) if a failure continues after the first conviction.⁹⁹ If it continues for more than a year after the conviction, a violator is subject to imprisonment for a period of up to seven years.¹⁰⁰

The Hazardous Wastes Rules allow SPCBs to impose civil fines on occupiers and operators if they violate any provision of the Hazardous Wastes Rules. Before an SPCB may impose a fine, however, it must first get approval from the CPCB.

⁹⁹ Rule 15(1), *supra* note 82.

¹⁰⁰ Rule 15(2), *supra* note 82.

CHAPTER 4

Innovative Strategies to Address Enforcement Challenges

While SPCBs have been given several powers to enforce India’s hazardous waste laws, they are facing several challenges in carrying out these duties. In this section, we address some of the main challenges that SPCBs are facing – challenges that many regulatory agencies around the world, including the United States, have faced. After addressing each challenge, we provide some techniques and strategies that have been used in India and the United States in order to overcome the challenge and achieve increased compliance.

Addressing the Challenge of Insufficient Resources

Challenge

One of the major challenges facing SPCBs is a **lack of financial resources**.¹⁰¹ As explained in a study conducted by Secretariat of the Asian Environmental Compliance and Enforcement Network (AECEN), SPCBs receive funding from two main sources:¹⁰²

- **Government:** SPCBs receive grants from state government, as well as “very limited program-based allocations from the central budget.”¹⁰³
- **Collected fees and penalties:** SPCBs also receive funding through “revenues from the water cess..., administrative fees for consent processing and laboratory analysis services..., as well as funds forfeited through bank guarantee programs...”¹⁰⁴

The extent to which SPCBs rely on government funding varies from state-to-state, with some SPCBs relying heavily on government funding. Others are able to rely on fees and penalties that they collect.¹⁰⁵

Regardless of their source of funding, SPCBs are subject to several limitations from state governments: for example, self-sufficient SPCBs are subject to “spending restrictions imposed by the state governments.”¹⁰⁶ At the same time, state governments are the ones that collect revenues from the water cess and other statutory fees. They are then expected to turn the

¹⁰¹ OECD, *supra* note 12 at 15.

¹⁰² SPCB funding can be categorized into two broad categories: (1) “Own resources” such as “cess reimbursement, consent fees and interest on investments”; and (2) “External assistance” such as funds “from the government of India, the concerned state government and the CPCB...” Turnaround, *supra* note 86.

¹⁰³ OECD, *supra* note 12 at 15.

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

¹⁰⁶ *Ibid.*

monies over to the SPCBs, but – in practice – this does not happen in a timely manner. This makes it difficult for SPCBs to find sufficient funds for their day-to-day functioning.¹⁰⁷

This lack of financial resources has led to “[in]adequate infrastructure...[for SPCBs] to execute their responsibilities.”¹⁰⁸ This includes insufficient monitoring equipment and laboratories.¹⁰⁹ For example, a Parliamentary Committee Report found that “out of 332 monitoring stations, a number of them are not online and some of them are not functioning. Data is not being regularly updated and the data generated is not being properly analyzed.”¹¹⁰ This makes it difficult for SPCBs to properly carry out their enforcement activities.

SPCBs are also facing a **shortage of staff**. Many positions are vacant at the SPCBs: one study found that, at one SPCB, as many as 65% of the positions were vacant.¹¹¹ Added to the high vacancy rate, there is an insufficient number of technical staff, with “[t]he human resources structure in most SPCBs...heavily dominated by non-technical staff.”¹¹² The technical staff carry out the enforcement activities of an SPCB and, with the number of regulated industries on the rise, technical staff are “looking after an ever-increasing number of industries.”¹¹³ Indeed, one study found that, at one of the SPCBs, “one technical person was required to monitor 100 polluting installations.”¹¹⁴ At the same time, technical staff are “overloaded with administrative duties.”¹¹⁵ As one study noted:

A significant amount of human-days of the technical staff goes into paperwork that involves clearances and consents. In fact, according to most SPCBs, their technical staff spent maximum time and effort on consent management. Most SPCBs lack the resources to develop the necessary computerised systems to manage information flow and to track activities. As a result, much of their human-days are devoted to administrative activities instead of actions that may reduce pollution.¹¹⁶

This has resulted in “enforcement and/or research [becoming] a sub-priority” for SPCBs.¹¹⁷

¹⁰⁷ Rajesh, Rangarajan, *Lessons from a model of public participation in environmental enforcement in India – LOCAL AREA ENVIRONMENT COMMITTEES*. Centre for Development Finance. 2010. <http://cdf.ifmr.ac.in/wp-content/uploads/2011/08/Rajesh_LAEC_final1.pdf>.

¹⁰⁸ OECD, *supra* note 12 at 15.

¹⁰⁹ *Ibid.*

¹¹⁰ Department Related Parliamentary Standing Committee on Science & Technology, Environment and Forests. *197th Report on Functioning of the Central Pollution Control Board*. Sept. 2008

<<http://164.100.47.5:8080/newcommittee/reports/EnglishCommittees/Committee%20on%20and%20T,%20Env.%20and%20Forests/192%20Report%20CPCB.htm>>.

¹¹¹ Turnaround, *supra* note 86 at 14.

¹¹² OECD, *supra* note 12 at 14.

¹¹³ Turnaround, *supra* note 86 at 7.

¹¹⁴ OECD, *supra* note 12 at 14.

¹¹⁵ PRESTELS. *Successful Models of Implementation of Environmental Policies and Programmes in States*. Mumbai: PRESTELS, 2012 <http://planningcommission.nic.in/reports/serreport/ser/successful_models09072012.pdf> [PRESTELS].

¹¹⁶ Turnaround, *supra* note 86 at 16.

¹¹⁷ *Ibid.*

Strategies for Addressing Insufficient Resources

Some strategies that have been used in India and the United States to address the challenge of insufficient resources include:

- Preventing violations;
- Using a system of stepped enforcement;
- Increased reliance on technology;
- Collaboration with external agencies and institutions; and
- Shifting some of the economic burden of monitoring onto regulated parties.

We examine examples of each of these strategies below.

Prevention of Violations. A particularly important strategy for dealing with resource constraints is preventing violations before they occur. Not every violation will be detected or punished. An SPCB's goal instead should be to create an atmosphere of deterrence, or the understanding among regulated industries that compliance is in their interest. This means creating strong incentives for regulated parties to comply. The advantage of effective incentives for compliance is that the regulatory body will not have to expend as many resources in punishing violators.

For an enforcement program to be effective in preventing violations, it must reduce the perceived benefits of noncompliance. Some of these benefits include avoided costs, saved time, an advantage over competitors, and shifting risk to the public. Regulated parties should feel that it would be less costly for them to comply rather than risk being caught for a violation. A regulatory body can decrease the benefits of noncompliance through their enforcement program in several ways, including increasing detection rates through strategies like relying on the public or requiring self-monitoring reports (see below for additional details on self-monitoring). Furthermore, different types of penalties can also help a regulatory body more efficiently punish different types of violations. These can include financial tools like fines, but also non-financial tools like closure orders or permit denials.¹¹⁸

A regulatory body may increase penalty rates to decrease the perceived benefits of noncompliance, because regulated parties may find it cheaper to comply rather than risk paying a serious penalty. A clear process should be developed to evaluate the severity of a violation in order to assign an appropriate penalty. The U.S. Environmental Protection Agency (USEPA) uses a penalty matrix to calculate penalty amounts for violations of RCRA requirements. Penalty amounts are based on four characteristics of a violation: severity (both the extent that a violator has deviated from a requirement and the potential for harm), duration, economic benefit gained during noncompliance, and site-specific factors. A sample penalty calculation for a hypothetical violation is described in Box 4.1.¹¹⁹

¹¹⁸ Beyond Enforcement, *supra* note 78.

¹¹⁹ Adapted from EPA. Hazardous Waste Civil Enforcement Response Policy. Washington: EPA, 2003. <<http://www.epa.gov/compliance/resources/policies/civil/rcra/finalerp1203.pdf>> and International Network for

Box 4.1. Sample Penalty Matrix

Factors that are generally taken into account when determining the amount of a penalty include the economic benefit of noncompliance, severity of the violation, duration of the violation, and past history of violation by the regulated party.

Severity of the Violation

The **severity** of a violation depends on the extent to which the violation deviates from the law and the potential for harm.

	Extent of Deviation from the Law			
		Minor	Moderate	Major
Potential for Harm	Minor	\$110 to \$549	\$550 to \$1,649	\$12,100 to \$16,499
	Moderate	\$3,300 to \$5,499	\$5,500 to \$8,799	\$8,800 to \$12,099
	Major	\$12,100 to \$16,499	\$16,500 to \$21,999	\$22,000 to \$27,500

For example, for a violation that is considered a moderate deviation from the law and with a moderate potential for harm, a penalty of \$6,000 could be initially assessed.

Duration of Violation

Once a penalty amount based on the severity of the violation is chosen, it will then be adjusted by the **duration of the violation**. The penalty may be adjusted as follows:

$$\text{Penalty} = [\text{Amount from Severity Calculation}] \times [\%][\text{Number of Days of Violation}]$$

For example, for a violation which lasted 10 days under a SPCB that uses a factor of 20% to weigh this adjustment factor, a penalty of \$12,000 could be assessed (i.e. \$6,000 [Amount from Severity Calculation] x 0.2 [Factor Used]x10 [Days of Violation] = \$12,000).

History of Past Violations

Another factor that may be taken into account is the **history of past violations**, which may adjust the penalty as follows:

$$\text{Penalty} = ([\text{Amount from Duration Calculation}] \times [\text{Factor for Degree of Violations in Past}]) + [\text{Amount from Duration Calculation}]$$

For a violation committed by an industry that has a history of repeated violations, a SPCB could choose to increase the calculated penalty amount by 15% and assess a new amount of \$13,800 (i.e. \$12,000 [Amount from Duration Calculation] x 0.15 [Factor Chosen by SPCB] + \$12,000 [Amount from Duration Calculation] = \$13,800).

Eliminating the Economic Benefit from Non-Compliance

Finally, the regulatory body should add the value of any **costs avoided** (e.g. costs to comply) from noncompliance, as well as earnings from delayed expenditures (e.g. return on investment not spent appropriately) and profits from otherwise unauthorized sales or services. This is an important factor, as it eliminates the economic benefit of non-compliance.

Using Stepped Enforcement. A regulatory body can also prioritize their monitoring efforts based on the severity of different types of violations. One method to guide prioritization is the use of a stepped enforcement system. Stepped enforcement means incrementally increasing the severity of enforcement actions in hopes of resolving violations at the lowest level appropriate in order to conserve resources. It is important to note that the enforcement response may begin at any of these steps and does not have to progress through each action.

Box 4.2. Wisconsin Department of Natural Resources: Stepped Enforcement

The following stepped enforcement process is used by state-level regulators in Wisconsin. Staff start with the lowest level of enforcement, implementing increasingly more severe enforcement actions until compliance has been achieved.

- **Inspections:** staff conduct routine inspections at an industry.
- **Notices or Letters of Noncompliance:** a letter is sent to the industry that documents minor violations, and requests correction in accordance with a fixed timeline.
- **Notice of Violation (NOV):** a formal letter gives notice of alleged violations and further potential enforcement actions. The NOV also schedules an enforcement conference.
- **Enforcement Conference (EC):** a formal meeting between the Wisconsin Department of Natural Resources and the violator is held to discuss legal or technical aspects of the violation and surrounding circumstances, and to establish an agreement about compliance actions.
- **Compliance Orders:** the order is a legally enforceable document that establishes a schedule for achieving compliance.
- **Environmental Citation:** this option is used for first time, minor violations where a penalty is still necessary. Court orders for remedial action may also be used at this stage.
- **Referral:** a request for prosecution is submitted to the Wisconsin Department of Justice which describes the alleged violation, evidence, potential penalties, the need for injunctive relief, and potential remedial actions.

An example of a stepped enforcement system, which is used by the Wisconsin Department of Natural Resources, is outlined in Box 4.2.¹²⁰

Increased reliance on technology. One strategy that SPCBs have successfully used to overcome resource constraints is the use of information communication technology (ICT) and pollution control technology.¹²¹ ICT can automate the regulatory activities of an SPCB while also increasing transparency and objectivity.¹²² SPCBs which lack computerized systems to manage

¹²⁰ Morphey, Matt. Environmental Enforcement Handbook. Wisconsin Department of Natural Resources, Bureau of Law Enforcement. Madison: Wisconsin, 2013. Print.

¹²¹ PRESTELS, *supra* note 115 at 2.

¹²² *Ibid* at 16.

data and track enforcement activities often dedicated much of their staff time to administrative activities rather than pollution reducing actions.¹²³ The e-governance system in Gujarat provides a good example of how ICT can improve efficiency, increase revenues, and strengthen an enforcement program. This system is described in more detail in Box 4.3.

Box 4.3. E-Governance in Gujarat

Gujarat PCB (GPCB) has automated many of its enforcement duties through the use of Extended Green Node (XGN) software. This software is used by industries to submit documents online, including applications for grants of authorization and grants of renewal, annual reports, and monitoring data.

For GPCB, this has allowed data to be analyzed more regularly, and decisions about industrial compliance to be made with greater confidence and transparency. This has also allowed GPCB to process applications for grants of authorization more quickly, even though the number of industries in Gujarat has increased. In addition, GPCB may use the software to deliver show cause notices, closure directions, and revocation orders.

Industries have also benefited from the use of the software. They can receive communications from GPCB through SMS, e-talk functions, and e-message boxes and alerts, which allows for immediate replies to inquiries from GPCB. It is important to note, however, that industries may not access their information online without first paying their water cess. This has proved to be a strong incentive to pay. In fact, GPCB has seen its water cess revenues increase from 280 million rupees to 760 million rupees since it started using the software.¹²⁴

This software has also been adopted in Himachal Pradesh, Uttaranchal, Goa, Andhra Pradesh, and Madhya Pradesh.¹²⁵

Collaborating with external agencies and institutions. Another way SPCBs have overcome resource constraints is through collaborating with external agencies and institutions to provide technical expertise and supplement existing monitoring efforts.¹²⁶ These collaborations include the use of environmental audits and third-party monitoring systems.

One example of this type of collaboration is the environmental audit (EA) scheme in Gujarat. The EA scheme was originally put in place as a result of a ruling from the High Court of Gujarat in 1996, where the court expressed a concern that regulators lacked the staff and technical capacity to regularly monitor Gujarat's industries. The EA scheme is a modification of Rule (1A)

¹²³ Turnaround, *supra* note 86 at 8.

¹²⁴ Shah, Hardik. "Innovative Instruments for Environmental Regulation – Gujarat Experience." Gujarat Pollution Control Board.

¹²⁵ PRESTELS, *supra* note 115 at 20.

¹²⁶ *Ibid* at 11.

of the EPA Rule 86 and is intended to supplement GPCB's inspection system.¹²⁷ Under this scheme, industries in the most polluting sectors are required to retain an auditor. Auditors prepare environmental audit reports (EAR), which provide pollution measurements and provide recommendations on how industries can improve their practices.¹²⁸ GPCB may issue a direction for closure if a facility does not submit its EAR.

To promote transparency in the program, auditors are randomly assigned to each industry and paid from a central pool.¹²⁹ Auditors are recommended to the GPCB based on their qualifications and experience by a technical committee comprised of experts from the National Institute of Occupational Health (NIOH), CPCB, and other government and academic institutions. Auditor teams are required to have four members with specific engineering and scientific degrees. They ultimately become the link between individual industries, their associations, and the GPCB.¹³⁰ According to the GPCB, the EA scheme has helped the GPCB regularly monitor common facilities, ensure compliance more effectively, and has improved local environmental quality.

In addition, GPCB has implemented a third-party monitoring system to supplement its monitoring of some of the most polluted industrial areas in Gujarat. The scheme was first implemented in the Vapi industrial estate and later extended across Gujarat. It was designed in response to evidence that the estate's common effluent treatment plant (CETP) was not meeting environmental standards and that most industrial units were secretly discharging pollutants into the local environment.¹³¹

Under this system, third parties support the monitoring efforts of the GPCB. They inspect and sample industrial units, underground drainage systems, CETPs, and streams passing through industrial clusters. These third parties are generally engineering colleges or technical institutes that are considered highly credible and capable.¹³² They are identified and chosen by GPCB or government officials for each identified cluster of industries.

The use of third-party monitoring has been highly successful. The technical institutes have the capacity to create databases of industrial effluents in order to conduct rigorous statistical analysis to continuously evaluate performance. Third parties also function as facilitators rather than just regulators, which means they can provide additional observations to help facilities implement action plans and promote future compliance. They are brought in on a contractual basis, which means they can be dismissed by the GPCB if any problems are identified.

¹²⁷ Shah, Hardik. "Involvement of Third Party in Environmental Performance Monitoring – Gujarat Experience." 56th Conference of Chairmen & Member Secretaries of SPCBs/Committees. New Delhi. 31 Aug. 2010 [Shah, Hardik].

¹²⁸ PRESTELS, *supra* note 115 at 11.

¹²⁹ *Ibid.*

¹³⁰ Shah, Hardik, *supra* note 127.

¹³¹ *Ibid.*

¹³² PRESTELS, *supra* note 115 at 11.

Data gathered by third parties has helped identify habitual violators, which can shape enforcement actions. This system is especially beneficial as networks of experts can build trust and cooperation between industries and regulators.

Shifting the economic burden. One final technique that has been effective in dealing with resource constraints is partly shifting the burden of enforcement to the regulated community and to the public.¹³³ For the regulated community, this can be achieved by requiring industries to self-monitor, keep records, and self-report periodically. This will provide regulators with much more information on industry compliance than through inspections alone. Regulators will, however, need to ensure that the self-reported data is accurate, either by requiring self-monitoring only in facilities with adequate technical capability or developing standards for recordkeeping. These efforts are particularly important in the context of judicial proceedings in which certain standards must be met for data to be deemed legally admissible. It is important to note, however, that at least some SPCBs take the view that they cannot pursue legal action based on self-monitoring reports, but based only on samples taken by certified inspectors.¹³⁴ Even so, self-monitoring reports still play an important role if proper incentives are in place to reduce underreporting (see Box 4.4 for incentives provided under the USEPA’s Audit Policy).¹³⁵ SPCBs may also rely on the public to act as a watchdog for many industries by establishing dedicated phone lines for whistle blowers.¹³⁶

Box 4.4. USEPA’s Audit Policy

Under its Audit Policy, the USEPA provides incentives to industries to “voluntarily discover, promptly disclose and expeditiously correct violations of Federal environmental requirements.” These incentives include reduced fines, not recommending that the industry be criminally prosecuted, and refraining from regularly asking the industry for audit reports. To be eligible for these incentives, industries must meet a number of different conditions. For example, the violation must be disclosed within 21 days of being discovered, and it must be corrected within 60 days of being discovered. In addition, there are certain violations, such as repeat violations, that are not eligible.¹³⁷

¹³³ *Ibid* at 16-17.

¹³⁴ OECD, *supra* note 12 at 14.

¹³⁵ International Network for Environmental Compliance and Enforcement. Principles of Environmental Compliance and Enforcement Handbook. USEPA 300F09002. Washington: USEPA, 2009. <<http://inece.org/principles/>> [INECE].

¹³⁶ Turnaround, *supra* note 86 at 26.

¹³⁷ United States. Environmental Protection Agency. *EPA’s Audit Policy*. July 2013. August 2013. <<http://www.epa.gov/compliance/incentives/auditing/auditpolicy.html>>.

Addressing the Challenge of Lack of Standardized Protocols

The Challenge

Another challenge that SPCBs face in carrying out their enforcement activities is the lack of standardized inspection protocols. As noted in one study, “[t]here are no standard inspection and sampling procedures prescribed in the Water Act, Air Act or EPA, or their regulations...” In addition, “the CPCB and the SPCBs have not issued uniform guidelines.”¹³⁸

This has some important consequences for SPCBs: there are variations in how inspections are conducted, with the “quality of inspection depend[ing] on the interpretation of the officer conducting the inspection, as well as the time he/she has to conduct the inspection.”¹³⁹ This is similar for sampling procedures. One study concluded that “the sampling procedure [for hazardous waste]...is not well-defined and most inspecting officers do not know what to collect, how to collect and where to collect.”¹⁴⁰ Indeed, as another study noted, “the deficiency of the sampling procedure is quoted as one of the main reasons why courts often rule against the government.”¹⁴¹

Strategy for Addressing Challenge of Lack of Standardized Protocols

One of the ways to address this challenge is to create standardized procedures. For example, USEPA has provided standardized “analytical and sampling methods that have been evaluated and approved for use in complying with the RCRA regulations.”¹⁴² These methods can be used by both regulators and industry. At the same time, checklists for inspections and sampling can be created. Some of the checklists that have been used in the United States for inspections and sampling are included in Appendix E. These ensure that inspectors collect all of the necessary information, while also ensuring that industries are treated equally.¹⁴³

Addressing the Challenge of Lack of Legal Authority

The Challenge

At the same time, SPCBs have “no deterrent mechanisms such as fines or penalties that could be imposed on non-complying industries.”¹⁴⁴ As noted in Chapter 3, the Hazardous Wastes Rules do in fact allow SPCBs to impose civil fines on occupiers and operators if they violate

¹³⁸ OECD, *supra* note 12 at 17.

¹³⁹ Turnaround, *supra* note 86 at 19.

¹⁴⁰ *Ibid* at 20.

¹⁴¹ OECD, *supra* note 86 at 17.

¹⁴² United States. Environmental Protection Agency. *SW-846*. Sept. 2013. Sept. 2013. <<http://www.epa.gov/osw/hazard/testmethods/sw846/>>.

¹⁴³ INECE, *supra* note 135 at 45.

¹⁴⁴ Turnaround, *supra* note 86 at 22.

provisions of the Hazardous Wastes Rules. An SPCB must, however, get approval from the CPCB before it imposes the fine.¹⁴⁵ This approval process can be difficult and time consuming,¹⁴⁶ which may be the reason that one study found that few SPCBs use this provision.

This hesitancy in imposing civil fines “limits the effectiveness of [S]PCBs’ enforcement efforts and leads to over-reliance on the judiciary for [criminal] enforcement.”¹⁴⁷ While the judiciary may impose significant penalties on violators,¹⁴⁸ these cases are “difficult to prosecute, have a low conviction rate (although that varies greatly between the states), and consume precious government resources and time.”¹⁴⁹ This makes them an “ineffective enforcement mechanism.”¹⁵⁰

Strategies for Addressing Lack of Legal Authority

While it is difficult for SPCBs to impose civil penalties for violations of hazardous waste laws, there are other ways to encourage the regulated community to comply with these laws. One strategy that has already been used in India is the bank guarantee system.

Bank Guarantees

Several SPCBs have used bank guarantees to promote compliance with environmental laws. This tool is based on the SPCB’s power established in Rule 5(4) of the Hazardous Wastes Rules to impose conditions before granting or renewing an industry’s authorization to operate. In circumstances where an industry has failed to comply with a particular law or regulation, an SPCB will negotiate with the industry the corrective actions that the industry needs to take and the time it will take to complete those actions. SPCBs that have used a bank guarantee have made the renewal of the consent to operate conditional on the posting of the guarantee, which is generally about 10% of the estimated cost of compliance. If the industry does not take corrective actions within the negotiated timeframe, it forfeits the guarantee to the SPCB. This financial threat has proven to be a strong incentive for non-compliant industries to take corrective actions within the negotiated timeframe.¹⁵¹

¹⁴⁵ India. Ministry of Environment and Forests. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 Rule 25(2). Ministry of Environment and Forests Notification S.O. 2265(E). New Delhi: 24 Sept. 2008 <<http://www.cpcb.nic.in/divisionsofheadoffice/hwmd/mhtrules2008.pdf>>.

¹⁴⁶ Subin Subin (NLSIU) Personal Interview. 28 Feb. and 1 Mar. 2013. Andhra Pradesh Pollution Control Board Officials. Hyderabad, India.

¹⁴⁷ OECD, *supra* note 12 at 14.

¹⁴⁸ Violators are subject to fines (up to one lakh rupees), imprisonment (up to five years), or both: See Rule 15(1) *supra* note 82 and *supra* note 86.

¹⁴⁹ OECD, *supra* note 12 at 13.

¹⁵⁰ *Ibid* at 14.

¹⁵¹ Turnaround, *supra* note 86 at 22.

Appendix A

Health Effects for Certain Hazardous Wastes¹

Substance	Potential Health Effects
Arsenic	Carcinogenic to humans (skin, lung, bladder, liver) – stomach and intestinal irritation, nausea, vomiting – decreased production of red and white blood cells – damage to blood vessels – skin changes – abnormal heart rhythm
Benzene	Carcinogenic to humans (leukemia) – harmful to bone marrow, decreased red blood cells, anemia – vomiting, stomach irritation – drowsiness dizziness, rapid heart rate, headaches, tremors, convulsions, unconsciousness
Cadmium	Likely to be carcinogenic to humans – kidney, bone, and lung damage – stomach irritation, vomiting, diarrhea – birth defects in some animal studies
Chloroform	Likely to be carcinogenic to humans – liver and kidney
Lead	Likely to be carcinogenic to humans – damage to the brain and nervous system (adults, children, unborn children) – miscarriage, premature births, neonatal mortality due to decreased birth weight, decreased male fertility – diminished learning abilities in children – increased blood pressure – kidney damage
Mercury	Brain, kidney, and lung damage – serious harm to neural development of fetuses and young children – chest pains, nausea, vomiting, diarrhea – skin rashes and eye irritation – increased blood pressure and heart rate – irritability, sleep disturbances, tremors, coordination problems, changes in vision and hearing, memory problems
Perchlorate	Inhibition of iodine uptake – hypothyroidism, which may adversely affect the skin, heart, lungs, kidneys, gastrointestinal tract, liver, blood, neuromuscular system, nervous system, skeleton, reproductive system, and numerous endocrine organs
Polychlorinated Biphenyls	Likely to be carcinogenic to humans – liver damage – skin rashes and acne – decreased birth weight – short-term behavioral and immune system impacts in children exposed via breast milk
Polycyclic Aromatic Hydrocarbons	Likely to be carcinogenic to humans – irritation of skin, lungs, and stomach – reproductive and birth defects in animal studies
Tetrachloroethylene	Likely to be carcinogenic to humans – dizziness, headaches, sleepiness, confusion, nausea, difficulty speaking and walking, unconsciousness
Trichloroethylene	Carcinogenic to humans – liver, kidney, and nervous system damage – impaired immune system and heart function – impaired fetal development – skin rashes, lung irritation, headaches, dizziness, nausea, unconsciousness

¹ Reproduced from: United States Environmental Protection Agency. RCRA Corrective Action: Case Studies Report. Washington, 2013 <<http://epa.gov/epawaste/hazard/correctiveaction/pdfs/rcracorrective.pdf>>.

Appendix B

In this appendix are Schedules I-VII of the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules reproduced from:

India. Ministry of Environment and Forests. The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, Schedules I-VII. Ministry of Environment and Forests Notification S.O. 2265(E). New Delhi: 24 Sept. 2008
<http://www.cpcb.nic.in/Hazardous_waste.php>.

Schedule I
[See rules 3 (1)]

List of processes generating hazardous wastes

S.No.	Processes	Hazardous Waste *
1.	Petrochemical processes and pyrolytic operations	1.1 Furnace/reactor residue and debris 1.2 Tarry residues 1.3 Oily sludge emulsion 1.4 Organic residues 1.5 Residues from alkali wash of fuels 1.6 Still bottoms from distillation process 1.7 Spent catalyst and molecular sieves 1.8 Slop oil from wastewater
2.	Drilling operation for oil and gas production	2.1 Drill cuttings containing oil 2.2 Sludge containing oil 2.3 Drilling mud and other drilling wastes
3.	Cleaning, emptying and maintenance of petroleum oil storage tanks including ships	3.1 Oil-containing cargo residue, washing water and sludge 3.2 Chemical-containing cargo residue and sludge 3.3 Sludge and filters contaminated with oil 3.4 <u>Ballast water containing oil from ships.</u>
4.	Petroleum refining/re-processing of used oil/recycling of waste oil	4.1 Oily sludge/emulsion 4.2 Spent catalyst 4.3 Slop oil 4.4 Organic residues from process 4.5 Spent clay containing oil
5.	Industrial operations using mineral/synthetic oil as lubricant in hydraulic systems or other applications	5.1 Used/spent oil 5.2 Wastes/residues containing oil
6.	Secondary production and/or industrial use of zinc	6.1 Sludge and filter press cake arising out of production of Zinc Sulphate and other Zinc Compounds. 6.2 Zinc fines/dust/ash/skimmings (dispersible form) 6.3 Other residues from processing of zinc ash/skimmings 6.4 <u>Flue gas dust and other particulates</u>
7.	Primary production of zinc/lead/copper and other non-ferrous metals except aluminium	7.1 Flue gas dust from roasting 7.2 Process residues 7.3 Arsenic-bearing sludge 7.4 Non ferrous metal bearing sludge and residue. 7.5 Sludge from scrubbers

8.	Secondary production of copper	8.1 Spent electrolytic solutions 8.2 Sludges and filter cakes 8.3 Flue gas dust and other particulates
9.	Secondary production of lead	9.1 Lead bearing residues 9.2 Lead ash/particulate from flue gas
10.	Production and/or industrial use of cadmium and arsenic and their compounds	10.1 Residues containing cadmium and arsenic
11.	Production of primary and secondary aluminium	11.1. Sludges from off-gas treatment 11.2. Cathode residues including pot lining wastes 11.3. Tar containing wastes 11.4. Flue gas dust and other particulates 11.5. Wastes from treatment of salt slags and black drosses
12.	Metal surface treatment, such as etching, staining, polishing, galvanising, cleaning, degreasing, plating, etc.	12.1 Acid residues 12.2 Alkali residues 12.3 Spent bath/sludge containing sulphide, cyanide and toxic metals 12.4 Sludge from bath containing organic solvents 12.5 Phosphate sludge 12.6 Sludge From staining bath 12.7 Copper etching residues 12.8 Plating metal sludge
	Production of iron and steel including other ferrous alloys (electric furnaces; steel rolling and finishing mills; Coke oven and by product plant)	13.1 Sludge from acid recovery unit 13.2 Benzol acid sludge 13.3 Decanter tank tar sludge 13.4 Tar storage tank residue
14.	Hardening of steel	14.1 Cyanide-, nitrate-, or nitrite-containing sludge 14.2 Spent hardening salt
15.	Production of asbestos or asbestos-containing materials	15.1 Asbestos-containing residues 15.2 Discarded asbestos 15.3 Dust/particulates from exhaust gas treatment.
16.	Production of caustic soda and chlorine	16.1 Mercury bearing sludge 16.2 Residue/sludges and filter cakes 16.3 Brine sludge containing mercury

17.	Production of mineral acids	17.1 Residues, dusts or filter cakes 17.2 Spent catalyst
18.	Production of nitrogenous and complex fertilizers	18.1 Spent catalyst 18.2 Spent carbon 18.3 Sludge/residue containing arsenic 18.4 Chromium sludge from water cooling tower
19.	Production of phenol	19.1 Residue/sludge containing phenol
20.	Production and/or industrial use of solvents	20.1 Contaminated aromatic, aliphatic or naphthenic solvents may or may not be fit for reuse. 20.2 Spent solvents 20.3 Distillation residues
21.	Production and/or industrial use of paints, pigments, lacquers, varnishes, plastics and inks	21.1 Process wastes, residues & sludges 21.2 Fillers residues
22.	Production of plastic raw materials	22.1 Residues of additives used in plastics manufacture like dyestuffs, stabilizers, flame retardants, etc. 22.2 Residues and waste of plasticisers 22.3 Residues from vinylchloride monomer production 22.4 Residues from acrylonitrile production 22.5 Non-polymerised residues
23.	Production and/or industrial use of glues, cements, adhesive and resins	23.1 Wastes/residues (not made with vegetable or animal materials)
24.	Production of canvas and textiles	24.1 Chemical residues
25.	Industrial production and formulation of wood preservatives	25.1 Chemical residues 25.2 Residues from wood alkali bath
26.	Production or industrial use of synthetic dyes, dye-intermediates and pigments	26.1 Process waste sludge/residues containing acid or other toxic metals or organic complexes 26.2 Dust from air filtration system

27.	Production of organo-silicone compounds	27.1 process residues
28.	Production/formulation of drugs/ pharmaceuticals & health care product	28.1. Process Residues and wastes 28.2 Spent catalyst / spent carbon 28.3 Off specification products 28.4 Date-expired, discarded and off-specification drugs/ medicines 28.5. Spent organic solvents
29.	Production, and formulation of pesticides including stock-piles	29.1 Process wastes/residues 29.2 Chemical sludge containing residue pesticides 29.3 Date-expired and off-specification pesticides
30.	Leather tanneries	30.1 Chromium bearing residues and sludges
31.	Electronic Industry	31.1 Process residues and wastes 31.2 Spent etching chemicals and solvents
32.	Pulp & Paper Industry	32.1 Spent chemicals 32.2 Corrosive wastes arising from use of strong acid and bases 32.3 Process sludge containing adsorbable organic halides [AOx]
33.	Disposal of barrels / containers used for handling of hazardous wastes / chemicals	33.1 Chemical-containing residue arising from decontamination. 33.2 Sludge from treatment of waste water arising out of cleaning / disposal of barrels / containers 33.3 Discarded containers / barrels / liners contaminated with hazardous wastes/chemicals
34.	Purification and treatment of exhaust air, water & waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	34.1 Flue gas cleaning residue 34.2 Spent ion exchange resin containing toxic metals 34.3 Chemical sludge from waste water treatment 34.4 Oil and grease skimming residues 34.5 Chromium sludge from cooling water

35.	Purification process for organic compounds/solvents	35.1 Filters and filter material which have organic liquids in them, e.g. mineral oil, synthetic oil and organic chlorine compounds 35.2 Spent catalyst 35.3 Spent carbon
36.	Hazardous waste treatment processes, e.g. incineration, distillation, separation and concentration techniques	36.1 Sludge from wet scrubbers 36.2 Ash from incineration of hazardous waste, flue gas cleaning residues 36.3 Spent acid from batteries 36.4 Distillation residues from contaminated organic solvents

*** The inclusion of wastes contained in this Schedule does not preclude the use of Schedule 2 to demonstrate that the waste is not hazardous. In case of dispute, the matter would be referred to the Technical Review Committee constituted by MoEF.**

Note: The high volume low effect wastes such as fly ash, phosphogypsum, red mud, slags from pyrometallurgical operations, mine tailings and ore beneficiation rejects are excluded from the category of hazardous wastes. Separate guidelines on the management of these wastes shall be issued by CPCB.

Schedule II
[See rule 3(1)]

List of Waste Constituents with Concentration Limits*

Class A

Concentration limit: □ 50 mg/kg

- A1 Antimony and antimony compounds
- A2 Arsenic and arsenic compounds
- A3 Beryllium and beryllium compounds
- A4 Cadmium and cadmium compounds
- A5 Chromium (VI) compounds
- A6 Mercury and mercury compounds
- A7 Selenium and selenium compounds
- A8 Tellurium and tellurium compounds
- A9 Thallium and thallium compounds
- A10 Inorganic cyanide compounds
- A11 Metal carbonyls
- A12 Napthalene
- A13 Anthracene
- A14 Phenanthrene
- A15 Chrysene, benzo (a) anthracene, fluoranthene, benzo (a) pyrene, benzo (K) fluoranthene, indeno (1, 2, 3-cd) pyrene and benzo (ghi) perylene
- A16 halogenated compounds of aromatic rings, e.g. polychlorinated biphenyls, polychloroterphenyls and their derivatives
- A17 Halogenated aromatic compounds
- A18 Benzene
- A19 Organo-chlorine pesticides
- A20 Organo-tin Compounds

Class B

Concentration limit: □ 5, 000 mg/kg

- B1 Chromium (III) compounds
- B2 Cobalt compounds
- B3 Copper compounds
- B4 Lead and lead compounds
- B5 Molybdenum compounds
- B6 Nickel compounds
- B7 Inorganic Tin compounds
- B8 Vanadium compounds
- B9 Tungsten compounds
- B10 Silver compounds
- B11 Halogenated aliphatic compounds
- B12 Organo phosphorus compounds

- B13 Organic peroxides
- B14 Organic nitro-and nitroso-compounds
- B15 Organic azo-and azoxy compounds
- B16 Nitriles
- B17 Amines
- B18 (Iso-and thio-) cyanates
- B19 Phenol and phenolic compounds
- B20 Mercaptans
- B21 Asbestos
- B22 Halogen-silanes
- B23 Hydrazine (s)
- B24 Flourine
- B25 Chlorine
- B26 Bromine
- B27 White and red phosphorus
- B28 Ferro-silicate and alloys
- B29 Manganese-silicate
- B30 Halogen-containing compounds which produce acidic vapours on contact with humid air or water, e.g. silicon tetrachloride, aluminium chloride, titanium tetrachloride

Class C

Concentration limit; □ 20, 000 mg/kg

- C1 Ammonia and ammonium compounds
- C2 Inorganic peroxides
- C3 Barium compounds except barium sulphate
- C4 Fluorine compounds
- C5 Phosphate compounds except phosphates of aluminium, calcium and iron
- C6 Bromates, (hypo-bromites)
- C7 Chlorates, (hypo-chlorites)
- C8 Aromatic compounds other than those listed under A12 to A18
- C9 Organic silicone compounds
- C10 Organic sulphur compounds
- C11 Iodates
- C12 Nitrates, nitrites
- C13 Sulphides
- C14 Zinc compounds
- C15 Salts of per-acids
- C16 Acid amides
- C17 Acid anhydrides

Class D

Concentration limit: □ 50, 000 mg/kg

- D1 Total Sulphur

- D2 Inorganic acids
- D3 Metal hydrogen sulphates
- D4 Oxides and hydroxides except those of hydrogen, carbon, silicon, iron, aluminum, titanium, manganese, magnesium, calcium
- D5 Total hydrocarbons other than those listed under A12 to A18
- D6 Organic oxygen compounds
- D7 Organic nitrogen compounds expressed as nitrogen
- D8 Nitrides
- D9 Hydrides

Class E

Regardless of concentration limit, Classified as hazardous wastes if the waste exhibits any of the following Characteristics.

- E1 Flammable
Flammable wastes with flash point 65.6^oc or below.
- E2 Explosive
Wastes which may explode under the effect of flame, heat or photochemical conditions. Any other waste of explosive materials included in the Indian Explosive Act.
- E3 Corrosive
Wastes which may be corrosive, by chemical action, will cause severe damage when in contact with living tissue.
- E4 Toxic
Wastes containing or contaminated with established toxic and or eco- toxic constituents.
- E5 Carcinogenicity, Mutagenicity and Endocrine disruptivity
Wastes contaminated or containing established carcinogens, mutagens and endocrine disruptors.

*Waste constituents and their concentration limits given in this list are based on erstwhile BAGA (the Netherlands Environment Protection Agency) List of Hazardous Substances. In order to decide whether specific **wastes** listed above is hazardous or not, following points be taken into consideration:

- (i) If a component of the waste appears in one of the five risk classes listed above (A,B,C,D or E) and the concentration of the component is equal to or more than the limit for the relevant risks class, the material is then classified as hazardous waste.
- (ii) If a chemical compound containing a hazardous constituent is present in the waste, the concentration limit does not apply to the compound, but only to the hazardous constituent itself.
- (iii) If multiple hazardous constituents from the same class are present in the waste, the concentrations are added together.
- (iv) If multiple hazardous constituents from different classes are present in the waste, the lowest concentration limit corresponding to the constituent(s) applies.
- (v) For determining the concentration of the hazardous constituents in the waste "Toxicity Characteristics Leaching Procedure (TCLP) as per ASTM-D5233-92 should be adopted.

Schedule III

[See rules 3(1),14(1),14(2) (i) ,(iii) and 15(1)]

PART A**Part A: List of Hazardous Wastes Applicable for Import with Prior Informed Consent [Annexure VIII of the Basel Convention*]**

Basel No.	Description of Hazardous Wastes
AI	Metal and Metal bearing wastes
A1010	Metal wastes and waste consisting of alloys of any of the following
	- Antimony
	- Cadmium
	- Tellurium
	- Lead
A1020	Waste having as constituents or contaminants, excluding metal wastes in massive form as listed in B1020, any of the following:
	- Cadmium, cadmium compounds.
	- Antimony, antimony compounds.
	- Tellurium, tellurium compounds.
	- Lead, lead compounds.
A1040	Wastes having metal carbonyls as constituents
A1050	Galvanic sludges
A1060	Wastes Liquors from the pickling of metals.
A1070	Leaching residues from zinc processing, dusts and sludges such as jarosite, hematite etc.,
A1080	Waste Zinc residues not included on list B containing lead and cadmium in concentrations sufficient to exhibit hazard characteristics indicated in Part C of Schedule - 3
A1090	Ashes from the incineration of insulated copper wire
A1100	Dusts and residues from gas cleaning systems of copper smelters.
A1110	Spent electrolytic solutions from copper electrorefining and electrowinning operations
A1120	Waste sludges, excluding anode slimes, from electrolytic purification systems in copper electrorefining and electrowinning operations.
A1130	Spent etching solutions containing dissolved copper.
A1150	Precious metal ash from incineration of printed circuit boards not included in list' B'
A1160	Waste Lead acid batteries whole or crushed.
A1170	Unsorted waste batteries excluding mixtures of List B batteries.
A1180	Waste Electrical and electronic assemblies or scrap containing, components such

	as accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule (refer B1110)
A2	Wastes containing principally inorganic constituents, which may contain metals and organic materials
A2010	Activated Glass cullets from cathode ray tubes and other activated glasses
A2030	Waste catalysts but excluding such wastes specified on List B of Schedule 3
A3	Wastes containing principally organic constituents which may contain metals and inorganic materials
A3010	Waste from the production or processing of petroleum coke and bitumen
A3020	Waste mineral oils unfit for their originally intended use
A3050	Wastes from production, formulation and use of resins, latex, plasticisers, glues/adhesives excluding such wastes specified in List B (B4020)
A3070	Waste phenol, phenol compounds including chlorophenol in the form of liquids or sludges
A3080	Waste ethers not including those specified in List B
A3120	Fluff: light fraction from shredding
A3130	Waste organic phosphorus compounds
A3140	Waste non-halogenated organic solvents but excluding such wastes specified on List B
A3160	Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
A3170	Waste arising from the production of aliphatic halogenated hydrocarbons (such as chloromethanes, dichloroethane, vinylchloride, vinylidene chloride, allyl chloride and epichlorhydrin)
A4	Wastes which may contain either inorganic or organic constituents
A4010	Wastes from the production and preparation and use of pharmaceutical products but excluding such wastes specified on List B
A4040	Wastes from the manufacture formulation and use of wood preserving chemicals
A4070	Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding those specified in List B (B4010)
A4080	Wastes of an explosive nature excluding such wastes specified on List B
A4090	Waste acidic or basic solutions excluding those specified in List B (B2120)
A4100	Wastes from industrial pollution control devices for cleaning of industrial off-gases excluding such wastes specified on List B
A4120	Wastes that contain, consist of or are contaminated with peroxides.
A4130	Waste packages and containers containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein.
A4140	Waste consisting of or containing off specification or out-dated chemicals containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein.

A4150	Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on human health and/or the environment are not known
A4160	Spent activated carbon not included on List B (B2060)

*This List is based on Annex.VIII of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes characterized as hazardous under Article 1, paragraph 1(a) of the Convention. Inclusion of wastes on this list does not preclude the use of hazard characteristics given in Annex.VIII of **the** Basel Convention (Part C of this Schedule) to demonstrate that the wastes are not hazardous. **Certain waste categories listed in the Schedule - 3 (Part-A) have been prohibited for import. Hazardous wastes in the Schedule – 3 (Part –A) are restricted and cannot be allowed to be imported without permission from Ministry of Environment & Forests and DGFT license.**

PART B

**List of Hazardous Wastes applicable for Import and Export
not Requiring Prior Informed Consent**

[Annex IX of the Basel Convention*]

Basel No.	Description of Wastes
B1	Metal and metal-bearing wastes
B1010	Metal and metal-alloy wastes in metallic, non-dispersible form:
	- Precious metals (gold, silver, platinum)**
	- Iron and steel scrap**
	- Nickel scrap**
	- Aluminum scrap**
	- Zinc scrap**
	- Tin scrap**
	- Tungsten scrap**
	- Molybdenum scrap**
	- Tantalum scrap**
	- Cobalt scrap**
	- Bismuth scrap**
	- Titanium scrap**
	- Zirconium scrap**
	- Manganese scrap **
	- Germanium scrap**
	- Vanadium scrap **
	- Hafnium scrap**
	- Indium scrap**
	- Niobium scrap**
	- Rhenium scrap**
	- Gallium scrap**
	- Magnesium scrap**
	- Copper scrap**
	- Thorium scrap
	- Rare earths scrap
	- Chromium scrap**
B1020	Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plates, beams, rods, etc.) , of:
	- Antimony scrap****
	- Cadmium scrap
	- Lead scrap (excluding lead acid batteries)
	- Tellurium scrap****
B1030	Refractory metals containing residues****

B1031	Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal and metal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in list A under entry A1050, Galvanic sludges****
B1040	Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous**
B1050	Mixed non-ferrous metal, heavy fraction scrap, not containing any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein**
B1060	Waste selenium and tellurium in metallic elemental form including powder****
B1070	Waste of copper and copper alloys in dispersible form, unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein***
B1080	Zinc ash and residues including zinc alloys residues in dispersible form unless they contain any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein***
B1090	Waste batteries conforming to a standard battery specification, excluding those made with lead, cadmium or mercury.****
B1100	Metal bearing wastes arising from melting, smelting and refining of metals:
	- Hard Zinc Spelter**
	- Zinc-containing drosses: ** ~ Galvanizing slab zinc top dross (>90% Zn) ~ Galvanizing slab zinc bottom dross (>92% Zn) ~ Zinc die casting dross (>85% Zn) ~ Hot dip galvanizers slab zinc dross (batch) (>92% Zn) ~ Zinc skimmings (>90%Zn)
	-Slags from copper processing for further processing or refining containing arsenic, lead or cadmium***
	- Slags from precious metals processing for further refining**
	- Wastes of refractory linings, including crucibles, originating from copper smelting
	- Aluminum skimmings (or skims) excluding salt slag**
	-Tantalum-bearing tin slags with less than 0.5% tin****
B1110	Electrical and electronic assemblies
	- Electronic assemblies consisting only of metals or alloys****

	- Waste electrical and electronic assemblies scrap (including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with constituents such as cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein ****
	- Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse and not for recycling or final disposal.
B1120	Spent catalysts excluding liquids used as catalysts, containing any of: Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) on list A: Scandium Titanium Vanadium Chromium Manganese Iron Cobalt Nickel Copper Zinc Yttrium Zirconium Niobium Molybdenum Hafnium Tantalum Tungsten Rhenium Lanthanides (rare earth metals): Lanthanum Cerium Praseodymium Neodymium Samarium Europium Gadolinium Terbium Dysprosium Holmium Erbium Thulium Ytterbium Lutetium
B1130	Cleaned spent precious metal bearing catalysts
B1140	Precious metal bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold , silver, the platinum group) in a dispersible form
B1160	Precious-metal ash from the incineration of printed circuit boards (note the related entry on list A A1150)
B1170	Precious metal ash from the incineration of photographic film

B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slag as a source of Titanium dioxide and Vanadium
B1220	Slag from zinc production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications mainly for construction
B1230	Mill scaling arising from manufacture of iron and steel**
B1240	Copper Oxide mill-scale***
B2	Wastes containing principally inorganic constituents, which may contain metals and organic materials
B2010	Wastes from mining operations in non-dispersible form:
	- Natural graphite waste
	- Slate wastes
	- Mica wastes
	- Leucite, nepheline and nepheline syenite waste
	- Feldspar waste
	- Fluorspar waste
	- Silica wastes in solid form excluding those used in foundry operations
B2020	Glass wastes in non-dispersible form:
	- Glass Culletts and other wastes and scrap of glass except activated glass culletts from cathode ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form:
	Cermet wastes and scrap (metal ceramic composites)
	- Ceramic based fibres
B2040	Other wastes containing principally inorganic constituents:
	- Partially refined calcium sulphate produced from flue gas desulphurisation (FGD)
	- Waste gypsum wallboard or plasterboard arising from the demolition of buildings
	- Sulphur in solid form

	<ul style="list-style-type: none"> - Limestone from production of calcium cyanamide (pH<9) - Sodium, potassium, calcium chlorides - Carborundum (silicon carbide) - Broken concrete - Lithium tantalum & Lillium-niobium containing glass scraps
B2060	Spent activated carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry on list A A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes unless it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein
B2090	Waste anode butts from steel or aluminium production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolyses and from other metallurgical industry)
B2100	Waste hydrates of aluminum and waste alumina and residues from alumina production, arising from gas cleaning, flocculation or filtration process
B2110	Bauxite residue ("red mud") (pH moderated to less than 11.5)
B2120	Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry on list A A4090)
B3	Wastes containing principally organic constituents, which may contain metals and inorganic materials
B3010	<p>Solid plastic waste</p> <p>The following plastic or mixed plastic waste, provided they are not mixed with other wastes and are prepared to a specification:</p> <ul style="list-style-type: none"> - Scrap plastic of non-halogenated polymers and copolymers, including but not limited to the following:
	Ethylene
	Styrene
	Polypropylene
	polyethylene terephthalate
	Acrylonitrile
	Butadiene
	Polyacetals
	Polyamides
	polybutylene tere-phthalate
	Polycarbonates

	Polyethers
	polyphenylene sulphides
	acrylic polymers
	alkanes C10-C13 (plasticiser)
	polyurethane (not containing CFC's)
	Polysiloxanes
	polymethyl methacrylate
	polyvinyl alcohol
	polyvinyl butyral
	Polyvinyl acetate
	- Cured waste resins or condensation products including the following:
	urea formaldehyde resins
	phenol formaldehyde resins
	melamine formaldehyde resins
	epoxy resins
	alkyd resins
	Polyamides
	- The following fluorinated polymer wastes (excluding post-consumer wastes):
	Perfluoroethylene/ propylene
	Perfluoroalkoxy alkane
	Metafluoroalkoxy alkane
	polyvinylfluoride
	polyvinylidene fluoride
B3020	Paper, paperboard and paper product wastes**** The following materials, provided they are not mixed with hazardous wastes: Waste and scrap of paper or paperboard of: <ul style="list-style-type: none"> • unbleached paper or paperboard or of corrugated paper or paperboard • other paper or paperboard, made mainly of bleached chemical pulp, not coloured in the mass • paper or paperboard made mainly of mechanical pulp (for example, newspapers, journals and similar printed matter) • other, including but not limited to 1) laminated paperboard 2) unsorted scrap.
B3130	Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
B3140	Waste pneumatic tyres, excluding those which do not lead to resource recovery, recycling, reclamation or direct reuse
B4	Wastes which may contain either inorganic or organic constituents
B4010	Wastes consisting mainly of water-based/latex paints, inks and hardened

	varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry on list A A4070)
B4020	Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives, not listed on list A, free of solvents and other contaminants to an extent that they do not exhibit Part C of Schedule 3 characteristics
B4030	Used single-use cameras, with batteries not included on list A

* This List is based on Annex. IX of the Basel Convention on Transboundary Movement of Hazardous Wastes and comprises of wastes not characterized as hazardous under Article – I of the Basel Convention.

** Import permitted in the country without any license or restriction.

*** Import permitted in the country for recycling/reprocessing by units registered with MoEF/CPCB and having DGFT license .

**** Import permitted in the country by the actual users with MoEF permission and DGFT license.

All other wastes listed in this Schedule -3 (Par – B) having no ‘ Star/s’(*...) can only be imported in to the country with the permission of MoEF.

Note:

- (1) Copper dross containing copper greater than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively; spent cleaned metal catalyst containing copper; and Copper reverts, cake and residues containing lead and cadmium equal to or less than 1.25% and 0.1% respectively are allowed for import without DGFT licence to units (actual users) registered with MoEF upto an annual quantity limit indicated in the Registration letter. Copper reverts, cake and residues containing lead and cadmium greater than 1.25% and 0.1% respectively are under restricted category for which import is permitted only against DGFT licence for the purpose of processing or reuse by units registered with MoEF (actual users).
- (2) Zinc ash/skimmings in dispersible form containing zinc more than 65% and lead and cadmium equal to or less than 1.25% and 0.1% respectively and spent cleaned metal catalyst containing zinc are allowed for import without DGFT licence to units registered with MoEF (actual users) upto an annual quantity limit indicated in Registration Letter. Zinc ash and skimmings containing less than 65% zinc and lead and cadmium equal to or more than 1.25% and 0.1% respectively and hard zinc spelter and brass dross containing lead greater than 1.25% are under restricted category for which import is permitted against DGFT licence and only for purpose of processing or reuse by units registered with MoEF (actual users).

PART C
List of Hazardous Characteristics

<u>Code</u>	<u>Characteristic</u>
H 1	Explosive An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such speed as to cause damage to the surroundings (UN Class 1; HI)
H 3	Flammable Liquids The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc. but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.5°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).
H 4.1	Flammable Solids Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
H 4.2.	Substances or wastes liable to spontaneous combustion Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
H 4.3	Substances or wastes which, in contact with water emit flammable gases Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

H 5.1 Oxidizing

Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

H 5.2 Organic Peroxides

Organic substances or wastes which contain the bivalent-O-O- structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

H 6.1 Poisons (Acute)

Substances or wastes liable either to cause death or serious injury or to harm health if swallowed or inhaled or by skin contact.

H 6.2 Infectious substances

Substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans.

H 8 Corrosives

Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

H 10 Liberation of toxic gases in contact with air or water

Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

H 11 Toxic (Delayed or chronic)

Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity).

H 12 Ecotoxic

Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.

H 13

Capable by any means, after disposal, of yielding another material, e.g., Leachate, which possesses any of the characteristics listed above.

Schedule IV
[(See rules), 8 (1) and 9]

List of Hazardous Wastes requiring Registration for Recycling/Reprocessing

Sl. No.	Wastes
1	Brass Dross
2	Copper Dross
3	Copper Oxide mill scale
4	Copper reverts, cake and residue
5	Waste Copper and copper alloys in dispersible form.
6	Slags from copper processing for further processing or refining
7	Insulated Copper Wire Scrap/copper with PVC sheathing including ISRI-code material namely "Druid"
8	Jelly filled copper cables
9	Spent cleared metal catalyst containing copper
10	Spent catalyst containing nickel, cadmium, zinc, copper, arsenic, vanadium
11	Zinc Dross-Hot dip Galvanizers SLAB
12	Zinc Dross-Bottom Dross
13	Zinc ash/skimmings arising from galvanizing and die casting operations
14	Zinc ash/skimming/other zinc bearing wastes arising from smelting and refining
15	Zinc ash and residues including zinc alloy residues in dispersible form
16	Spent cleared metal catalyst containing zinc
17	Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [*Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRI, Code word "Rains".
18	Components of waste electrical and electronic assemblies comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.
19	Paint and ink Sludge/residues
20	Used Oil and Waste Oil - As per specifications prescribed from time to time .

Schedule V
[See rule 3 (ze) and (zf)]
PART A

Specifications of used oil suitable for reprocessing / recycling

<u>S. No.</u>	<u>Parameter</u>	<u>Maximum permissible Limits</u>
<u>(1)</u>	<u>(2)</u>	<u>(3)</u>
1.	<u>Polychlorinated biphenyls (PCBs)</u>	<u><2 ppm *</u>
2.	<u>Lead</u>	<u>100 ppm</u>
3.	<u>Arsenic</u>	<u>5 ppm</u>
4.	<u>Cadmium+Chromium+Nickel</u>	<u>500 ppm</u>
5	<u>Polyaromatic hydrocarbons (PAH)</u>	<u>6%</u>

PART B

Specifications of fuel derived from Waste Oil

S. No.	Parameter	Maximum permissible Limits
(1)	(2)	(3)
1.	Sediment	0.25 %
2.	Lead	100 ppm
3.	Arsenic	5 ppm
4.	Cadmium+Chromium+Nickel	500 ppm
5.	Polyaromatic hydrocarbons (PAH)	6%
6.	Total halogens	4000 ppm
7.	Polychlorinated biphenyls (PCBs)	<2 ppm *
8.	Sulfur	4.5 %
9.	Water Content	1 %

* **The detection limit is 2 ppm by Gas Liquid Chromatography (GLC) using Electron Capture detector (ECD)**

Schedule VI
[See rule 13(4)]

Hazardous Wastes Prohibited for Import and Export

S.No.	Basel No	Description of Hazardous Wastes
1.	A1010	Mercury bearing wastes
2.	A1030	Waste having Mercury: Mercury Compounds as constituents or contaminants
3.	A1010	Beryllium bearing wastes
4.	A1020	Waste having Beryllium: Beryllium Compounds as constituents or contaminants
5.	A1010	Arsenic bearing wastes
6.	A1030	Waste having Arsenic: Arsenic compounds as constituents or contaminants
7.	A1010	Selenium bearing wastes
8.	A1020	Waste having Selenium; Selenium Compounds as constituents or contaminants
9.	A1010	Thallium bearing wastes
10.	A1030	Waste having Thallium; Thallium Compounds as constituents or contaminants
11.	A1040	Hexavalent Chromium Compounds bearing wastes
12.	A1140	Wastes Cupric Chloride and Copper Cyanide Catalysts bearing wastes
13.	A1190	Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB", lead, cadmium, other organohalogen compounds or other constituents as mentioned in schedule 2 to the extent of concentration limits specified therein.
14.	A2020	Waste inorganic fluorine compounds in the form of liquids or sludge but excluding calcium fluoride sludge
15.	A2040	Waste gypsum arising from chemical industry processes if it contains any of the constituents mentioned in Schedule 2 to the extent of concentration limits specified therein
16.	A2050	Waste Asbestos (Dust and Fibres)
17.	A3030	Wastes that consist of or are contaminated with leaded anti-knock compound sludge or leaded petrol (gasoline) sludges.
18.	A3040	Waste Thermal (heat transfer) fluids
19.	A3060	Waste Nitrocellulose
20.	A3090	Waste Leather dust, ash, sludges or flours when containing hexavalent chromium compounds or biocides
21.	A3100	Waste paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, containing hexavalent chromium compounds and biocides
22.	A3110	Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances
23.	A3150	Halogenated organic solvents

24.	A3180	Waste, Substances and articles containing, consisting of or contaminated with polychlorinated biphenyles (PCB) and/or polychlorinated terphenyls, (PCT) and/or polychlorinated naphthalenes (PCN) and/or polybrominated biphenyles (PBB) or any other polybrominated analogues of these compounds
25.	A3190	Waste tarry residues (excluding asphalt cements) arising from refining, distillation and pyrolytic treatment of organic materials)
26.	A4020	Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices and wastes generated in hospital or other facilities during the investigation or treatment of patients, or research projects.
27.	A4030	Waste from the production, formulation and use of biocides and phyto-pharmaceuticals, including waste pesticides and herbicides which are off-specification, out-dated, and/or unfit for their originally intended use.
28.	A4050	Waste that contain, consist of, or are contaminated with any of the following; Inorganic cyanides, excepting precious metal bearing residues in solid form containing traces of inorganic cyanides. Organic cyanides
29.	A4060	Waste oil/water, hydrocarbons/water mixtures, emulsions
30.	A4110	Wastes that contain, consist of or are contaminated with any of the following : <ul style="list-style-type: none"> • Any congener of polychlorinated dibenzofuran • Any congener of polychlorinated dibenzo-dioxin.

Schedule VII
[See rule 23]

List of Authorities and Corresponding Duties

S.No.	Authority	Corresponding Duties
1.	Ministry of Environment and Forests under the Environment (Protection) Act, 1986	<ul style="list-style-type: none"> i. Identification of hazardous wastes ii. Permission to exporters of hazardous wastes iii. Permission to importers of hazardous wastes iv. Permission for transit of hazardous wastes through India v. Sponsoring of training and Awareness programme on Hazardous Waste Management related activities.
2.	Central Pollution Control Board constituted under the Water (Prevention and Control of Pollution) Act, 1974	<ul style="list-style-type: none"> i. Co-ordination of activities of State Pollution control Boards/ Committees ii. Conduct training courses for authorities dealing with management of hazardous wastes iii. Recommend standards and specifications for treatment and disposal of wastes and leachates Recommend procedures for characterization of hazardous wastes. iv. Sector specific documentation to identify waste for inclusion in Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. v. Prepare guidelines to prevent/reduce/minimize the generation and handling of hazardous wastes vi. Registration and renewal of registration of Recyclers/Re-processors vii. Any other function under Rules delegated by the Ministry of Environment & Forests.
3.	State Government/Union Territory Government/Administration	<ul style="list-style-type: none"> i. Identification of site(s) for common Hazardous Waste Treatment Storage and Disposal Facility (TSDF) ii. Assess EIA reports and convey the decision of approval of site or otherwise iii. Acquire the site or inform operator of facility or occupier or association of occupiers to acquire the site iv. Notification of sites v. Publish periodically an inventory of all disposal sites in the State/Union Territory
4.	State Pollution Control Boards or Pollution Control	<ul style="list-style-type: none"> i. Inventorisation of hazardous wastes ii. Grant and renewal of authorization

	Committees constituted under the Water (Prevention and Control of Pollution) Act, 1974	<ul style="list-style-type: none"> iii. Monitoring of compliance of various provisions and conditions of authorization including conditions of permission for issued by MoEF exports and imports iv. Examining the applications for imports submitted by the importers and forwarding the same to Ministry of Environment and Forests v. Implementation of programmes to prevent/reduce/minimize the generation of hazardous wastes vi. Action against violations of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 vii. Any other function under these Rules assigned by MoEF from time to time.
5.	Directorate General of Foreign Trade constituted under the Foreign Trade (Development and Regulation) Act, 1992	<ul style="list-style-type: none"> i. Grant of licence for import of hazardous wastes ii. Refusal of licence for hazardous wastes prohibited for imports and export
6.	Port Authority under Indian Ports Act, 1908 (15 of 1908) and Customs Authority under the Customs Act, 1962 (52 of 1962)	<ul style="list-style-type: none"> i. Verify the documents ii. Inform the Ministry of Environment and Forests of any illegal traffic iii. Analyse wastes permitted for imports and exports iv. Train officials on the provisions of the (Management, Handling and Transboundary Movement) Rules, 2008 and in the analysis of hazardous wastes v. Take action against exporter/importer for violations under the Indian Ports Act, 1908/Customs Act, 1962

Appendix C

In this appendix are Schedules I, II, III, and V of the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 reproduced from:

India. Ministry of Environment and Forests. Manufacture, Storage, and Import of Hazardous Chemical Rules, 1989 Schedules I, II, III, and V. Ministry of Environment and Forests Notification S.O. 966(E). New Delhi: 1989
<<http://www.scribd.com/doc/128699553.Manufacture-Storage-and-Import-of-Hazardous-Chemicals-Rules-1989>>.

(6) The importer of the hazardous chemical of a person working on his behalf shall ensure that transport of hazardous chemicals from port of entry to the ultimate destination is in accordance with the Central Motor Vehicles Rules, 1989 framed under the provisions of the Motor Vehicles Act, 1988.

19. Improvement notices.

(1) If the concerned authority is of the opinion that a person has contravened the provisions of these rules, the concerned authority shall serve on him a notice (in this para referred to as "an improvement notice") requiring that person to remedy the contravention or, as the case may be, the matters occasioning it within such period as may be specified in the notice.

(2) A notice served under sub-rule (1) shall clearly specify the measures to be taken by the occupier in remedying said contraventions.

20. Power of the Central Government to modify the Schedule.

The Central Government may, at any-time, by notification in the Official Gazette, make suitable changes in the Schedules.

SCHEDULE I

[See rule 2(c)(i), 4(1)(a), 4(2), 17 and 18]
Indicative Criteria and List of Chemicals

PART I

(a) Toxic Chemicals:

Chemicals having the following values of acute toxicity and which, owing to their physical and chemical properties, are capable of producing major accidents hazards.

S.No.	Degree of Toxicity	Medium lethal dose by the oral route (oral toxicity) LD50 (mg/kg) body weight of test animals	Medium lethal dose by the dermal route (dermal toxicity) LD 50 (mg/kg) body weight of test animals	Medium lethal concentration by inhalation route (four hours) LC 50 (mg/l) inhalation on test animals
1	Extremely toxic	1 - 50	1 - 200	0.1 - 0.5

2	Highly toxic	51 - 500	201 - 2000	0.5 - 2.0
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(b) Flammable chemicals:

(i) Flammable gases; chemicals which in the gaseous state at normal pressure and mixed with air become flammable and the boiling point of which at normal pressure is 20C or below;

(ii) highly flammable liquids: chemicals which have a flash point lower than 23C and the boiling point of which at normal pressure is above 20 C;

(iii) flammable liquids: chemicals which have a flash point lower than 65C- and which remain liquids under pressure, where particular processing conditions, such as high pressure and high temperature, may create major accident hazards.

(c) Explosives:

Chemicals which may explode under the effect of flame, heat or photo-chemical conditions or which are more sensitive to shocks or friction than dinitrobenzene.

PART II
LIST OF HAZARDOUS AND TOXIC CHEMICALS

Sl. No.	Name of the Chemical
1	Acetone
2	Acetone Cynohydride
3	Acetylene Chloride
4	Acetylene (Ethyne)
5	Acrolein (2-Propenal)
6	Acrylonitrile
7	Aldicarb
8	Aldrin
9	Alkyl Phthalate
10	Allyl Alcohol
11	Allylamine
12	Alpha Naphthyl Thiourea (Antu)
13	Aminodiphenyl-4

14	Aminophenol-2
15	Amiton
16	Ammonia
17	Ammonium Nitrate
18	Ammonium Nitrates in fertilizers
19	Ammonium Sulfamate
20	Anabasine
21	Aniline
22	Anisidine-p
23	Antimony and Compounds
24	Antimony Hydride (Stibine)
25	Arsenic Hydride (Arsine)
26	Arsenic Pentoxide, Arsenic (v) Acid, and Salts
27	Arsenic Trioxide, Arsenious (iii) Acids and Salts
28	Asbestos
29	azinophos-Ethyl
30	Azinphos-Methyl
31	Banum Azide
32	Benzene
33	Benzidine
34	Benzidine Salts
35	Benzoquinone
36	Benzoyl Chloride
37	Benzoyl Peroxide
38	Benzyl Chloride
39	Benzyl Cyanide
40	Beryllium (Powders Compound)
41	Biphenyl
42	Bis (2-Chloromethyl) Ketone
43	Bis (2, 4, 6-Trinitrophenyl) Amine
44	Bis (2, Chloroethyl sulphide)
45	Bis (Chloromethyl) ether
46	Bis (tert-Butyl peroxy) Butane-2, 2
47	Bis (tert-Butyl peroxy) Cyclohexane-11
48	Bis-1, 2 Tribromophenoxy Ethane
49	Bis phenol
50	Boron and Compounds
51	Bromine

52	Bromine Pentafluoride
53	Bromoform
54	Butoadine
55	Butane
56	Butanethiol
57	Butanone-2
58	Butoxy Ethanol
59	Butyl Glycidal Ether
60	Butyl Peroxy acetate, tert
61	BUtyL Peroxyisobutyrate, tert
62	Butyl Peroxyisopropyl Carbonate, tert
63	Butyl Peroxymaleate, tert
64	Butyl Peroxypivalate, tert
65	Butyl Vinyl Ether
66	Buty-n-Mercaptan
67	Butylamine
68	C-9, Aromatic Hydrocarbon Fraction
69	Cadmium and Compounds
70	Cadmium Oxide (fumes)
71	Calcium Cynicde
72	Captan
73	Captofol
74	Carbaryl (Sevin)
75	Carbofuran
76	Carbon Disulphide
77	Carbon Monoxide
78	Carbon Tetrachloride
79	Carbophenothion
80	Cellulose Nitrate
81	Chlorats (used in explosives)
82	Chlordane
83	Chlorfenvinphos
84	Chlorinated Benzenes
85	Chlorine
86	Chlorine Di Oxide
87	Chlorine Oxide
88	Chlorine Trifluoride
89	Chloromequal Chloride

90	Chloroacetalchloride
91	Chloroacetaldehyde
92	Chloroanilin-2
93	Chloroaniline4
94	Chlorobenzene
95	Chlorodiphenyl
96	Chloropoxypropane
97	Chloroethanol
98	Chloroethyl
99	Chloroformate
100	Chlorofluorocarbons
101	Chloroform
102	Chloroformyl-4, Merpholine
103	Chloromethane
104	Chloromethyl Ether
105	Chloromethyl Methyl Ether
106	Chloronitrobenzene
107	Chloroprene
108	Chlorosulphonic Acid
109	Chlorotrinitro benzene
110	Chloroxuron
111	Chromium and Compounds
112	Cobalt and Compounds
113	Copper and Compounds
114	Coumafuryl
115	Coumaphos
116	Coumateralyl
117	Cresols
118	Cumidine
119	Cumene
120	Cynophos
121	Cynothoate
122	Cyanuric Fluoride
123	Cyclohexane
124	Cyclohexanol
125	Cyclohexane
126	Cycloheximide
127	Cyclopentadinene

- 128 Cyclopentane
- 129 Cyclotetramethylenetrinitramine
- 130 Cyclotriethylene Trinitramine
- 131 DDT
- 132 Dicarbomodiphenyl Oxide
- 133 Demeton
- 134 Di-Isobutyl Peroxide
- 135 Di n-Propyl Peroxydicarbonate
- 136 Di-sec-Butyl Peroxydicarbonate
- 137 Dalifos Mazodinitrophewl
- 138 Diszomethane
- 139 Dibenzyl Peroxydicarbonate
- 140 Diehloroaetylene
- 141 Diehlorobenzene-0
- 142 Dichlorobenzene-2
- 143 Di-chloroethane
- 144 Dichlorethyl Ether
- 145 Dichlorophenol-2, 4
- 146 Dichlorophenol-2, 6
- 147 Dichlorophenoxy Acetic Acid, -2,4 (2,4-D)
- 148 Dichloropropane-1, 2
- 149 Diehlorosalicylic Acid, -3,5
- 150 Dichlorovos (DDVP)
- 151 Dicrotophos
- 152 Dieldrin
- 153 Diepoxybutane
- 154 Diethyl Peroxydicarbonate
- 155 Diethyl Glycol Dinitrate
- 156 Diethylene Triamine
- 157 Diehlyneglycol Butyl Ether/Diethyleteglycol Butyl Acetate
- 158 Diethylenetriamine (DETA)
- 159 Diglycidyl Ether
- 160 Dihydroperoxypropane, -2,2
- 161 Diisobutyryl Peroxide
- 162 Dimethoate
- 163 Dimethyl Phosphoramidocynidic Acid
- 164 Dimelhyl Phthalate
- 165 Dimethylcarbonyl

166	Dimethylnitrosamine
167	Dinitrophenol, Salts
168	Dinitroluene
169	Dinitro-o-Cresol
170	Dioxane
171	Dioxathion
172	Dioxalane
173	Diphacinone
174	Diphosphoramidate Octamethyl
175	Dipropylene Glycolmethylether
176	Disulfoton
177	Endosulfan
178	Endrin
179	Epichlorohydrine
180	EPN
181	Epoxypropane, 1, 2
182	Ehion
183	Ethyl Carbamate f
184	Ethyl ether
185	Ethyl Hexanol, -2
186	Ethyl Mercaptan
187	Ethyl Methacrylate
188	Ethyl Nitrate
189	Ethylamine
190	Ethylene
191	Ethylene Chlorohydrine
192	Ethylene Diamine
193	Ethylene Dibromide
194	Ethylene Dichloride
195	Ethylene Glycol Dinitrate
196	Ethylene Oxide
197	Ethyleneimine
198	Ethylthiocyanate
199	Fensulphothion
200	Fluometil
201	Fluoro, -4,2-Hydroxybutyric Acid and Salts, Esters, Amides
202	Fluoroacetic Acid and Salts, Esters, Amides
203	Fluorobutyric Acid, -4, and Salts, Esters, Amides

204 Fluorocrotonic Acid, -4, and Salts, Esters, Amides
205 Formaldehyde
206 Glyconitrite (Hydroxyacetone nitrite)
207 Guanyl, -1, 4 Nitrosaminoguanyl-1-Tetrazenc
208 Heptachlor
209 Hexachloro Cyclopentadiene
210 Hexachlorocyclohexane
211 Hexachlorocycloamethane
212 Hexachlorodibenzo-p-Dioxin, -1, 2, 3, 7, 8, 9
213 Hexafluoropropene
214 Hexamethylphosphoramide
215 Hexamethyl, -3, 3, 6, 6, 9, 9, -1, 2, 4, 5-Tetroxacyclononane
216 Hexamethylenediamine
217 Hexane
218 Hexanitrosstibene, -2, 2, 4, 4, 6, 6,
219 Hexavalent Chromium
220 Hydrazine
221 Hydrazine Nitrate Hydrochloric Acid
222 Hydrogen
223 Hydrogen Bromide (Hydrobromic Acid)
224 Hydrogen Chloride (Liquified Gas)
225 Hydrogen Cyanide
226 Hydrogen Fluoride
227 Hydrogen Selenide
228 Hydrogen Sulphide
229 Hydroquinone
230 Iodine
231 Isobenzan
232 Isodrin
233 Isophorone Diisocyanate
234 Isopropyl Ether
235 Juglone (5-Hydroxynaphthalene-1, 4-Dione)
236 Lead (inorganic fumes & dusts)
237 Lead 2, 4, 6 -Trinitroresorcinoxide (Lead Styphnate)
238 Lead Azide
239 Leptophos
240 Lindane
241 Liquified Petroleum Gas (LPG)

242	Maleic Anhydride
243	Manganese & Compounds
244	Mercapto Benzothiazole
245	Mercury Alkyl
246	Mercury Fulminate
247	Mercury Methyl
248	Methacrylic Anhydride
249	Methacrylonitrile
250	Methacryloyl Chloride
251	Methamidophos
252	Methanesulphonyl Fluoride
253	Methanethiol
254	Methoxy Ethanol (2-Methyl Cellosive)
255	Methoxy ethyl mercuric Acetate
256	Methyl Acrylate
257	Methyl Alcohol
258	Methyl Amylketone
259	Methyl Bromide (Bromomethane)
260	Methyl Chloride
261	Methyl Chloroform
262	Methyl Cyclohexene
263	Methyl Ethyl Ketone Peroxide
264	Methyl Hydrazine
265	Methyl Isobutyl Ketone
266	Methyl Isobutyl Ketone Peroxide
267	Methyl Isocyanate
268	Methyl Isothiocyanate
269	Methyl Mercaptan
270	Methyl Methacrylate
271	Methyl Parathion
272	Methyl Phosphonic Dichloride
273	Methyl-N, 2, 4, 6,-Trinitroaniline
274	Methylene Chloride
275	Methylenebis, -4, 4, (2-Chloroaniline)
276	Methyltrichlorosilane
277	Mevinphos
278	Molybdenum & Compounds
279	N-Methyl-N, 2, 4, 6-N-Tetranitroaniline

280	Naptha (Coal Tar)
281	Naphthylamine, 2
282	Nickel & Compounds
283	Nickel Tetracarbonyl
284	Noitroaniline-O
285	Nitroaniline-P
286	Nitrobenzene
287	Nitrochloroberizene-P
288	Nitrocyclohexane
289	Nitriothage
290	Nitrogen.Dioxide
291	Nitrogen Oxide
292	Nitrogen Trifluoride
293	Nitroglycerine
294	Nitrophenol-P
295	Nitropropane-1
296	Nitropropane-2
297	Nitrosodirnethylarnine
298	Nitrotolune
299	Octabromophenyl Oxide
300	Oleurn
301	Oleylarnine
302	OO-Diethyl S-Ethylsulphonylmethyl phosbhorothioate
303	OO-Diethyl S-Ethylthiornethyl Phosphorothioate
304	OO-Diethyl S-Ethiomethyl'Phosphorathioate
305	OO-Diethyl S-1sopropyliniornethyl Phosphorolithioate
306	OO-diethyl S-Propylthiornethyl Phosphorodithioate
307	Oxyarnyl
308	Oxydisulioton
309	Oxygen (Liquid)
310	Oxygen Difluoride
311	Ozone
312	Paraoxon (Diethyl 4-Nitrophenyl Phosphate)
313	Paraquat
314	Parathion
315	Parathion Methyl
316	Paris green (Bis Aceto Hexametaatsinito Tetracopper)
317	Pentaborane

318 Pentabromodiphenyl Oxide
319 Pentabromophenol
320 Pentachloro Naphthalene
321 Pentachloroethane
322 Petachlorophenol
323 Pentacrythritol Tetranitrate
324 Pentane
325 Peracetic Acid
326 Perchloroethylene
327 Perchloromethyl Mercaptan
328 Pentanone, 2,4-Methyl
329 Phenol
330 Phenyl Glycidal Ether
331 Phenylene p-Diarnine
332 Phenylmercury Acetate
333 Phorate
334 Phosacetim
335 Phosalone
336 Phosfolan
337 Phosgene (Carbonyl Chloride)
338 Phosmet
339 Phospamidon
340 Phosphine (Hydrogen Phosphide)
341 Phosphoric Acid and Esters
342 Phosphoric Acid, Bromethyl Bromo (2,2-dimethylpropyl)
Bromoethyl Ester
343 Phosphoric Acid, Bromoethyl Bromo (2,2-Dimethylpropyl)
Chlorethyethyl Ester
344 Phosphoric Acid, Chloroethyl Bromo (2,2-Dimethoxylpropyl)
Chloroethyl Ester
345 Phosporous & Compounds
346 Phostalan Pircic Acid (2,4,6-Trinitrophenol)
347 Polybrominaled Biphenyl
348 Potassium Arsenite
349 Potassium Chlorate
350 Promurit (1-(3, 4-Dichlorophenyl)-3-Triazenethiocarboxamide)
351 Propanesultone-1, 3
352 Propen,-1, 2-Chloro-1,3-Diol-Diacetate
353 Propylene Dichloride

354 Propylene Oxide
355 Propyleneimine
356 Pyrazoxon
357 Selenium Hexafluoride
358 Semicarbazide Hydrochloride
359 Sodium Arsenite
360 Sodium Azide
361 Sodium Chlorate
362 Sodium Cyanide
363 Sodium Picramate
364 Sodium Selenite
365 Styrene, 1, 1, 2, 2-Tetrachloroethane
366 Sulfotep
367 Sulphur Dichloride
368 Sulphur Dioxide
369 Sulphur Trioxide
370 Sulphuric Acid
371 Sulphoxide, 3-Chloropropyloctyl
372 Tellurium
373 Tellurium Hexafluoride
374 Tepp
375 Terbufos
376 Tetrabromobisphenol-A
377 Tetrachloro, 2, 2, 5, 6, 2, 5-Cyclohexadiene-1, 4-Dione
378 Tetrachlorodibenzo-p Dioxin, 2, 3, 7, 8 (TCDD)
379 Tetraethyl Lead
380 Tetrafluoroethane
381 Tetramethylenedisulphotetramine
382 Tetramethyl Lead
383 Tetramnitromethane
384 Thallium & Compounds
385 Thionzin
386 Thionyl Chloride
387 Tirpate
388 Toluene
389 Toluidien-2, 4 Diisocynate
390 Toluidiene-O
391 Toluene 2, 6-Diisocynate

392 Trans-1, 4-Chlorobutene
393 Tri, -1 (Cyclohexyl) Stannyl-1H, 1, 2, 4-Trazole
394 Triamino, -1, 3, 5, 2, 4, 6-Trinitrobenzene
395 Tribromophenol, 2, 4, 6
396 Trichloro Acetyl Chloride
397 Trichloro Ethane
398 Trichloro Naphthalene
399 Trichloro (chloromethyl) Silane
400 Trichlorodichlorophenylsilane
401 Trichloroethane, 1, 1, 1
402 Trichloroethyl Silane
403 Trichloroethylene
404 Trichloromethanesulphenyl Chloride
405 Trichlorophenol, 2, 2, 6
406 Trichlorophenol, 2, 4, 5
407 Triethylamine
408 Triethylenemelamine
409 Trimethyl Chlorosilane
410 Trimethylpropane Phosphite
411 Trinitroaniline
412 Trinitroanisole, 2, 2, 4, 6
413 Trinolrobenzene
414 Trinitrobenzoic Acid
415 Trinitrocresol
416 Trinitrophenetole, 2, 4, 6
417 Trinitroresorcinol, 2, 4, 6 (Styphnic Acid)
418 Trinitrotoluene
419 Triorthocressyl Phosphate
420 Triphenylin Chloride
421 Turpenline Uranium & Compounds
422 Vanadium & Compounds
423 Vinyl Chloride
424 Vinyl Fluoride
425 Warfarin
426 Xylene
427 Xylidine
428 Zinc & Compounds
429 Zirconium & Compounds

SCHEDULE 2

[(See rule 2(e)(ii), 4(1)(b), 4(2) (1) and 6(1)(b)]
Isolated storage at Installations other than those covered by Schedule 4

(a) The threshold quantities set out below relate to each installation or group of installations belonging to the same occupier where the distance between installation is not sufficient to avoid, in foreseeable circumstances, any aggravation of major accident hazards. These threshold quantities apply in any case to each group of installations belonging to the same occupier where the distance between the installations is less than 500 metres.

(b) For the purpose of determining the threshold quantity of hazardous chemical at an isolated storage, account shall also be taken of any hazardous chemical which is:-

(i) in that part of any pipeline under the control of the occupier having control of the site which is within 500 metres of that site and connected to it;

(ii) at any other site under the control of the same occupier any part of the boundary of which is within 500 metres of the said site; and

(iii) in any vehicle, vessel, aircraft or hovercraft, under the control of the same occupier which is used for storage purpose either at the site or within 500 metres of it;

but no account shall be taken of any hazardous chemical which is in a vehicle, vessel, aircraft or a hovercraft used for transporting it.

Sl. No.	Chemicals	Threshold Quantities (tonnes)	
		For application of Rules 4, 5 and 7-9	For application of Rules 10 to 15
1	2	3	4
1	Acrylonitrile	350	5,000
2	Ammonia	60	600
3	Ammonium nitrate (a)	350	2,500
4	Ammonium nitrate fertilizers (b)	1,250	10,000
5	Chlorine	10	25
6	Flammable gases as defined in Schedule 1, paragraph (b) (i)	50	300
7	Highly flammable liquids as defined in Schedule 1, paragraph (b) (ii)	10,000	100,000

8	Liquid oxygen	200	2,000
9	Sodium chlorate	25	250
10	Sulphur dioxide	20	500
11	Sulphur trioxide	15	100

(a) This applies to ammonium nitrate and mixtures of ammonium nitrates where the nitrogen content derived from the ammonium nitrate is greater than 28 per cent by weight and to aqueous solutions of ammonium nitrate where the concentration of ammonium nitrate is greater than 90 per cent by weight

(b) This applies to straight ammonium nitrate fertilizers and to compound fertilizers where the nitrogen content derived from the ammonium nitrate is greater than 28 per cent by weight (a compound-fertilizer contains ammonium nitrate together with phosphate and/or potash).

SCHEDULE 3

[See rule 2(e) (iii), 5 and 6(1) (a)]

List of Hazardous Chemicals for Application of Rules 5 and 7 to 15

(a) The quantities set-out-below relate to each installation or group of installations belonging to the same occupier where the distance between the installations is not sufficient to avoid, in foreseeable circumstances, any aggravation of major-accident hazards. These quantities apply in any case to each group of installations belonging to the same occupier where the distance between the installations is less than 500 metres.

(b) For the purpose of determining the threshold quantity of a hazardous chemical in an industrial installation, account shall also be taken of any hazardous chemicals which is:-

(i) in that part of any pipeline under the control of the occupier have control of the site, which is within 500 metres off that site and connected to it;

(ii) at any other site under the control of the same occupier any part of the boundary of which is within 500 metres of the said site; and

(iii) in any vehicle, vessel, aircraft or hovercraft under the control of the same occupier which is used for storage purpose either at the site or within 500 metres of it;

but no account shall be taken of any hazardous chemical which is in a vehicle, vessel, aircraft or hovercraft used for transporting it.

PART I
Named Chemicals

S.No.	Chemical	Threshold Quantity		CAS Number
		for application of Rules, 5, 7-9 and 13-15	for application of Rules 10-12	
1	2	3	4	5
GROUP 1-TOXIC SUBSTANCES				
1	Aldicarb	100 kg		116-06-3
2	4-Aminodiphenyl	1 kg		96-67-1
3	Amiton	1 kg		78-53-5
4	Anabasine	100 kg		494-52-0
5	Arseinc pentoxide, Arsenic (V) acid & salts	500 kg		
6	Arsenic trioxide, Arseius (III) acid & salts	100 kg		
7	Arsine (Arsenic hydride)	10 kg		7784-42-1
8	Azinphos-ethyl	100 kg		2642-71-9
9	Azinphos-melhyl	100 kg		86-50-0
10	Benzidine	1 kg		92-87-5
11	Benzidine salts	1 kg		
12	Beryllium (powders, compounds}	10 kg		
13	Bis (2-chloroethyl) sulphide	1 kg		505-60-2
14	Bis (chloromethyl) ether	1 kg		542-88-1
15	Carbophuran	100 kg		1563-66-2
16	Carbophenothion	100 kg		786-19-6
17	Chlorefenvinphos	100 kg		470-90-6
18	4-(Chloroformyl) morpholine	1 kg		15159-40-7
19	Chloromethyl methyl ether	1 kg		107-30-2
20	Cobalt (metal, oxides, carbonates, sulphides, as powders)	1 t		
21	Crimidine	100 kg		535-89-7
22	Cynthoate	100 kg		3734-95-0
23	Cycloheximide	100 kg		66-81-9
24	Demeton	100 kg		8065-48-3
25	Dialifos	100 kg		10311-84-9
26	OO-Diethyl S-ethylsulphinylmethyl	100 kg		2588-05-8

	phosphorothiate		
27	OO-Diethyl S-ethylsulphonylmethyl phosphorothioate	100 kg	2588-06-9
28	OO-Dielhyl S-ethylthiomethyl Phosphorothioate	100 kg	2600-69-3
29	OO-Diethyl S-isopropylthiomethyl phosphorodithioate	100 kg	78-52-4
30	OO-Diethyl S-propylthiomethyl phosphorodithioate	100 kg	3309-68-0
31	Dimefox	100 kg	115-26-4
32	Dimethylcarbamoyl chloride	1 kg	79-44-7
33	Dimethylnitrosamine	1 kg	62-75-9
34	Dimethyl phosphoramidocynidic acid	1 t	63917-41-9
35	Diphacinone	100 kg	82-66-6
36	Disulfoton	100 kg	298-04-4
37	EPN	100 kg	2104-64-5
38	Ethion	100 kg	563-12-2
39	Fensulfothion	100 kg	115-90-2
40	Fluometil	100 kg	4301-50-2
41	Fluoroacetic acid	1 kg	144-49-0
42	Fluoroacetic acid, salts	1 kg	
43	Fluoroacetic acid, esters	1 kg	
44	Fluoroacetic acid, amides	1 kg	
45	4-Fluorobutyric acid	1 kg	462-23-7
46	4-Fluorobutyric acid, salts	1 kg	
47	4-Fluorobutyric acid, esters	1 kg	
48	4-Fluorobutyric acid, amides	1 kg	
49	4-Fluorocrotonic acid	1 kg	37759-72-1
50	4-Fluorocrotonic acid, salts	1 kg	
51	4-Fluorocrotonic acid, esters	1 kg	
52	4-Fluorocrotonic acid, amides	1 kg	
53	4-Fluoro-2-hydroxybutyric acid, amides	1 kg	
54	4-Fluoro-2-hydroxybutyric acid, salts	1 kg	
55	4-Fluoro-2-hydroxybutyric acid, esters	1 kg	
56	4-Fluoro-2-hydroxybutyric acid, amides	1 kg	
57	Glycolonitrile (Hydroxyacetonitrile)	100 kg	107-16-4
58	1, 2, 3, 7, 8, 9-Hexachlorodibenzo-p-dioxin	100 g	194-8-74-3

59	Hexamethylphosphoramide	1 kg		680-31-9
60	Hydrogen selenide	10 kg		7783-07-5
61	Isobenzan	100 kg		297-78-9
62	Isodrin	100 kg		465-73-6
63	Juglone (5-Hydroxynaphthalene 1, 4 dione)	100 kg		481-39-0
64	4, 4-Methylenebis (2-chloroniline)	10 kg		101-14-4
65	Methyl isocyanate	150 kg	150 kg	624-83-9
66	Mevinphos	100 kg		7786-34-7
67	2-Naphthylamine	1 kg		91 -59-8
68	2-Nickel (metal, oxides, carbonates, sulphides, as powders)	1 t		
69	Nickel tetracarbonyl	10 kg		13463-39-3
70	Oxygendisulfoton	100 kg		2497-07-6
71	Oxygen difluoride	10 kg		7783-41-7
72	Paraxon (Diethyl 4-nitrophenyl phosphate)	100 kg		311 -45-5
73	Parathion	100 kg		56-38-2
74	Parathion-methyl	100 kg		298-00-0
75	Pentaborane	100 kg		19624-22-7
76	Phorate	100 kg		298-02-2
77	Phosacetim	100 kg		4104-14-7
78	Phosgene (carbonyl chloride)	750 kg	750 kg	75-44-5
79	Phosphamidon	100 kg		13171-41-6
80	Phosphine (Hydrogen phosphide)	100 kg		7803-51 -2
81	Promurit (1-(3, 4-dichlorophenyl)-3 triazenethiocarboxamide)	100 kg		5836-73-7
82	1, 3-Propanesultone	1 kg		1120-7t-4
83	1 -Propen-2-chloro- 1, 3-diol diacetate	10 kg		10118-72-6
84	Pyrazoxon	100 kg		108-34-9
85	Selenium hexafluoride	10 kg		7783-79-1
86	Sodium selenite	100 kg		10102-18-8
87	Stibine (Antimony hydride)	100 kg		7803-52-3
88	Sulfotep	100 kg		3689-24-5
89	Sulphur dichloride	1 t		10545-99-0
90	Tellurium hexanuroride	100 kg		7783-80-4
91	TEPP	100 kg		107-49-3
92	2, 3, 7, 8-Tetrachlorodibenzo-p-dioxin	1 kg		1746-01 -6

	(TCDD)		
93	Tetramethylenedisulphotetramine	1 kg	80-12-6
94	Thionazin	100 kg	297-97-2
95	Tirpate (2, 4-Dimethyl-1, 3-dithiolane-2-carboxaldehyde O-methylcarbamoyloxime)	100 kg	26419-8
96	Trichloromethanesulphenyl chloride	100 kg	594-42-3
97	1-Tri (cyclohexyl) stannyl-1 H-1, 2, 4-triazole	100 kg	41083-11-8
98	Triethylenemelamine	10 kg	51-18-3
99	Warfarin	100 kg	81-81-2

GROUP 2-TOXIC SUBSTANCES

100	Acetonecyanohydrin (2-Cyanopropan-2-01)	200 t		75-86-5
101	Acrolein (2-Propenal)	20 t		107-02-8
102	Acrylonitrile	20 t	200 t	107-13-1
103	Allyl alcohol (Propen-1-01)	200 t		107-18-6
104	Alylamine	200 t		107-11-9
105	Ammonia	50 t	500 t	7664-41-7
106	Bromine	40 t		7726-95-6
107	Carbon disulphide	20 t	200 t	75-15-0
108	Chlorine	10 t	25 t	7782-fo 5
109	Dipneyl ethane di-isocynate (MDI)	20 t		101-68-8
110	Ethylene dibromide (1, 2-Dibromoethane)	5 t		106-93-4
111	Ethyleneimine	50 t		151-56-4
112	Formaldehyde (concentration 90%)	5 t		50-00 0
113	Hydrogen chloride (liquified gas)	25 t	250 t	7647-01-0
114	Hydrogen cynide	5 t	20 t	74-90-8
115	Hydrogen fluoride	5 t	50 t	7664-39-3
116	Hydrogen sulphide	5 t	50 t	7783-06-4
117	Methyl bromide (Bromomethane)	20 t		74-83-9
118	Nitrogen oxides	50 t		11104-93-1
119	Propyleneimine	50 t		75-55-8
120	Sulphur dioxide	20 t	250 t	7446-09-5
121	Sulphur trioxide	15 t	75 t	7446-11-9
122	Tetraethyl lead	5 t		78-00-2
123	Tetramethyl lead	5 t		75-74-1

124	Toluene di-isocyanate (TDI)	10 t		584-84-9 75-01-4
GROUP 3--HIGHLY REACTIVE SUBSTANCES				
125	Acetylene (ethyne)	5 t		74-86-2
126	a. Ammonium nitrate (1)	350 t	2500 t	6484-52-2
	b. Ammonium nitrate in form of fertiliser (2)	1250 t		
127	2,2-Bis (tert-butylperoxy) butane (concentration 70%)	5 t		2167-23-9
128	1,1-Bis (tert-butylperoxy) cyclohexane (concentration 80%)	5 t		3006-86-8
129	tert-Butyl peroxyacetate (concentration 70%)	5 t		107-71-1
130	Tert-Butyl peroxyisobutyrate (concentration 80%)	5 t		109-13-7
131	tert-Butyl peroxy isopropyl carbonate (concentration 80%)	5 t		2372-21-6
132	tert-Butyl peroxy maleate (concentration 80%)	5 t		1931-62-0
133	Tert-Butyl peroxy pivalate (concentration 77%)	50 t		927-07-1
134	Dibenzyl peroxydicarbonate (concentration 90%)	5 t		2144-45-8
135	Di-sec-butyl peroxydicarbonate (concentration 80%)	5 t		19910-65-7
136	Diethyl peroxydicarbonate (concentration 30%)	50 t		14666-78-5
137	2,2-dihydroperoxypropane (concentration 30%)	5 t		2614-76-08
138	Di-isobutyl peroxide (concentration 50%)	50 t		3437-84-1
139	Di-n-propyl peroxydicarbonate (concentration 80%)	5 t		16066-38-9
140	Ethylene oxide	5 t	50 t	75-21-8
141	Ethyl nitrate	50 t		625-58-1
142	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tert-oxacyclononane (concentration 75%)	50 t		22397-38-7
143	Hydrogen	2 t	50 t	1333-74-0
144	Liquid Oxygen	200 t		7782-41-7
145	Methyl ethyl ketone peroxide	50t		1338-23-4

	(concentration 60%)		
146	Methyl isobutyl ketone peroxide (concentration 60%)	50 t	37206-20-5
147	Peracetic acid (concentration 60%)	50 t	79-21-0
148	Propylene oxide	50 t	75-56-9
149	Sodium chlorate	25 t	7775-09-9
GROUP 4-EXPLOSIVE SUBSTANCES			
150	Barium azide	50 t	18810-58-7
151	Bis (2,4, 6-trinitrophenyl) amine	50 t	131-073-7
152	Chlorotrinitro benzene	50 t	28260-61-9
153	Cellulose nitrate (containing 12.6% Nitrogen)	50 t	9004-70-0
154	Cyclotetramethyleneteranitramine	50 t	2691-41-0
155	Cyclotrimetylenetiranitramine	50 t	121-82-1
156	Diazodinitrophenol	10 t	7008-81-3
157	Diethylene glycol dinitrate	10 t	693-21-0
158	Dinitrophenol, salts	50 t	
159	Ethylene glycol dinitrate	10 t	628-96-6
160	1-Gyanyl-4-nitrosaminoguanyl-1-tetrazene	10 t	109-27-3
161	2, 2', 4, 4', 6, 6'-Hexanitrostilbene	50 t	20062-22-0
162	Hydrazine nitrate	50 t	13464-97-6
163	Lead azide	50 t	13424-46-9
164	Lead styphnate (Lead 2, 4, 6-trinitroresorcinoxide)	50 t	15245 44-0
165	Mercury fulminate	10 t	20820-45-5 628-86-4
166	N-Methyl-N, 2, 4, 6-tetranitroaniline	50 t	479-45-8
167	Nitroglycerine	10 t	10 t 55-63-0
168	Pentacrythritol tetranitrate	50 t	78-11-5
169	Picric acid (2, 3, 6-Tr.nitrophenol)	10 t	88-89-1
170	Sodium picramate	50 t	831-52-7
171	Styphnic acid (2, 4, 6-Trinitroresorcinol)	50 t	82-71-3
172	1, 3, 5-Triamino-2, 4, 6-trinitrobenzene	50 t	3058-38-6
173	Trinitroaniline-	50 t	2695242-1
174	2, 4, 6-Trinitroanisole	50 t	606-35-9
175	Trinitrobenzene	50 t	25377-32-6

176	Trinitrobenzoic acid	50 t		35860-50-5 129-66-8
177	Trinitrocresol	50 t		2890S-71-7
178	2,4, 6-Trinitrophenitole	50 t		47324-3
179	2,4, 6-Trinitrotulene	50 t	50 t	118-96-7

PART-II

Classes of chemicals not specifically named in Part-I

1	2	3	4	5
GROUP 5-FLAMMABLE CHEMICALS				
1	Flammable gases:	15 t	200 t	
	Substances which in the gaseous state normal pressure and mixed with air become flammable and the boiling point of which at normal pressure is 20C or below;			
2	Highly flammable liquids:	1000 t	50,000 t	
	Substances which have a flash point lower than 23C and the boiling point Of which at normal pressure is above 20C;			
3	Flammable liquids:	25 t	200 t	
	Substances which have a Rash point lower than 65ø C and which remain liquid under pressure, where particular processing conditions, such as high pressure and high temperature, may create major accident hazards.			

(1) This applies to ammonium nitrate and mixtures of ammonium nitrate where the nitrogen content derived from the ammonium nitrate is greater than 28% by weight and aqueous solutions of ammonium nitrate where the concentration of ammonium nitrate is greater than 90% by weight.

(2) This applies to straight ammonium nitrate fertilizers and to compound fertilizers where the nitrogen content derived from the ammonium nitrate is greater than 28% by weight (a compound fertilizer contains ammonium nitrate together with phosphate and/or potash).

SCHEDULE 4

3. Installations for the total or partial disposal of solid or liquid substances by incineration or chemical decomposition.
4. Installations for production, processing or treatment of energy gases, for example, LPG, LNG, SNG.
5. Installations for the dry distillation of coal or lignite.
6. Installations for the production of metals or non-metals by a wet process or by means of electrical energy.

SCHEDULE-5

[See Rules 2(b) and 3]

S.No.	Authority (ies) with legal backing	Duties and corresponding Rule
1	Ministry of Environment and Forest under Environment (Protection) Act, 1986.	(1) Notification of hazardous chemical- as per Rules 2(e)(i), 2(e) (ii) & 2(e) (iii)
2	Chief Controller Imports & Exports under Import & Export (Control) Act, 1947.	Import of hazardous chemicals as per Rule 18.
3	Central Pollution Control Board or State Pollution Control Board under Environment (Protection) Act, 1986 as the case may be.	(1) Enforcement of directions and procedures in respect of isolated storage of hazardous chemicals, regarding, (i) Notification of major accidents as per Rules 5(1) and 5(2). (ii) Notification of sites as per Rules 7 to 9. (iii) Safety reports in respect of isolated storages as per Rule 10 to 12. (iv) Preparation of on-site emergency plans as per Rule 13. (2) Import of hazardous Chemicals and enforcement of directions and procedures on import of hazardous chemicals as per Rule 18.

- 4 Chief Inspector of Factories appointed under the Factories Act, 1948. Enforcement of directions and procedures in respect of industrial installations and isolated storages covered under the Factories Act, 1948, dealing with hazardous chemicals and pipelines including inter-state pipelines regarding,-
- (i) Notification of major accidents as per Rule 5(1) and 5(2).
 - (ii) Notification of sites as per Rules 7-9.
 - (iii) Safety reports as per Rules 10 to 12.
 - (iv) Preparation of on-site emergency plans as per Rule 13.
 - (v) Preparation of off-site emergency - plans in consultation with District Collector or District Emergency Authority as per Sr. No. 9 of this schedule.
- 5 Chief Inspector of Dock Safety appointed under the Dock Workers (Safety, Health and Welfare) Act, 1986. Enforcement of directions and procedures in respect of industrial installations and isolated storages dealing with hazardous chemicals and pipelines inside a port regarding,-
- (i) Notification of major accidents as per Rules 5(1) and 5(2).
 - (ii) Notification of sites as per Rules 7 to 9.
 - (ii) Safety reports as per Rules 10 to 12.
 - (iv) Preparation of on-site emergency plans as per Rule 13.
 - (v) Preparation of off-site emergency plans in consultation with District Collector or District Emergency Authority as per Sr. No. 9 of this schedule.
- 6 Chief Inspector of Mines appointed under Mines Act, 1952. Enforcement of directions and procedures in the respect of industrial installations and isolated storages dealing with hazardous chemicals and pipelines inside a port regarding,-

		(i) Notification of major accidents as per Rules 5(1) and 5(2).
		(ii) Notification of sites as per Rules 7 to 9.
		(iii) Safety reports as per Rules 10 to 12
		(iv) Preparation of on-site emergency plans as per Rule 13.
		(v) Preparation of off-site emergency plans in consultation with District Collector or District Emergency Authority as per Sr. No. 9 of this schedule.
7	Atomic Energy Regulatory Board appointed under the Atomic Energy Act, 1972.	Enforcement of directions and procedures as per the provisions of the Atomic Energy Act, 1972.
8	Chief Controller of Explosives appointed under the Indian Explosives Act and Rules, 1983.	Enforcement of directions and procedures as per the provisions of the Indian explosives Act and Rules 1983.
9	District Collector or District Emergency Authority designated by the State Government.	Preparation of off-site emergency plans as per Rule 14.
10	Directorate Or Explosives Safety (DLS), Defence Research and Development of Organisation (DRDO). Department of defence Research & Development, Ministry of Defence.	Enforcement of directions and procedures in respect of laboratories industrial establishment and isolated storages dealing with hazardous chemicals in the Ministry of Defence.

SCHEDULE 7

[See rule 7(1)]

INFORMATION TO BE FURNISHED FOR THE NOTIFICATION OF SITES

PART-I

Particulars to be included in a notification of a site.

1. The name and address of the employer making the notification.
2. The full postal address of the site where the notifiable industrial activity will be carried on.

Appendix D

Minimum Frequency of Inspections: CPCB Guidance¹

Size of Industry	Category of Pollution Potential	Inspection Frequency
Large and Medium-Sized	Red	Once every 3 months
	Orange	Once a year
	Green	Once in two years
Small Scale (Capital and Investment Below 10,000 Rupees)	Red	Once a year
	Orange	Once in 3 years
	Green	Once in 5 years

¹ Reproduced from: OECD. *Environmental Compliance and Enforcement in India: Rapid Assessment*. 2006
<<http://www.oecd.org/environment/outreach/37838061.pdf>>.

Appendix E

In this appendix are sample checklists reproduced from:

Wyoming. Dpt. of Environmental Quality. Solid and Hazardous Waste Division. Chapters 2, 8 & 12, CESQG & Used Oil Generator – Abbreviated, Large Quantity Hazardous Waste Generator – 2010, Small Quantity Hazardous Waste Generator – 2010. Cheyenne: Wyoming Dpt. of Environmental Quality, 2010.

United States. Environmental Protection Agency. Protocol for Conducting Environmental Compliance Audits of Treatment, Storage and Disposal Facilities under the Resource Conservation and Recovery Act. Washington: Office of Enforcement and Compliance Assurance, Dec. 1998.

**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID AND HAZARDOUS WASTE DIVISION
Chapters 2, 8 & 12, CESQG & Used Oil Generator - Abbreviated**

HW Determination [Section 1(b)]		
Result	Section	Inspection Item
	8 1(b)(i)(B)	Does the facility generate solid waste(s) listed in Chapter 2, Section 4 (any listed hazardous waste)?
	8 1(b)(i)(B)	<u>If yes, list wastes and quantities (include EPA HW #).</u>
	8 1(b)(i)(C)	Does the facility generate solid waste(s) listed in Chapter 2, Section 3 that exhibit hazardous characteristics (corrosivity, ignitability, reactivity, TCLP)?
	8 1(b)(i)(C)	<u>If yes, list wastes and quantities (include EPA HW #).</u>
	8 1(b)(i)(C)(I)	If determined by testing, did generator use test methods in Chapter 2, Appendix A-C or equivalent? (If equivalent test methods were used, attach a copy of the equivalent method.)
	8 1(b)(i)(C)(II)	If determined by process knowledge, did generator apply process knowledge of the hazard characteristic in light of the materials or the processes used?
	8 1(b)	Are there any other non-hazardous solid wastes generated by the generator? List wastes and types
	P2	Are there additional initiatives beyond solvent substitution taken by the facility that could be considered voluntary pollution prevention?
		Does the facility recycle solvents?
		Does the facility substitute non-hazardous solvents for hazardous solvents?
	Self-Audit	Did the handler perform a self-audit using I&C guideline #1 or the video entitled, "Ready To Do Business" that we provided? (Vehicle service facilities only. This item is not required by the HWRR.)
	VRP	Does the facility do pollution prevention activities and if so, are they aware of the Voluntary Remediation Program, P2 rule?
	VRP	Does the facility have a P2 plan?

V = Violation, NA = Not Applicable, IC = In Compliance, A = Applicable, XX = Not Relevant, TBD = To Be Determined, NE = Not Evaluated

HW Generator Status		
Result	Section	Inspection Item
	2 1(e)(i)	If the facility generates hazardous waste, does the facility generate less than 100 kg (220 lbs) per month or less than 1 kg per month of acute hazardous waste? If YES, generator must comply with 1(a)-(e).
	2 1(e)	<u>If so, the CESQG must comply with all of the following Chapter 2, Section 1(e) requirements: [1(b)-(e)](CESQG Only).</u>
	2 1(e)(vii)(A)	Does the CESQG adequately determine whether the waste is hazardous?(CESQG Only).
	2 1(e)(iii)	Does the CESQG determine the amount of HW generated per month?(CESQG Only).
	2 1(e)(vii)(B)	Does the CESQG ever accumulate more than 1000 kg? If more 1000 kg, then generator must comply with all SQG requirements (CESQG Only).
	2 1(e)(vii)(C)	Are HW managed at a federal or state permitted facility?(CESQG Only)

V = Violation, NA = Not Applicable, IC = In Compliance, A = Applicable, XX = Not Relevant, TBD = To Be Determined, NE = Not Evaluated

EPA Identification Number

Result	Section	Inspection Item
	8 1(c)(i)	Does the generator have an EPA ID number?
	8 1(c)(i)	<u>What is the EPA ID number?</u>

V = Violation, NA = Not Applicable, IC = In Compliance, A = Applicable, XX = Not Relevant, TBD = To Be Determined, NE = Not Evaluated

Used Oil Generator Questions

Result	Section	Inspection Item
		<u>IMPORTANT: If any of the following questions in this section are applicable to this inspection, you must use the regular Used Oil Generator checklist.</u>
	12 11(c)	Does the Generator store oil in an Underground Storage Tank(s) (UST(s))?
	12 11(c)	Is the generators total used oil storage capacity greater than 1,320 gallons? Note, this total does not include any container less than 55 gallons.
	1(1)(f)(i) (SWRR)	Does the generator have > 2,000 gallons total used oil storage capacity and is a vehicle service/equipment facility or is it a solid waste storage or transfer facility used only for the storage or transfer of >500 gallons of used oil? If so, they must have a solid waste storage permit.
	12 11(e)	Does the generator transport their own used oil to approved collection centers?
	12 11(a)(ii)(D)	Does the generator ship off-spec used oil to a a used oil burner or first claim that the used oil is to be burned for energy recovery and it meets the specification?
	12 11 (e)(iii)	Does the generator have a "tolling arrangement" whereby the reclaimed used oil is returned by the processor/re-refiner to the generator for reuse?
	12 11(d)(i)	Does the generator burn used oil in a space heater?
	12 11(a)(ii)(B)	Does the generator process or re-refine used oil?
	12 12(b)	Does the generator operate a used oil collection center which collects oil from used oil generators other than Do-It-Yourselfer's?

V = Violation, NA = Not Applicable, IC = In Compliance, A = Applicable, XX = Not Relevant, TBD = To Be Determined, NE = Not Evaluated

Basic Used Oil Generator Requirements, SWRR Chapter 1, HWRR Chapter 12

Result	Section	Inspection Item
	12 11(c)(i)	Does the used oil generator store used oil in tanks, containers, or units that meet the hazardous waste container requirements?
	1(1)(f)(i) (SWRR)	Does the generator have > 2,000 gallons total used oil storage capacity and is a vehicle service/equipment facility or is it a solid waste storage or transfer facility used only for the storage or transfer of >500 gallons of used oil? If so, they must have a solid waste storage permit.
	12 16(c)(i) and (ii).	Does the generator burn on-spec used oil from other generators? If yes, the generator must comply with Section 16(c)(i) and (ii). Note: If the on-spec generator complies with Section 16(c)(recordkeeping), 16(d)(notification), and Section 16(e)(ii)(shipment information), the used oil is not subject to any other used oil requirements
	12 11 (c)(ii)	Are the used oil containers in good condition (no severe rusting, structural defects or deterioration) and/or there are no visible leaks?
	12 11 (c)(iii)	Are the containers, above ground tanks, and UST fill pipes labeled or clearly marked with the words "Used Oil"?
	12 11(c)(iv)(A)	Is there evidence the generator performs the following cleanup step in response to used oil releases: Stopped the Release?
	12 11(c)(iv)(B)	Contained the released used oil?
	12 11(c)(iv)(C)	Clean up and properly manage the released used oil and other materials?
	12 11(c)(iv)(D)	If necessary to prevent future releases, repair or replace any leaking storage tanks or containers before returning them to service?

	12 11(a)(ii)(B)(I)	<u>Generators who perform the following activities are not processors provided that the used oil is generated onsite and is not being sent off-site to a burner of on- or off-specification used oil fuel.</u>
	12 11(a)(ii)(B)(I)(1.)	<u>Filtering, cleaning or otherwise reconditioning used oil before returning for reuse by the used oil generator.</u>
	12 11(a)(ii)(B)(I)(2.)	<u>Separating used oil from wastewater generated onsite to make the wastewater acceptable for discharge.</u>
	12 11(a)(ii)(B)(I)(3.)	<u>Using oil mist collectors to remove small droplets of used oil from in-plant air.</u>
	12 11(a)(ii)(B)(I)(4.)	<u>Draining or otherwise removing used oil from material containing or otherwise contaminated with used oil to remove excessive oil according to the requirement.</u>
	12 11(a)(ii)(B)(I)(5.)	<u>Filtering, separating or otherwise reconditioning used oil before burning it in a space heater.</u>
	12 17	Does the generator dispose of used oil and/or use it as a dust suppressant?
	1 1(f)(i)	If the facility is a retail facility, are there greater than 1,000 scrap tires being stored? If so, does the facility have a solid waste storage permit?
	12 11(c)	Does the generator have an SPCC plan that adequately addresses used oil spills and cleanup and total waste containment?
	12 11 (d)i	Does the generator burn used oil in a space heater that meets the following requirement: The burner burns only used oil for energy recovery generated by the owner/operator and household do-it-yourselfers (DIYs)?
	12 11(d)ii	Does the space heater have a maximum capacity of not more than 0.5 million Btu/hr?
	12 11(d)iii	Are the space heater combustion gases vented to the outside?

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Used Oil Filters [Chapter 2, Section 1(d)(ii)(M)]

Result	Section	Inspection Item
	2 1(d)(ii)(M)	<u>Used Oil Filters</u>
	2 1(d)(ii)(M)	Does the owner/operator generate used oil filters? If YES, must comply with 1(a) and either (b), (c) or (d).
	2 1(d)(ii)(M)	Is there evidence the filters are non-terne? If NO, evaluate compliance with the hazardous waste generator requirements.
	2 1(d)(ii)(M)(I)	Is there evidence the filters are hot-drained by puncturing the filter anti-drain back valve or the filter dome end?
	2 1(d)(ii)(M)(II)	Is there evidence the filters are hot-drained by crushing?
	2 1(d)(ii)(M)(III)	Is there evidence the filters are hot-drained by dismantling?
	2 1(d)(ii)(M)(IV)	Is there evidence the filters are hot-drained using any other equivalent method that will remove the used oil?

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**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID AND HAZARDOUS WASTE DIVISION
Large Quantity Hazardous Waste Generator-2010**

HW Determination [Section 1(b)]		
Result	Section	Inspection Item
	8 1(b)(i)(B)	Does the facility generate solid waste(s) listed in Chapter 2, Section 4 (any listed hazardous waste)?
	8 1(b)(i)(B)	If yes, list wastes and quantities (include EPA HW#).
	8 1(b)(i)(C)	Does the facility generate solid waste(s) that exhibit hazardous characteristics (corrosivity, ignitability, reactivity, TCLP)?
	8 1(b)(i)(C)	If yes, list wastes and quantities (include EPA HW#).
	8 1(b)(i)(C)(I)	If waste determination is by testing, did the generator use the test methods in Chapter 2, Appendix A-C or equivalent? (If equivalent test methods were used, attach copy of equivalent method)
	8 1(b)(i)(C)(II)	If waste determination is by process knowledge, did the generator apply process knowledge of the hazard characteristic in light of the materials or the processes used?
	8 1 (b)	Are there any other nonhazardous solid wastes generated by the generator? List wastes and types.
	NA	Does the facility recycle solvents?
	NA	Does the facility substitute nonhazardous solvents for hazardous solvents?
	NA	Are there additional initiatives beyond solvent substitution taken by the facility that could be considered voluntary pollution prevention?
	VRP	Is the facility aware of the Voluntary Remediation Program and the need to have a P2 Plan in-place to be eligible for the VRP?
	VRP	Does the facility have a P2 plan? If so, please briefly describe the plan that was presented to the inspector.
	XXX	

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EPA Identification Number		
Result	Section	Inspection Item
	8 1(c)(i)	Does the facility have an EPA ID number?
	8 1(c)(i)	What is the EPA ID number?

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Hazardous Waste Manifest		
Result	Section	Inspection Item
	8 2	Does the waste generator ship hazardous waste offsite? If NO, do not fill out the rest of section but proceed to Pre-Transport Requirements. If YES, list the primary off-site facility.
	8 2	Does the waste generator use a hazardous waste manifest to ship the HW?
	8 2(a)(i)	Does the manifest include the generator's name?
	8 2(a)(i)	Does the manifest include the manifest document number?
	8 2(a)(i)	Does the manifest include the generator name, mailing address, and telephone number?

	8 2(a)(i)	Does the manifest include the generator EPA ID number?
	8 2(a)(i)	Does the manifest include the transporter's name and EPA ID #?
	8 2(a)(i)	Does the manifest include the facility name, address and EPA ID#?
	8 2(a)(i)	Does the manifest include an alternate facility name, address and/or EPA ID# for any receipt of full load rejections?
	8 2(a)(i)	Does the manifest include the following waste information required by DOT: shipping name, quantity (weight or volume), and containers (type and number)?
	8 2 (a)(i)	Does the manifest include emergency information (special handling instruction, telephone number)?
	8 2(a)(i)	Are the most current and up-to-date manifest forms being used?
	8 2(d)(i)(C)	Does the generator maintain copies of the manifests?
	8 2(d)(i)(B)	Did the generator sign and date all manifests?
	8 4(a)	Did the generator obtain a hand-written signature of acceptance from the initial transporter?
	8 4(a)	Does the generator retain one copy of the manifest signed by the generator and initial transporter?
	8 4(a)	Do returned copies of the manifest include the facility owner/operator signature and date of acceptance?
	8 4(a)	Does the generator retain copies for at least 3 years?
	8 2(c)	Does the generator receive a copy of the manifest from the TSD?

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Pre-Transport Requirements

Result	Section	Inspection Item
	8 3(a)(i)	Does the generator package waste in accordance with DOT requirements? (See 49 CFR parts 173, 178, and 179)
	8 3(b)(i)	Does the generator follow DOT labeling requirements in accordance with 49 CFR 172?
	8 3(c)(i)	Does the generator mark each package in accordance with the 49 CFR 172 hazardous materials requirements?
	8 3(c)(ii)	Before transporting HW or offering HW for transportation offsite, is each container of 110 gallons or less marked with the required HW label: "HAZARDOUS WASTE-Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency. Generator's name and Address _____ Manifest Document Number _____."?
	8 3(d)(i)	Does the generator have placards to offer to transporter or has the generator properly placarded each hazardous waste transportation vehicle with the appropriate placards in accord with the 49 CFR Part 172, Subpart F requirements?
	8 e(ii)	Is the HW being stored for longer than 90 days?
	8 3(e)(i)(A)(I); 11 10(e)(i)	Does the generator inspect all containers for leakage and corrosion at least weekly?
	8 3(e)(i)(C)	Is each HW container being stored for less than 90 days, labeled/marked with the wording, "Hazardous Waste"?
	8 3(e)(i)(A)(I); 11 10(g)	Does the generator locate any containers holding ignitable or reactive waste at least 50 feet from the facility property line?
	8 e(i)(B)	Is each container clearly dated?
	8 3(e)(i)(A)(I); 11 10(b)	If the HW container is leaking, does the generator transfer the contents to a container in good condition or manage the waste in another acceptable way?

8 3(e)(i)(A)(I); 11 10(c)	Is the HW container compatible with the HW being stored?
8 3(e)(i)(A)(I); 11 10(d)(i)	Is there evidence the HW container(s) is closed during storage, except when it is necessary to add or remove waste?
8 3(e)(i)(A)(I); 11 10(h)	Are incompatible wastes being placed in the same container, are incompatible wastes in other containers being stored next to each other, or is incompatible waste being placed in an unwashed container that formerly held an incompatible waste?
8 3(e)(iii)(A)(II)	Is the hazardous waste container being stored in the satellite accumulation area, properly labeled with the wording, "Hazardous Waste" or other applicable wording?
8 3(e)(iii)	Is the maximum amount of hazardous waste being stored in the satellite accumulation area, one 55 gallon drum or one quart of acute HW, and is the drum/container in the hazardous waste satellite accumulation area, located at or near the waste generating process or in control of the waste generating process operator?
8 3(e)(iii)(A)(I)	Is the HW container in good condition, is the container compatible with the HW being stored, and is the container closed during storage unless it is necessary to add or remove waste?
8 3(e)(iii)(B)	Once the 55-gallon limit is met, has the drum/container in the hazardous waste satellite accumulation area been moved to the main storage area within 3 days and dated?
8 3(e)(i)(A)(I)	Does the HW container in the satellite accumulation area comply with items 11 10(b)(leaking container), 11 10(c)(container compatibility), and 11 10(d)(i)(closed container)?
8 3(e)(i)(A)(II)	Is HW being stored in tanks? If so, does the generator comply with the HWRR, Chapter 11, Section 11, Tank Systems requirements? Use specific checklist to evaluate.
8 3(e)(i)(A)(III); 11 24	Does the HW generator store waste on drip pads? If so, does the generator comply with the drip pad requirements? Use specific checklist to evaluate (See Drip Pad definition in HWRR, Chapter 1. Only applicable to wood preserving facilities that use drip pads.)
8 3(e)(i)(A)(IV); 11 31	Does the HW generator store HW in containment buildings? If so, does the generator comply with the HW containment building requirements? Use specific checklist to evaluate.

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Preparedness & Prevention

Result	Section	Inspection Item
	11 5(b); 8 3(e)(i)(D)	Is the facility maintained and operated to prevent fires, explosions, and sudden and non-sudden releases of HW to air, soil or surface water that could impact human health and the environment?
	8 3(e)(i)(D); 11 5(c)(iii)	Does the facility have the following required equipment unless none of the facility hazards would require the equipment: (a) internal communications or alarm system; (b) telephone or hand held two-way radio capable of summoning emergency assistance; (c) portable fire extinguishers, spill control and decon equipment; (d) water at adequate volume and pressure or foam equipment, auto sprinklers, or water spray systems?
	8 3(e)(i)(D); 11 5(d)	Has this equipment been tested and maintained to assure proper operation?
	8 3(e)(i)(D); 11 5(e)	Whenever HW is being poured, mixed, spread or handled, is there evidence of immediate access to an internal alarm or communication device unless none of the hazards posed by the facility require any of the emergency equipment? If there is ever just one employee on the premises, does this also apply unless none of the hazards posed by the facility require any of the emergency equipment?
	11 5(f), 8 3(e)(i)(D)	Is there sufficient aisle space to allow unobstructed movement of personnel and equipment?
	11 5(h), 8 3(e)(i)(D)	Has the owner/operator made arrangements to familiarize police, fire departments and emergency response personnel with facility layout, HW properties, working areas, entrance roads inside facility and possible evacuation routes as appropriate, for the type of waste handled, and the potential need for the services of these organizations, to familiarize them with the characteristics of the facility?
	11 5(h)(i)(B), 8 3(e)(i)(D)	In the case that more than one police or fire department might respond, is there a designated authority? If YES, name the primary authority.
	11 5(h)(i)(C), 8 3(e)(i)(D)	Does the owner/operator have phone numbers of and agreements with State emergency response teams, emergency response contractors, and equipment suppliers as appropriate, for the types of waste(s) handled, and the potential need for the services of these organizations?
	11 5(h)(i)(D), 8 3(e)(i)(D)	Has the owner/operator arranged to familiarize local hospitals with the properties of hazardous waste handled and types of injuries that could result from fires, explosions, or releases at the

		facility, as appropriate for the type of waste(s) handled and the potential need for the services of these organizations?
	11 5(h)(ii), 8 3(e)(i)(D)	Where State or local authorities decline to enter into the arrangements described under Section 5(h)(i), is this entered in the operating record?

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Personnel Training Requirements

Result	Section	Inspection Item
	8 3(e)(i)(D);11 4(g)(i)(A)	Do facility personnel successfully complete classroom or on-the-job training addressing compliance with the large quantity hazardous waste generator requirements?
	8 3(e)(i)(D);11 4(g)(i)(B)	Is the HW program directed by a person trained in HW procedures and instruction that teaches facility personnel the management procedures relevant to the positions in which they are employed?
	8 3(e)(i)(D);11 4(g)(i)(C)	Does the training program ensure facility personnel are able to effectively respond to emergencies by familiarizing them with emergency procedures, equipment, systems and the following where applicable: procedures for using, inspecting, repairing and replacing emergency and monitoring equipment; key parameters for auto waste feed cut-off systems; communication or alarm systems; fires & explosions response; groundwater contamination incidents;and shutdown of operations?
	8 3(e)(i)(D);11 4(g)(ii)	Do personnel successfully complete the required training specified under Items 16-18 within 6 months after the date of employment or position assignment, whichever is later and does their work in these areas not commence until they have completed the training requirements?
	8 3(e)(i)(D);11 4 (g)(iii)	Do the hazardous waste personnel take part in an annual review of the training described under 11 4(g)(i)(A)-(C)?
	8 3(e)(i)(D);11 4(g)(iv)(A)&(B)	Are the following documents/records being kept at the facility: Job title and written job description of each position?
	8 3(e)(i)(D);11 4(g)(iv)(C)	Are the following training documents/records being kept at the facility: Description of type and amount of training?
	8 3(e)(i)(D);11 4(g)(iv)(D)	Are there records being kept documenting that the required initial and refresher HW training has been given to and completed by facility personnel?
	8 3(e)(i)(D);11 4(g)(v)	Is there evidence that training records for current personnel are being kept until facility closure and for former employees, for 3 years?

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Recordkeeping & Records

Result	Section	Inspection Item
	8 4(a)(i)	Does the generator keep the following reports for at least three years: Manifests or signed copies from designated facilities?
	8 4(a)(ii)	Does the generator keep the following reports for at least three years from the report due date: Biennial Reports and Exception Reports?
	8 4(a)(iii)	Does the generator keep copies of test results, waste determinations or other determinations for at least 3 years from the date the waste was last sent to onsite or off-site treatment, storage or disposal?
	8 4(b)	Has the generator submitted the biennial report by March 1 of every even numbered year if HW is shipped offsite to a treatment, storage or disposal facility within the US?
	8 4(c)	Did the waste generator who generates greater than 1,000 kg/month HW, contact the transporter or TSD within 35 days of the initial transporter acceptance date, if they did not receive a copy of the waste shipment manifest with signature from the designated facility?
	8 4(c)(i)(B)	Did the waste generator of greater than 1,000 kg/month, submit the required Exception Report within 45 days of the date the waste was accepted by the initial transporter for each HW shipment where they did not receive the manifest with the signature of the owner/operator of the designated facility? If so, does the report contain the following: 1) Legible copy of the specific manifest for which the generator has not confirmation of delivery; 2) Cover letter signed by the generator signed by an authorized representative explaining efforts to relocate the HW and the results?

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Special Conditions

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Result	Section	Inspection Item
	8 5	Has the primary exporter received from or transported to a foreign source any hazardous waste?
	8 5(d)	If yes, has notice been filed with the Regional Administrator and does the notice contain all of the required items listed under 5(d)?
	8 5(e)	Does the primary exporter comply with the manifest requirements and the specific provisions of Chapter 8, Section 5(e)(i)? (See HWRR)
	8 5(f)	Does the generator comply with the special requirements contained under 8 5(f)(i)? See HWRR.
	8 5(g)	Does the primary exporter comply with the requirements under 8 5(g)? See HWRR
	8 5(h)	Does the primary exporter comply with the recordkeeping requirements listed under Chapter 8, Section 5(h)?
	8 6(a)	Does the hazardous waste importer comply with the requirements listed under Section 6? See HWRR.

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Land Disposal Restrictions

Result	Section	Inspection Item
	Chapter 13	<u>LDR General Requirements</u>
	13 1(g)(i)(A)	Has the generator determined whether the hazardous waste needs to be treated before it can be land disposed? Was this determination made by either testing the waste or using knowledge of the wastes? Note: The generator can also allow the TSD to make this determination. [71 FR 16862] See Notice Requirement-TSD Waste Treatment Determination item for specific Notice requirements if TSD makes the determination.
	13 1(g)(i)(B)	If the waste or contaminated soil does not meet the treatment standard, did the waste generator send the required one-time written notice with the initial shipment of waste, to each TSD receiving the waste, and place the required copy in the file? Note: Only one notice is required for the first initial waste shipment unless the waste constituents change.
	13 1(g)(i)(B)	Did the one-time written notice contain the following required items: a)EPA HW numbers and manifest number of first shipment? b)The constituents of concern for listed wastes and underlying hazardous constituents in characteristic HW unless all constituents will be treated, then there is no need to put all of them on the notice? c)Applicable wastewater/nonwastewater category? d)Waste analysis data (when applicable, i.e. if knowledge is not used)? e)For hazardous debris, when treating with the alternative treatment technologies, the contaminants subject to treatment and an indication the contaminants are being treated to comply with Section 4(f)? f)For contaminated soil, the constituents subject to treatment and the following statement, "This contaminated soil (does/does not) contain listed HW and (does/does not) exhibit a HW characteristic and (is subject to/complies with the soil treatment standards as provided by Section 4(j)(iii) of this Chapter or the universal treatment standards)"?
	71 FR 16862	If the generator allows the TSD to make the treatment determination, does the LDR notice contain only the following items: a) waste code? b) manifest number of the first waste shipment? c) the following statement, "This hazardous waste may or may not be subject to the LDR treatment standards. The treatment facility must make the determination?"
	13 1(g)(i)(H)	Does the generator keep a copy of all required notices, certifications, waste analysis data and other required documentation under Chapter 13, for 3 years from the date the subject waste was sent offsite to the TSD?
	13 1(g)(i)(B)(I)	For contaminated soil, was the required certification statement included on the notice and signed by an authorized representative: "I certify under penalty of law that I personally have examined this contaminated soil and it(does/does not)contain listed HW and(does/does not) exhibit a characteristic of HW and requires treatment to meet the soil treatment standard as provided by Chapter 13, Section 4(j)(iii) of the Wyoming HWRR"?
	Chapter 13	<u>HW or HW Soil-Treatment Standard Met</u>
	13 1(g)(i)(C)	Did the HW or HW contaminated soil meet the treatment standard at the original point of waste generation? If so, did the waste generator send with the initial shipment of waste to each TSD, the required one-time written notice to each TSD receiving the waste and place the required copy in the file?
	13 1(g)(i)(C)(I)	Did the one-time notice for contaminated soil that meets the treatment standard, contain the following required items: a) EPA HW numbers and manifest number of first shipment? b)The constituents of concern for listed wastes and underlying hazardous constituents in characteristic

		HW unless all constituents will be treated, then there is no need to put all of them on the notice? c)Applicable wastewater/nonwastewater category? d)Waste analysis data (when applicable, i.e. if knowledge is not used)? e)Does the one-time written notice contain the following certification: "I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or thorough knowledge of the waste to support this certification that the waste complies with the treatment standards specified in Chapter 13, Section 4 of the Wyoming Hazardous Waste Management Rules and Regulations. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment"?
	13 1(g)(i)(C)(II)	If the facility generates HW contaminated soil that meets the treatment standard, did the generator send the required notice containing all items listed under checklist item 13 1(g)(i)(C)(I), a-e, including the following statement, "This contaminated soil (does/does not) contain listed HW and (does/does not) exhibit a HW characteristic and (is subject to/complies with the soil treatment standards as provided by Section 4(j)(iii) of this Chapter or the universal treatment standards)", with the initial shipment of HW to the TSD?
	13 1(g)(i)(C)(III)	If the waste meeting the treatment standard changes, did the generator send a new notice and certification to the receiving facility and place a copy in their files? Note: Hazardous debris that is excluded from the definition of HW, are not subject to these requirements.
	Chapter 13	<u>Waste Does Not Meet Treatment Standard</u>
	13 1(g)(i)(D)	In the case where the generator's hazardous waste or contaminated soil does not meet the treatment standards but it is allowed to be land disposed as a result of a case-by-case extension, disposal in a no-migration unit or is the result of a national capacity or case-by-case capacity variance, did the waste generator send the required notice?
	13 1(g)(i)(D)	Does the one-time notice and certification contain the following: a)EPA HW numbers and manifest number of first shipment? b)The following statement: "This waste is not prohibited from land disposal"? c)Waste analysis data, when applicable? d)Date the waste is subject to the prohibition? e)For hazardous debris, when treating with the alternative treatment technologies, the contaminants subject to treatment and an indication the contaminants are being treated to comply with Section 4(f)?
	Chapter 13	<u>Treatment In Onsite Tanks, Containers, Containment Buildings</u>
	13 1(g)(i)(E)	If the waste generator is managing and treating prohibited waste or contaminated soil in tanks, containers, or containment buildings under Chapter 8, Section 3(e), does the generator develop and follow a waste analysis plan describing the procedures to comply with the treatment standards? Is a copy of the plan onsite?
	13 1(g)(i)(E)(I)	Is the plan based on a detailed chemical and physical analysis of a representative sample of the prohibited waste being treated and includes all information necessary to treat the waste, including the selected testing frequency?
	13 1(g)(i)(E)(II)	Is a copy of the plan being kept on file and is available for review?
	13 1(g)(i)(E)(III)	If the waste generator is managing and treating prohibited waste or contaminated soil in tanks, containers, or containment buildings under Chapter 8, Section 3(e), does the generator comply with the notification requirements contained under checklist item 13 1(g)(i)(C)(I)&(II)?
	Chapter 13	<u>Waste, Contaminated Soil Restricted</u>
	13 1(g)(i)(F)	If the generator has determined that the waste or contaminated soil is restricted based solely on knowledge of the waste or by testing the waste or a waste extract, does the generator have on file, all supporting data to make the determination or the waste analysis data used to make the determination?
	Chapter 13	<u>Prohibited Waste Exclusion</u>
	13 1(g)(i)(G)	If the generator is managing a prohibited waste that is excluded from the HW or waste material definition or is exempted under the HWRR subsequent to the point of waste generation(including CWA or UIC exempt wastes), does the generator have on file, a copy of the one-time notice that describes the waste generation, subsequent exclusion or exemption from the definition of HW or waste material or CWA exemption, and the disposition of the waste? Does the generator first make claim that the characteristic hazardous waste are no longer hazardous?
	Chapter 13	<u>Lab Packs</u>
	13 1(g)(i)(I)(I)	Does the generator manage lab packs that contain HW? If so, does the generator wish to use the alternative treatment standard in Section 4(c)(iii)? If so, does the generator submit a notice containing the following information: a)EPA HW numbers and manifest number of first shipment, and, b)The following certification: "I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have been

		excluded under Chapter 13, Appendix D of the Wyoming Hazardous Waste Rules & Regulations and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at Chapter 13, Section 4(c)(iii) of the Wyoming Hazardous Waste Rules & Regulations. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment”?
	13 1(g)(i)(I)(II)	If the lab pack or receiving facility changes, does the generator send and keep in the file, a new notice and certification containing all required information listed under 13 1(g)(i)(I)(I)?
	13 1(g)(i)(I)(IV)	For lab packs, does the generator comply with the recordkeeping requirements of 13 1(g)(i)(F) and the excluded prohibited waste requirements listed under 13 1(g)(i)(G)?

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Contingency Plan & Emergency Procedures

Result	Section	Inspection Item
	11 6(b), 8 3(e)(i)(D)	Is a contingency plan maintained at the facility? If so, were the provisions of the plan carried out every time there is a fire, explosion or HW release or constituents that could threaten human health or the environment?
	8 3(e)(i)(D);11 6(c)(i)	Does the contingency plan describe the actions facility personnel must take in response to fires, explosions, or any sudden or non-sudden release of HW or HW constituents to air, soil or surface water required under the contingency and emergency procedures requirements?
	8 3(e)(i)(D);11 6(c)(ii)	Is the contingency plan a revised SPCC Plan? If so, has it been amended to include HW provisions that are sufficient to comply with the requirements?
	8 3(e)(i)(D);11 6(c)(iii)	Does the Contingency Plan include the following required item: Arrangements with local emergency response organizations?
	8 3(e)(i)(D);11 6(c)(iv)	Does the Contingency Plan include the following required item: The emergency response coordinator's name(s), phone number(s), and address(es)? If more than one is listed, is one listed as primary and the others listed in the order of importance as alternates?
	8 3(e)(i)(D);11 6(c)(v)	Does the Contingency Plan include the following required item: A list of all emergency equipment at the facility and include descriptions of the equipment?
	8 3(e)(i)(D);11 6(c)(vi)	Does the Contingency Plan include the following required item: An evacuation plan?
	8 3(e)(i)(D);11 6(b)(ii)	Have the provisions of the contingency plan been carried out immediately whenever there has been a fire, explosion or hazardous waste/constituent release that could threaten human health and environment?
	8 3(e)(i)(D);11 6(d)(ii)	Have copies of the contingency plan been submitted to all local police departments, hospitals, and State and local emergency response teams?
	8 3(e)(i)(D);11 6(e)	Has it been necessary to amend the current contingency plan? If so, was it amended for any of the following reasons: (i) revised regulations; (ii) plan fails in emergency; (iii) facility changes in way materially that increases the potential for emergency; (iv) list of emergency coordinators changes; or list of emergency equipment changes.
	8 3(e)(i)(D);11 6(f)	Is there an emergency coordinator available onsite or on call at all times?
	8 3(e)(i)(D);11 6(g)	Has the emergency coordinator taken the following procedures during an imminent or actual emergency situation: (A) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel, and (B)Notified appropriate State or local agencies if their help is needed?
	8 3(e)(i)(D);11 6(g)(ii)	In the case of a release, has the emergency coordinator immediately identified the character, exact source, amount, and real extent of any released materials?
	8 3(e)(i)(D);11 6(g)(iii)(A)	Did the emergency coordinator make the required hazard assessment resulting from the release including a consideration of the direct and indirect effects of the release?
	8 3(e)(i)(D);11 6(g)(iv)(B)	If the release can impact human health & environment, did the emergency coordinator report the following: (A) If evacuation, immediately notify local authorities; (B) Has the on-scene coordinator or National Response Center been notified. Also, has WDEQ been notified with a report submitted consisting of the following required items: (I) Name/phone number of reporter; (II) Facility name/address; (III) Time and type of incident; (IV) Name/quantity of material involved if known; (V) Extend of injuries, if any; and (VI) the possible hazards to human health & environment outside the facility?
	8 3(e)(i)(D);11 6 (g)(v)	Did the emergency coordinator take all reasonable measures necessary to ensure that fires, explosions and releases do not occur, recur or spread to other HW at the facility? The measures must include stopping processes and operations, collection and containing released waste, and removing or isolating containers.

	8 3(e)(i)(D);11 6 (g)(vi)	If operations are stopped in response to fire, explosion or release, did the emergency coordinator monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes or other equipment where this is appropriate?
	8 3(e)(i)(D);11 6(g)(vii)	Did the emergency coordinator provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material resulting from the release, fire, or explosion?
	8 3(e)(i)(D);11 6(g)(viii)(A)&(B)	Does the emergency coordinator ensure that incompatible wastes are treated, stored or disposed until cleanup is completed and all emergency equipment is cleaned and fit for future use before operations resume?
	8 3(e)(i)(D);11 6(g)(ix)	Did the owner/operator notify the Director, and appropriate state and local authorities that the facility is in compliance with 11 6(g)(viii) before operations are resumed?
	8 3(e)(i)(D);11 6(g)(x)	Does the owner/operator note in the operating record the time, date and details of any incident requiring contingency plan implementation? Has the owner/operator submitted the required written report to the Director containing the following items: (A)Name,address and phone number of the owner/operator; B) Facility name, address and phone number; C) Date, time and incident type; D) Quantity and name of materials involved; E) Extent of injuries, if any; F) Human health & environment assessment of actual or potential hazards if applicable; G) Estimated quantity and disposition of recovered material that resulted from the incident?
	8 3(e)(i)(D);11 5(b)	Is the facility being operated to minimize the possibility of fire, explosion or any sudden or non-sudden hazardous waste release that could threaten human health or environment?

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**WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID AND HAZARDOUS WASTE DIVISION
Small Quantity Hazardous Waste Generator-2010**

HW Determination [Section 1(b)]		
Result	Section	Inspection Item
	8 1(b)(i)(B)	Does the facility generate solid waste(s) listed in Chapter 2, Section 4 (any listed hazardous waste)?
	8 1(b)(i)(B)	If yes, list wastes and quantities (include EPA HW#).
	8 1(b)(i)(C)	Does the facility generate solid waste(s) that exhibit hazardous characteristics (corrosivity, ignitability, reactivity, TCLP)?
	8 1(b)(i)(C)	If yes, list wastes and quantities (include EPA HW#).
	8 1(b)(i)(C)(I)	If waste determination is by testing, did the generator use the test methods in Chapter 2, Appendix A-C or equivalent? (If equivalent test methods were used, attach copy of equivalent method)
	8 1(b)(i)(C)(II)	If waste determination is by process knowledge, did the generator apply process knowledge of the hazard characteristic in light of the materials or the processes used?
	8 1 (b)	Are there any other nonhazardous solid wastes generated by the generator? List wastes and types.
	NA	Does the facility recycle solvents?
	NA	Does the facility substitute nonhazardous solvents for hazardous solvents?
	NA	Are there additional initiatives beyond solvent substitution taken by the facility that could be considered voluntary pollution prevention?
	VRP	Does the facility do pollution prevention activities and if so, are they aware of the Voluntary Remediation Program, P2 rule?
	VRP	Does the facility have a P2 plan?

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HW Identification Number		
Result	Section	Inspection Item
	8 1(c)(i)	Does the facility have a State/EPA ID number?
	8 1(c)(i)	What is the State/EPA ID number?

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Hazardous Waste Manifest		
Result	Section	Inspection Item
	8 2	Does the waste generator ship hazardous waste offsite? If NO, do not fill out the rest of section but proceed to Pre-Transport Requirements. If YES, list the primary off-site facility.
	8 2	Does the generator use a manifest? If NO, is the generator a small quantity generator (SQG), generating between 100 and 1000 kg/month? If YES, proceed to the next question. If NO, use CEG or LQG checklists.
	8 2(a)(v)(A)(I)	Does the SQG have a contractual agreement for waste reclamation? If YES, need to address 8 2(a)(v)(A)(I) and 8 2(a)(v)(A)(II) only, if NO, proceed to Item 8 2(a)(i), Manifest Requirements. Does the SQG contractual agreement contain the waste type and frequency of shipments?
	8 2(a)(v)(A)(II)	Does the SQG contractual agreement contain information to verify the vehicle used to transport the waste to the recycling facility and to deliver regenerated material is owned and operated by the reclaimer of the waste?
	8 2(a)(v)(B)	Does the SQG keep a copy of the reclamation agreement for at least 3 years after agreement

		termination?
	8 2(a)(i)	Does the manifest include the generator name?
	8 2(a)(i)	Does the manifest include the manifest document number?
	8 2(a)(i)	Does the manifest include the generator name, mailing address, and telephone number?
	8 2(a)(i)	Does the manifest include the generator ID#?
	8 2(a)(i)	Does the manifest include the transporter's name and EPA ID #?
	8 2(a)(i)	Does the manifest include the facility name, address and EPA ID#?
	8 2(a)(i)	Does the manifest include an alternate facility name, address and/or EPA ID#?
	8 2(a)(i)	Does the manifest include the following waste information required by DOT: shipping name, quantity (weight or volume), and containers (type and number)?
	8 2(a)(i)	Does the manifest include emergency information (special handling instruction, telephone number)?
	8 2(a)(i)	Are the most current and up-to-date manifest forms being used?
	8 2(d)(i)(C)	Does the generator maintain copies of the manifests?
	8 2(d)(i)(B)	Did the generator sign and date all manifests?
	8 4(a)	Did the generator obtain a hand-written signature of acceptance from the initial transporter?
	8 4(a)	Does the generator retain one copy of the manifest signed by the generator and initial transporter?
	8 4(a)	Do returned copies of the manifest include the facility owner/operator signature and date of acceptance?
	8 4(a)	Does the generator retain copies for at least 3 years?
	8 2(c)	Does the generator receive a copy of the manifest from the TSD?

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Pre-Transport Requirements

Result	Section	Inspection Item
	8 3(a)(i)	Does the generator package waste in accordance with DOT requirements? (See 49 CFR parts 173, 178, and 179)
	8 3(b)(i)	Does the generator follow DOT labeling requirements in accordance with 49 CFR 172?
	8 3(c)(i)	Does the generator mark each package in accordance with the 49 CFR 172 hazardous materials requirements?
	8 3(c)(ii)	Before transporting HW or offering HW for transportation offsite, is each container of 110 gallons or less marked with the required HW label: "HAZARDOUS WASTE-Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the US Environmental Protection Agency. Generator's name and Address _____ Manifest Document Number _____."?
	8 3(d)(i)	Does the generator have placards to offer to transporter or has the generator properly placarded each hazardous waste transportation vehicle with the appropriate placards in accord with the 49 CFR Part 172, Subpart F requirements?
	8 (e)(iv)(A) & (vi)	Is the HW being stored for longer than 180 or 270 (if the closed TSD is located greater than 200 miles) days or is the SQG accumulating greater than 6000 kg of HW?
	8 3(e)(iv)(B);11 10(e)(i)	Does the generator inspect all containers for leakage and corrosion at least weekly?
	8 3(e)(iv)(D) & (e)(i)(C)	Is each HW container being stored for less than 90 days, labeled/marked with the wording, "Hazardous Waste"?

	8 3(e)(iv)(D) & (e)(i)(B)	Is each container clearly dated?
	8 3(e)(iv)(B); 11 10(b)	If the HW container is leaking, does the generator transfer the contents to a container in good condition or manage the waste in another acceptable way?
	8 3(e)(iv)(B); 11 10(c)	Is the HW container compatible with the HW being stored?
	8 3(e)(iv)(B); 11 10(d)(i)	Is there evidence the HW container(s) is closed during storage, except when it is necessary to add or remove waste?
	8 3(e)(iv)(B); 11 10(h)	Are incompatible wastes being placed in the same container, are incompatible wastes in other containers being stored next to each other, or is incompatible waste being placed in an unwashed container that formerly held an incompatible waste?
	8 3(e)(iii)(A)(II)	Is the hazardous waste container being stored in the satellite accumulation area, properly labeled with the wording, "Hazardous Waste" or other applicable wording?
	8 3(e)(iii)	Is the maximum amount of hazardous waste being stored in the satellite accumulation area, one 55 gallon drum or one quart of acute HW, and is the drum/container in the hazardous waste satellite accumulation area, located at or near the waste generating process or in control of the waste generating process operator?
	8 3(e)(iii)(B)	Once the HW in the satellite accumulation container is full, does the generator move the HW to the HW storage area after 3 days?
	8 3(e)(iv)(C); 11 11(l)	Is HW being stored in tanks? If so, does the generator comply with the HWRR, Chapter 11, Section 11 11(l), SQG Tank Systems requirements? Use specific checklist to evaluate.
	8 3(e)(i)(A)(III); 11 24	Does the HW generator store waste on drip pads? If so, does the generator comply with the drip pad requirements? Use specific checklist to evaluate
	8 3(e)(i)(A)(IV); 11 31	Does the HW generator store HW in containment buildings? If so, does the generator comply with the HW containment building requirements? Use specific checklist to evaluate.
	8 3(e)(i)(A)(I)	Does the HW container in the satellite accumulation area comply with items 11 10(b)(leaking container), 11 10(c)(container compatibility), and 11 10(d)(i)(closed container)?

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Preparedness & Prevention

Result	Section	Inspection Item
	11 5(b); 8 3(e)(iv)(D)	Is the facility maintained and operated to prevent fires, explosions, and sudden and non-sudden releases of HW to air, soil or surface water that could impact human health and the environment?
	8 3(e)(iv)(D); 11 5(c)(iii)	Does the facility have the following required equipment unless none of the facility hazards would require the equipment: (a) internal communications or alarm system; (b) telephone or hand held two-way radio capable of summoning emergency assistance; (c) portable fire extinguishers, spill control and decon equipment; (d) water at adequate volume and pressure or foam equipment, auto sprinklers, or water spray systems?
	8 3(e)(iv)(D); 11 5(d)	Has this equipment been tested and maintained to assure proper operation?
	8 3(e)(iv)(D); 11 5(e)	Whenever HW is being poured, mixed, spread or handled, is there evidence of immediate access to internal alarm or communication device unless none of the hazards posed by the facility require any of the emergency equipment? If there is ever just one employee on the premises, does this also apply, unless none of the hazards posed by the facility require any of the emergency equipment?
	11 5(f), 8 3(e)(iv)(D)	Is there sufficient aisle space to allow unobstructed movement of personnel and equipment?
	11 5(h), 8 3(e)(iv)(D)	Has the owner/operator made arrangements to familiarize police, fire departments and emergency response personnel with facility layout, HW properties, working areas, entrance roads inside facility and possible evacuation routes as appropriate, for the type of waste handled, and the potential need for the services of these organizations, to familiarize them with the characteristics of the facility?
	11 5(h)(i)(B), 8 3(e)(iv)(D)	In the case that more than one police or fire department might respond, is there a designated authority? If YES, name the primary authority.
	11 5(h)(i)(C), 8 3(e)(iv)(D)	Does the owner/operator have phone numbers of and agreements with State emergency response teams, emergency response contractors, and equipment suppliers as appropriate, for the types of waste(s) handled, and the potential need for the services of these organizations?

	11 5(h)(i)(D), 8 3(e)(iv)(D)	Has the owner/operator arranged to familiarize local hospitals with the properties of hazardous waste handled and types of injuries that could result from fires, explosions, or releases at the facility, as appropriate for the type of waste(s) handled and the potential need for the services of these organizations?
	11 5(h)(ii), 8 3(e)(iv)(D)	Where State or local authorities decline to enter into the arrangements described under Section 5(h)(i), is this entered in the operating record?

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Emergency Procedures

Result	Section	Inspection Item
	8 3(e)(iv)(E)(I)	Is there an emergency coordinator onsite or on call at all times?
	8 3(e)(iv)(E)(II)(1.)	Is the following information posted next to the telephone: The name and phone number of the emergency coordinator?
	8 3(e)(iv)(E)(II)(2.)	Is the following information posted next to the telephone: The location of fire extinguishers, spill control equipment, and a fire alarm (if necessary)?
	8 3(e)(iv)(E)(II)(3.)	Is the following information posted next to the telephone: The phone number of the fire department (not necessary if facility has a fire alarm)?
	8 3(e)(iv)(E)(III)	Does the generator ensure all employees associated with duties related to hazardous waste management are familiar with proper waste handling and emergency procedures?
	8 3(e)(iv)(E)(IV)(1.)	In the event of a fire, are there provisions for the emergency coordinator or his or her designee, to call the fire department or attempt to extinguish it using a fire extinguisher?
	8 3(e)(iv)(E)(IV)(2.)	In the event of a spill, are there provisions for the emergency coordinator or his or her designee, to contain the flow of hazardous waste to the extent possible, and as soon as is practicable, clean up the hazardous waste and any contaminated materials or soil?
	8 3(e)(iv)(E)(3.)	In the event of fire, explosion or other release that could threaten human health outside of facility or if there is knowledge that a spill has reached surface water, does the generator immediately notify the National Response Center?
	8 3(e)(iv)(E)(IV)(3.)(a.)	Does the spill report contain the following information: name, address, and U.S.EPA ID# of the generator?
	8 3(e)(iv)(E)(IV)(3.)(b.)	Does the spill report contain the following info: date, time, and type of incident (e.g., spill or fire)?
	8 3(e)(iv)(E)(IV)(3.)(c.)	Does the spill report contain the following info: quantity and type of HW involved in the incident?
	8 3(e)(iv)(E)(IV)(3.)(d.)	Does the spill report contain the following info: extent of injuries, if any?
	8 3(e)(iv)(E)(IV)(3.)(e.)	Does the spill report contain the following info: estimated quantity and disposition of recovered materials, if any?

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Recordkeeping

Result	Section	Inspection Item
	8 4(e)(i) & 4(a)(i)	Does the generator keep the following reports for at least three years: manifests or signed copies from designated facilities?
	8 4(e)(i) & 4(a)(iii)	Does the generator keep copies of test results, waste determinations or other determinations for at least 3 years from the date the waste was last sent to onsite or off-site treatment, storage or disposal?
	8 4(e)(ii) & 4(c)(ii)	If the generator did not receive a copy of the manifest with handwritten signature of the owner/operator of the designated facility within 60 days from the date the waste was originally accepted by initial transporter, did the generator submit a legible copy of the manifest with indication (handwritten or typed note on manifest copy or attached paper stating returned copy not received)of no delivery confirmation to the Director?

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Special Conditions

Result	Section	Inspection Item
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	8 5	Has the primary exporter received from or transported to a foreign source any hazardous waste?
	8 5(d)	If yes, has notice been filed with the Regional Administrator and does the notice contain all of the required items listed under 5(d)?
	8 5(e)	Does the primary exporter comply with the manifest requirements and the specific provisions of Chapter 8, Section 5(e)(i)? (See HWRR)
	8 5(f)	Does the generator comply with the special requirements contained under 8 5(f)(i)? See HWRR.
	8 5(g)	Does the primary exporter comply with the requirements under 8 5(g)? See HWRR
	8 5(h)	Does the primary exporter comply with the recordkeeping requirements listed under Chapter 8, Section 5(h)?
	8 6(a)	Does the hazardous waste importer comply with the requirements listed under Section 6? See HWRR.

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Land Disposal Restrictions		
Result	Section	Inspection Item
	13 1(g)(i)(J)	Does the SQG have a tolling agreement in compliance with 8 2(a)(v)(A)&(B)? If so, the SQG must comply with the notification requirements of 13 1(g)(i)(B) for the initial waste shipment. Has the SQG kept a copy of the notification and certification along with the tolling agreement for a period of at least 3 years? Note: If the SQG complies with these tolling agreement requirements, the remaining requirements are NA.
	13 1(g)(i)(A)	Has the generator determined whether the hazardous waste needs to be treated before it can be land disposed? Was this determination made by either testing the waste or using knowledge of the wastes? Note: The generator can also allow the TSD to make this determination. [71 FR 16862] See Notice Requirement-TSD Waste Treatment Determination Item for specific Notice requirements if the TSD makes the determination.
	13 1(g)(i)(B)	If the waste or contaminated soil does not meet the treatment standard, did the waste generator send the required one-time written notice with the initial shipment of waste, to each TSD receiving the waste, and place the required copy in the file? Note: Only one notice is required for the first initial waste shipment unless the waste constituents change.
	13 1(g)(i)(B)	Did the one-time written notice contain the following required items: a)EPA HW numbers and manifest number of first shipment? b)The constituents of concern for listed wastes and underlying hazardous constituents in characteristic HW unless all constituents will be treated, then there is no need to put all of them on the notice? c)Applicable wastewater/nonwastewater category? d)Waste analysis data (when applicable, i.e. if knowledge is not used)? e)For hazardous debris, when treating with the alternative treatment technologies, the contaminants subject to treatment and an indication the contaminants are being treated to comply with Section 4(f)? f)For contaminated soil, the constituents subject to treatment and the following statement, "This contaminated soil (does/does not) contain listed HW and (does/does not) exhibit a HW characteristic and (is subject to/complies with the soil treatment standards as provided by Section 4(j)(iii) of this Chapter or the universal treatment standards)"?
	13 1(g)(i)(B)(I)	For contaminated soil, was the required certification statement included on the notice and signed by an authorized representative: "I certify under penalty of law that I personally have examined this contaminated soil and it(does/does not)contain listed HW and(does/does not) exhibit a characteristic of HW and requires treatment to meet the soil treatment standard as provided by Chapter 13, Section 4(j)(iii) of the Wyoming HWRR"?
	71 FR 16862	If the generator allows the TSD to make the treatment determination, does the LDR notice contain only the following items: a) waste code? b) manifest number of the first waste shipment? c) the following statement, "This hazardous waste may or may not be subject to the LDR treatment standards. The treatment facility must make the determination"?
	13 1(g)(i)(C)	Did the HW or HW contaminated soil meet the treatment standard at the original point of waste generation? If so, did the waste generator send with the initial shipment of waste to each TSD, the required one-time written notice to each TSD receiving the waste and place the required copy in the file?
	13 1(g)(i)(C)(I)	Did the one-time notice for contaminated soil that meets the treatment standard, contain the following required items: a) EPA HW numbers and manifest number of first shipment? b)The constituents of concern for listed wastes and underlying hazardous constituents in characteristic HW unless all constituents will be treated, then there is no need to put all of them on the notice? c)Applicable wastewater/nonwastewater category? d)Waste analysis data (when applicable, i.e. if knowledge is not used)? e)Does the one-time written notice contain the following certification: "I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or thorough knowledge of the waste to support this certification that

		the waste complies with the treatment standards specified in Chapter 13, Section 4 of the Wyoming Hazardous Waste Management Rules and Regulations. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment”?
	13 1(g)(i)(C)(III)	If the waste meeting the treatment standard changes, did the generator send a new notice and certification to the receiving facility and place a copy in their files? Note: Hazardous debris that is excluded from the definition of HW, are not subject to these requirements.
	13 1(g)(i)(D)	In the case where the generator’s hazardous waste or contaminated soil does not meet the treatment standards but it is allowed to be land disposed as a result of a case-by-case extension, disposal in a no-migration unit or is the result of a national capacity or case-by-case capacity variance, did the waste generator send the required notice?
	13 1(g)(i)(F)	If the generator has determined that the waste or contaminated soil is restricted based solely on knowledge of the waste or by testing the waste or a waste extract, does the generator have on file, all supporting data to make the determination or the waste analysis data used to make the determination?
	13 1(g)(i)(G)	If the generator is managing a prohibited waste that is excluded from the HW or waste material definition or is exempted under the HWRR subsequent to the point of waste generation(including CWA or UIC exempt wastes), does the generator have on file, a copy of the one-time notice that describes the waste generation, subsequent exclusion or exemption from the definition of HW or waste material or CWA exemption, and the disposition of the waste? Does the generator first make the claim that characteristic hazardous waste are no longer hazardous?
	13 1(g)(i)(H)	Does the generator keep a copy of all required notices,certifications, waste analysis data and other required documentation under Chapter 13, for 3 years from the date the subject waste was sent offsite to the TSD?
	13 1(g)(i)(I)(I)	Does the generator manage lab packs that contain HW? If so, does the generator wish to use the alternative treatment standard in Section 4(c)(iii)? If so, does the generator submit a notice containing the following information: a)EPA HW numbers and manifest number of first shipment, and, b)The following certification: “I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have been excluded under Chapter 13, Appendix D of the Wyoming Hazardous Waste Rules & Regulations and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at Chapter 13, Section 4(c)(iii) of the Wyoming Hazardous Waste Rules & Regulations. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment”?
	13 1(g)(i)(I)(II)	If the lab pack or receiving facility changes, does the generator send and keep in the file, a new notice and certification containing all required information listed under 13 1(g)(i)(I)(I)?
	13 1(g)(i)(I)(IV)	For lab packs, does the generator comply with the recordkeeping requirements of 13 1(g)(i)(F) and the excluded prohibited waste requirements listed under 13 1(g)(i)(G)?

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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:
All Facilities	
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.	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. For those open items, indicate what corrective action is planned and milestones established to correct problems.
DF.2. Facilities are required to comply with all applicable federal regulatory requirements not contained in this checklist.	Determine if any new regulations have been issued since the finalization of the guide. If so, annotate checklist to include new standards. Determine if the facility has activities or facilities which are federally regulated, but not addressed in this checklist. Verify that the facility is in compliance with all applicable and newly issued regulations.
DF.3. Facilities are required to comply with state and local regulations concerning hazardous waste management.	Verify that the facility is abiding by state and local hazardous waste requirements. Verify that the facility is operating according to permits issued by the state or local agencies where approved. (NOTE: Issues typically regulated by state and local agencies include: - Additional manifesting requirements - More frequent reporting requirements - Transportation - Identification of special waste or waste categories - Regulation of specific substances as hazardous waste such as: medical, pathological, and infectious waste; used oil; explosives; used batteries - Small and very small quantity generator requirements - RCRA permitting of oil/water separators - Disposal requirements - Construction and operation of storage and disposal facilities - Satellite accumulation point requirements - Container marking and labeling requirements.) Verify that the actions detailed in compliance agreements are being taken according to the schedule established in the agreements.
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>	<i>Verify that specific individuals have been designated responsible for hazardous waste storage areas.</i> <i>Verify that the individuals designated responsible for hazardous waste storage areas are aware of the precise nature of their responsibilities.</i> <i>Verify that required hazardous waste handling training is in personnel file.</i>

Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA

Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
Transportation of Hazardous Waste	
<p>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>	<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>
<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>	<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"> - "HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency." - Generator's name and address - Manifest Document Number ____. <p>Verify that proper DOT placarding is available for the transporter.</p>
<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>	<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>
<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>	<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>

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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"> - Transfer facility storage is for 10 days or less - DOT packaging requirements are met - Shipments are manifested and manifests accompany shipments - Storage is consistent with good management practices. <p>(NOTE: Storage for more than 10 days will require a TSDF permit.)</p>
All Treatment, Storage and Disposal Facilities (TSDFs)	
<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"> - Reporting and recordkeeping - Compliance schedules - Allowable wastes - Allowable activities - Corrective action, if applicable.
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"> - 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 - 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).

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Compliance Category: Hazardous Waste Management	
Regulatory Requirement or Management Practice:	Reviewer Checks:
<p>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>	<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"> - Internal communications or alarm system capable of providing immediate emergency instruction to facility personnel - A telephone or hand-held two way radio, capable of summoning emergency assistance - Portable fire extinguishers and fire control equipment, including special extinguishing equipment (foam, inert gas, or dry chemicals) - Spill control equipment - Decontamination equipment - Fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam-producing equipment, or automatic sprinklers, or water spray systems. <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>
<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>	<p>Verify from the operating record and/or observation that the following safe management practices are used:</p> <ul style="list-style-type: none"> - Wastes are separated and protected from sources of ignition or reaction - Smoking and open flame is confined to specially designated locations when ignitable or reactive wastes is handled - No Smoking signs are used when necessary.
<p>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>	<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"> - Generation of extreme heat or pressure, fire or explosions, or violent reactions - Production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment - Production of uncontrolled flammable fumes or gases sufficient to pose a risk of fire or explosions - Damage the structural integrity of the device or facility - Threats to human health or the environment through other like means.

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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"> - Immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties - Identify the character, exact source, amount, and a real extent of any released materials - Assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.) - Take all reasonable measures necessary to ensure that fires, explosions and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include where applicable: <ul style="list-style-type: none"> -- stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases -- collect and contain the released waste -- remove or isolate containers when necessary - Monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate - Provide for treatment, storage, or disposal of recovered waste, contaminated soil, or surface water, or other material immediately after emergency - Ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed - Ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed - Notify EPA, and appropriate state and local authorities that the facility is in compliance with 40 CFR 265.56(h) before operation resumes.

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