

# HAZARDOUS WASTE LEGISLATION GUIDE

# TELEPHONE NUMBERS

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## WHERE TO REPORT SPILLS (24 HOURS)

Provincial Emergency Program  
Canadian Coast Guard (to report marine spills)

1-800-663-3456  
604-666-6011  
or toll-free 1-800-889-8852

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Victoria (250) 387-3205

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#### Lower Mainland Region

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Emergencies (613) 996-6666  
Information (613) 992-4624

## ENVIRONMENT CANADA

Oil and Chemical Spill Reports (24 hours) 604-666-6100

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# **Hazardous Waste Legislation Guide**

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for

Ministry of Environment  
The Province of British Columbia

June 2005

## Library and Archives Canada Cataloguing in Publication Data

Main entry under title:

Hazardous waste legislation guide. --

“Revised by Oliver N.C. St. Quintin, Egistra Innovation Ltd.”

Previously issued as: Special waste legislation guide / BC Environment,  
Environmental Protection Division, 1993.

Also available on the Internet.

ISBN 0-7726-5378-X

1. Hazardous wastes – Law and legislation - British Columbia. I. British  
Columbia. Ministry of Environment. II. Title: Special waste legislation guide.

KEB431.5.W37 H39 2005    346.71104'622    C2005-960132-9  
KF3946 H39 2005

Copies of this guide are available in electronic format from the Hazardous Wastes page on the web site of the Ministry of Environment or in hard copy from Crown Publications Inc. See [Appendix A](#) for address details.

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# HOW TO USE THIS GUIDE

This guide explains how to follow the laws in BC for managing hazardous waste. It also describes the province's programs for managing hazardous waste.

The guide has 22 chapters. It starts with a brief introduction and goes through procedures required to identify, handle, store, transport, and dispose of hazardous wastes.

**Figures** Tables, diagrams, and charts are numbered in order and referred to as *Figures*. For example, Figure 11, whether it is a table or a chart, is always located after Figure 10. In addition, all figures appear at the end of the chapter that first refers to them.

**When is a Waste a Hazardous Waste?** People who generate or own waste need to know first if their wastes are hazardous. They should start with Chapter 3, [When is a Waste a Hazardous Waste?](#) A good chemical and physical characterization of the waste is often required to answer this question. This may require access to a well-equipped laboratory for chemical analyses.

**Registration** For anything more than very small quantities, the next step is to register the waste with the Ministry of Environment if it is hazardous. Chapter 4, [Generator Registration](#), discusses the quantities that must be registered, how to register, and what time is allowed for registering.

**Containers** Containers are an important part of any option for managing hazardous waste. Before putting hazardous waste into containers, review Chapter 5, [Containers for Hazardous Waste](#) (and Section 3.0 in Chapter 10, [Short-Term Storage Facilities](#), if storage of PCB wastes is involved). This could save time and effort by avoiding use of the wrong types of containers or packing in incompatible combinations.

**Transport** Chapter 6, [Transporting Hazardous Waste](#), discusses transport of hazardous waste. This chapter is very important for people who consign (ship), carry, or receive hazardous waste. It discusses the system for identifying consignors (BC Generator or BCG numbers), how to get a transport licence, and everyone's responsibilities for completing a manifest.

**Management Options** If a waste is found to be hazardous waste, a decision must be made soon after on how to manage it. Various ways of managing hazardous wastes are reviewed in Chapter 7, [Hazardous Waste Management Options](#). This chapter includes a table giving options for reusing, treating, or disposing of different types of hazardous wastes.

**Requirements** The chapter to consult next depends on how the waste is going to be managed. Chapter 8, [All Hazardous Waste Facilities](#), is very important because it discusses the general requirements for all facilities. Chapters 9 to 16 discuss the additional requirements that apply to specific types of facilities. For example, if waste is going to be managed at a mobile treatment facility, the following chapters should all be reviewed:

- Chapter 8, [All Hazardous Waste Facilities](#)
- Chapter 11, [Treatment Facilities](#) and
- Chapter 13, [Mobile Facilities](#)

- Prohibited Practices** Chapter 17, *Prohibited Management Practices*, discusses some practices that may not be used to manage hazardous wastes:
- mixing or diluting
  - underground injection (except as allowed in the *Oil and Gas Waste Regulation* for oil or gas extraction)
  - location of any types of hazardous waste facilities on water and
  - discharges to municipal sewers or landfills
- Less Restrictive Options** Alternative, less restrictive options are allowed for managing some specific types of hazardous waste. Chapter 18, *Specific Hazardous Wastes*, discusses the special provisions allowed for managing:
- waste asbestos
  - waste oil
  - hydrocarbon contaminated soil
  - pesticide wastes
  - waste paint and
  - household hazardous waste
- Authorizations** Chapter 19, *Permits and Other Forms of Authorization*, discusses the various types of authorizations that may be required for managing or transporting hazardous waste. The chapter explains:
- types of authorizations
  - how to apply for a permit for discharge to the environment or for a secure landfill
  - decision-making and appeal processes for permits
  - some cases where authorization is not required and
  - how to apply for a change in requirements or delisting of a hazardous waste
- Enforcement and Penalties** Chapter 20, *Enforcement and Penalties*, explains how BC's laws are enforced and summarizes some of the offences and possible penalties. In some cases, penalties under federal legislation such as the *Canadian Environmental Protection Act*, the *Transportation of Dangerous Goods Act*, or the *Fisheries Act* may also apply.
- Contingency Planning** Provincial requirements for contingency planning, spill reporting, and management of spills are discussed in Chapter 21, *Contingency Planning*.
- Contacts** The inside cover contains an abbreviated list of contacts for various government agencies involved in managing hazardous wastes. A complete list of addresses and telephone numbers is given in [Appendix A](#).
- Other Resources** The guide contains other useful resources:
- selected information sources in [Appendix B](#) and
  - a glossary explaining various technical terms in [Appendix C](#)
- Updates** The law on hazardous wastes changes from time to time. Anyone managing hazardous waste must therefore have a way to keep up to date with these changes. Officially, changes to provincial law are published in the *British Columbia Gazette*. However, unofficial announcements can usually be found on the Ministry's web site. Some companies also offer updating services by subscription or for a fee.

As changes are made to the law on hazardous waste, this guide may also be revised. Check the Ministry's web site for the latest edition.

**Important Terms**

Many parts of the *Hazardous Waste (HW) Regulation* and this guide refer to decisions or actions by a director. Section 1 of the *Environmental Management (EM) Act* defines a director. In addition, section 3 of the *EM Act* allows a director to delegate most powers to another person. So, in this guide, a *director* means:

- a person employed by the government and designated in writing by the minister as a director of waste management or as an acting, deputy, or assistant director of waste management
- a person to whom powers have been delegated by a director or
- a district director for cases that are within the jurisdiction of a district director appointed under section 31, 32, or 33 of the *EM Act*

The term *approved* is also used often. Section 1(2) of the *HW Regulation* specifies that for something to be approved, it must be in writing and it must be issued by a director, unless another person's approval is specifically required.

**Disclaimer**

Finally, this guide is not a legal document. In all cases the *EM Act*, regulations, and other legislation take precedence. If further explanation of BC's system for managing hazardous waste is required, consult Hazardous Waste Program staff in Victoria or any office of the Regional Operations Branch.





# INTRODUCTION

Hazardous wastes are wastes that could harm human health or the environment if not properly handled or disposed of. Special techniques are needed to eliminate or reduce the hazards. Hazardous wastes must not be sent to ordinary landfills or discharged to sewer; more specialized facilities are required to deal safely with these wastes. Chapter 7, *Hazardous Waste Management Options*, discusses options for managing hazardous wastes. Preferred options are discussed first.

Hazardous wastes may be hazardous in many different ways. They may be corrosive, ignitable, infectious, reactive, toxic, or bioaccumulative. They may range from paints, oils, and solvents to acids, heavy metals, and pesticides. Most of us know them as the by-products of an industrialized society.

There are various ways of dealing properly with hazardous wastes. This guide explains BC's system for managing these troublesome substances, with emphasis on the laws and regulations that apply.

## 1.0 Background

In the late 1970s, the lack of facilities for proper treatment and disposal of hazardous wastes in BC became clear as a result of a number of serious incidents. The need to clean up abandoned chemicals and contaminated work sites led the government to develop plans for a waste management system that could handle these hazardous materials.

Part of the initial planning included the commissioning of a comprehensive hazardous waste management strategy for the four western provinces, North-western Ontario, the Yukon and Northwest Territories, and the federal government of Canada.

Following publication of the strategy, a committee was established to advise on development of safe, acceptable methods and facilities for managing hazardous wastes in BC. The committee's recommendations were published in June, 1981, in the *Report of the Hazardous Waste Advisory Committee*. This work formed the groundwork for the provincial hazardous waste management program.

The committee recognized that a comprehensive system was needed for managing hazardous waste in BC. Five major program elements were identified for this system:

- technologies to recycle, treat, store, transport, and dispose of hazardous wastes
- operators for hazardous waste management facilities
- suitable locations for these facilities
- laws and regulations to ensure proper and safe operation of the system and
- programs to inform the public about the hazardous waste system

Significant progress has been made in all five program elements. The Ministry of Environment will continue efforts to make further progress in these areas.

## 2.0 Acts and Regulations

This document is a guide to the law in BC for managing hazardous wastes.

**Provincial** The provincial acts and regulations most relevant to this topic are:

- *Environmental Management (EM) Act*
- *Hazardous Waste (HW) Regulation*
- *Environmental Assessment Act* and
- *Reviewable Projects Regulation*

Among other things, the *EM Act* sets up a comprehensive framework for regulating hazardous wastes in BC. The details are contained in the *HW Regulation* and include:

- registration of hazardous waste
- requirements for hazardous waste facilities
- containers for storing and transporting hazardous wastes
- licensing of hazardous waste carriers and
- requirements for specific types of hazardous waste

The *Environmental Assessment Act* sets up the framework for reviewing projects that may have an environmental impact. Details are contained in regulations under the Act, including the *Reviewable Projects Regulation*. This Regulation specifies the types and capacities of hazardous waste facilities that are reviewable.

**Federal** The federal acts and regulations most relevant to managing hazardous wastes are:

- *Canadian Environmental Protection Act*
- *Export and Import of Hazardous Wastes Regulations*
- *Interprovincial Movement of Hazardous Waste Regulations* and
- *Transportation of Dangerous Goods Act and Regulations*

**Disclaimer** This guide is not a legal document. Acts and regulations always take precedence over any interpretation given in this guide.



# WHEN IS A WASTE A HAZARDOUS WASTE?

What is a hazardous waste? How do I know if I have a hazardous waste? When does the *Hazardous Waste (HW) Regulation* apply? The answers to these questions depend on four key considerations:

- definition of a waste
- composition, properties, and origin of a waste
- definition of hazardous waste and
- where in a process the waste is evaluated to find out if it is a hazardous waste

The rest of this chapter discusses these considerations further and provides detailed procedures for evaluating and naming wastes.

## 1.0 Waste Substances

The definition of waste from section 1 of the *Environmental Management (EM) Act* is shown in [Figure 1, Definition of Waste](#). The terms *air contaminant*, *effluent*, and *refuse* are further defined in the *EM Act*, the terms *biomedical waste* and *hazardous waste* are further defined in the *HW Regulation*.

The first part of the definition lists various types of wastes. The second part of the definition states that commercial value or usefulness does not stop something from being a waste. This exclusion is important because it broadens the definition of waste. It means that by-products, recyclables, and reusable substances must be evaluated to find out if they are hazardous waste.

## 2.0 Waste Composition, Properties, and Origin

Under the *HW Regulation*, the generator of a waste is mainly responsible for knowing the composition, properties, and origin of a waste. This knowledge is required to properly evaluate the waste, as well as to protect the generator, the generator's employees, the public, and the environment. The services of a well-equipped analytical laboratory may be needed to get some of this information.

## 3.0 Definition of Hazardous Waste

The definition of hazardous waste from section 1 of the *HW Regulation* is shown in [Figure 2, Definition of Hazardous Waste](#).

The first substances listed in the definition are dangerous goods in certain classes that are no longer used for their original purpose. So what are dangerous goods?

### ***Dangerous Goods***

In 1985, BC joined the federal government and the other provinces to agree on a national definition of dangerous goods. This definition is given in the federal *Transportation of Dangerous Goods (TDG) Act*.

Under the *TDG Act*, *dangerous goods* means: a product, substance, or organism included by its nature or by the regulations in any of the classes listed in the schedule. Step 4 in Section 5.0, *Waste Evaluation Procedure*, explains in more detail what this definition means and how it must be used.

The *TDG Regulations* repeat the definition of dangerous goods and provide the details for defining and classifying them. Because many hazardous wastes are dangerous goods as defined by the *TDG Regulations*, the *HW Regulation* uses the same rules to define and classify the more hazardous wastes.

For this reason, the waste generator must have a good understanding of the *TDG Regulations*. The *TDG Act and Regulations* are available online from the Transport of Dangerous Goods page of Transport Canada's web site. See [Appendix A](#) for the address.

#### **Other Types of Hazardous Wastes**

Most of the other 11 types of substances listed as hazardous wastes are further defined in separate definitions in section 1 of the *HW Regulation*.

### **4.0 Evaluation Point**

The point in a process where a substance becomes waste is important. This is the point where the substance must be evaluated to see if it is hazardous waste. If the substance is hazardous waste at this point, it means that all facilities for handling the waste after this point must comply with the *HW Regulation*. In many cases, the point where a substance becomes waste is not the point of discharge or final disposal.

Using the proper point to evaluate substances is one of the most difficult aspects of working with the *HW Regulation*. While there is no answer that always applies, it is suggested that process streams be evaluated at the point beyond which no useful product or purpose is derived. In some cases, however, Environmental Protection Division staff may require generators to use a different point of evaluation.

### **5.0 Waste Evaluation Procedure**

In essence, hazardous waste is defined by a process of elimination. The composition, properties, and origin of a waste are checked against a series of excluded substances, criteria, and descriptions. A waste is a hazardous waste if no exclusion is applicable and:

- any of the criteria are exceeded or
- the waste matches any of the descriptions

A standard sequence of steps is followed for this checking process. The steps follow from the definition of hazardous waste and are described in more detail below. [Figure 3, Evaluation Flowchart](#), shows the process schematically.



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**Note:** Wastes must be properly evaluated. There are severe penalties under both the *TDG Regulations* and the *HW Regulation* for not correctly classifying wastes that are dangerous goods or hazardous waste.

It is also important to follow the steps in the order given to make sure that the most hazardous property of a waste is properly identified. This is especially the case if a waste exceeds the criteria or meets the descriptions of more than one type of waste.

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**Tip:** Formal tests may not be required at each step if the origin of a waste, the process generating it, or other information indicates that a particular test is not required. It is suggested that a written record be kept of the reasons why a test was not required.



**Tip:** It may be possible to save on disposal costs by spending more time and money to find out if disposal as hazardous waste is really required. Disposing of waste as hazardous waste is more costly than disposing of it as non-hazardous waste.

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### **Step 1: Starting Point**

Start with the substance or process stream to be evaluated. Is this substance or stream waste?



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**Note:** As indicated in Section 1.0, [Waste Substances](#), commercial value or usefulness does not prevent a substance or stream from being waste.



**Note:** Explosives are always regulated by the *Explosives Act*, and radioactive materials are always regulated by the *Nuclear Safety and Control Act*. Such materials can never be waste and cannot therefore be hazardous waste.

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If the waste is being generated in a process, go back in the process to the point where the waste is first generated—see Section 4.0, [Evaluation Point](#).

### **Step 2: Exclusions**

Is the waste excluded from being hazardous waste by definition? Wastes that are not hazardous waste by definition are listed in the lower part of [Figure 2, Definition of Hazardous Waste](#).

### **Step 3: Characterization**

What are the properties of the waste and what is in it?

The amount of work and the methods used to characterize a waste vary. They usually depend on how the waste was generated or where it came from.

Analysis, calculations, or knowledge of the waste origin may all be used for characterization as long as they give enough information to check if the waste is *classified* as described below.

### **Step 4: Dangerous Goods Check**

Would the waste be classified and regulated as dangerous goods according to the *Transportation of Dangerous Goods (TDG) Regulations* if transported?

A waste is classified if it is in one or more classes defined by the *TDG Regulations*. The possible TDG classes and divisions of classes that need to be considered when classifying wastes are summarized in [Figure 4, Summary of TDG Classes for Wastes](#).



**Tip:** Some substances that are classified as dangerous goods are exempt from regulation. Exemptions are given in Part 1 of the *TDG Regulations* and include a short list of exempt substances in section 1.46.



**Note:** By definition of dangerous goods in the *HW Regulation*, the exemption in section 1.25 of the *TDG Regulations* does not apply to hazardous wastes.

Although there are other exemptions from regulation in Part 1 of the *TDG Regulations*, some of these are not appropriate for waste substances. The exemptions that are not appropriate for waste substances are usually those that apply only in specific cases, such as transport by road or rail. If in doubt, consult Hazardous Waste Program staff to find out if an exemption is appropriate.

### Classification Criteria

Part 2 of the *TDG Regulations* contains the *classification criteria* for each of the TDG classes. The classification criteria are the values of properties that decide if a substance is in a TDG class or not. Classification criteria must always be measured according to the test methods specified in the regulations.

To check if a waste is classified, compare the value of each waste property against each possible corresponding classification criterion. If any criterion for a class is exceeded, then the waste is in that class.

### Ex

**Example:** Flashpoint is one property used to measure the flammability of liquids. According to the *TDG Regulations*, a liquid is in class 3 if it has a flashpoint of 60.5 °C or less.

A fuel has a flashpoint of about 38 °C. So, according to the *TDG Regulations*, this fuel is a flammable liquid in class 3.

### Packing Groups/ Risk Groups

For classified substances other than gases and infectious substances, the *TDG Regulations* have further criteria for packing groups. The most hazardous substances within a class are in packing group I; the least hazardous are in packing group III. If a substance is classified, the criteria for packing groups must be used to work out the correct packing group.

Risk groups are similar to packing groups, except that the order of the groups runs from risk group 1 for the least hazardous organisms to risk group 4 for the most hazardous organisms.

### Multiple Classes

It is possible for substances to be in more than one class. If a substance is found to be in a class, check other possible classes, excluding class 9. If a waste is already in a class other than class 9, class 9 does not have to be checked.

### Precedence of Classification

If a substance is in more than one class, the class that shows the most important hazard must be identified. This is called the primary class. Use the rules in section 2.8 of the *TDG Regulations* to work out which is the *primary class*. Any other classes are *subsidiary classes*.

### List of Dangerous Goods

Schedule 1 of the *TDG Regulations* contains a list of dangerous goods, together with information for each listing on:

- class and packing or risk group
- special provisions (notes that apply to a specific listing)
- various quantity limits and
- emergency response

Two types of dangerous goods are listed:

- specific, common substances, such as gasoline or sodium hydroxide solution and
- non-specific substances with a generic name, such as solids containing flammable liquid, n.o.s. or toxic liquid, organic, n.o.s.

The abbreviation *n.o.s.* means *not otherwise specified*.

### **Specifically Listed Dangerous Goods**

Substances in their normal trade or technical grade can often be classified without reference to the classification criteria if they are specifically listed in Schedule 1. A few wastes can be classified this way.

Examples could be:

- gasoline that is waste because of contamination with dirt or water
- paint that is waste because two different colours have been mixed together
- medicines that are past their expiry date or
- wet batteries filled with acid or alkali that are waste because they no longer hold their charge

In each of the above examples, the hazardous properties before and after the substance becomes waste are likely to be the same. The waste may therefore be classified directly by referring to Schedule 1.

### **Generically Listed Dangerous Goods**

Substances that are not specifically listed cannot be classified directly by referring to Schedule 1. Their properties must be checked against the classification criteria to see if they are classified. This applies to most wastes.

If a waste is found to be regulated dangerous goods and classified as described in Step 4, then the waste is a hazardous waste. All that remains is to select the correct name for the waste—see Section 6.0, *Names for Hazardous Wastes*.

If the waste is not regulated dangerous goods, continue with Step 5.



**Tip:** Remember that dangerous goods are classified so that they can be transported safely.

For example, for safety reasons, carriers or emergency response personnel are very interested to know if a substance is likely to catch fire. So substances that are only slightly flammable are classified as dangerous goods.

On the other hand, carriers or emergency response personnel do not taste substances that are carried or spilled. So substances must be distinctly toxic by mouth to be classified as dangerous goods.



**Penalties:** Anyone not complying with the *TDG Act* may be:

- fined up to \$50 000 for a first offence and up to \$100 000 for subsequent offences and/or
- imprisoned for up to two years and/or
- required to do things that cost up to \$1 000 000 per offence

Each day that an offence continues may be a separate offence.

**Step 5: Hazardous Waste Regulation Check**

Is the waste one of the other types of hazardous waste defined in the *HW Regulation* that are not dangerous goods?

**PCB Wastes**

The *HW Regulation* defines *PCB wastes* as: PCB liquid, PCB solid, and PCB equipment that have been taken out of service for the purpose of treatment, recycling, reuse, or disposal, or for the purpose of storage prior to treatment, recycling, reuse, or disposal.

The terms *PCB liquid*, *PCB solid*, and *PCB equipment* are further defined in section 1 of the *HW Regulation*.



**Note:** Most PCB wastes are dangerous goods under the *TDG Regulations* and are at least in class 9. Other classes may apply if there are other hazardous materials in the waste.



**Note:** The *HW Regulation* definition is broader than the TDG definition because it specifically includes PCB equipment that has been taken out of service.

**Biomedical Waste**

The *HW Regulation* defines *biomedical waste* as specific types of wastes from the following sources:

- human or animal health care facilities
- medical or veterinary research and teaching establishments
- health care teaching establishments
- clinical testing or research laboratories and
- facilities involved in the production or testing of vaccines

Operators of such facilities should refer to section 1 of the *HW Regulation* for details.



**Note:** Biomedical wastes that contain specific organisms listed in Part 2 of the *TDG Regulations* are dangerous goods in class 6.2.

**Waste Containing Dioxin**

The *HW Regulation* defines *waste containing dioxin* as: waste containing dioxin TEQ in a concentration greater than 100 parts per billion by weight.

*Dioxin TEQ* (toxicity equivalent) is a number that allows the toxicity of substances containing different dioxins and furans to be compared. Dioxin TEQ is the amount of the single most toxic dioxin a substance would have to contain to have the same toxicity as the substance containing the different dioxins and furans. Section 1 of the *HW Regulation* describes how to calculate dioxin TEQ.

In summary, dioxin TEQ is calculated by:

- multiplying the concentration of each compound listed in Schedule 1 of the *HW Regulation* by its toxicity equivalency factor and then
- adding all of the multiplied numbers together

If a measured concentration is below the detection limit of the analytical method, the concentration is assumed to be half of the detection limit.



**Note:** Wastes containing large amounts of dioxin are dangerous goods under the *TDG Regulations* and are at least in class 6.1.

**Waste Oil** The *HW Regulation* defines *waste oil* as: automotive lubricating oil, cutting oil, fuel oil, gear oil, hydraulic oil, or any other refined petroleum-based oil or synthetic oil where:

- the oils are in the waste in a total concentration greater than 3% by weight and
- the oils through use, storage, or handling have become unsuitable for their original purpose due to the presence of impurities or loss of original properties



**Note:** Some waste oil may be dangerous goods under the *TDG Regulations*: at least in class 3 if it has a flashpoint less than 60.5 °C or at least in class 9 if it contains environmentally hazardous substances above specified levels.



**Note:** Solids can be waste oil. Examples could be soil contaminated with more than 3% oil or sorbents used for spill clean-up containing more than 3% oil.

### Waste Asbestos

The *HW Regulation* defines *waste asbestos* as: waste containing friable asbestos fibres or asbestos dust in a concentration greater than 1% by weight either at the time of manufacture, or as determined by the test method *Asbestos in Bulk Samples — Dispersion Staining*, Industrial Hygiene Laboratory Analytical Methods, Workers' Compensation Board of British Columbia.



**Note:** In practice, any waste that is waste asbestos by the above definition is dangerous goods under the *TDG Regulations* and is at least in class 9.



**Tip:** Asbestos that is tightly bound so that fibres or dust are not easily released is not hazardous waste. Examples could include hardboard or brake linings.

### Pesticide Wastes

Under the *HW Regulation*, waste pest control product containers and wastes containing pest control products, including wastes produced in the production of treated wood products using pest control products, are defined as hazardous waste.



**Note:** Wastes containing pest control products could be dangerous goods under the *TDG Regulations*. The most likely classes would be 2, 3, 6.1, or 9.

### Leachable Toxic Waste

The *HW Regulation* defines *leachable toxic waste* as: waste when subject to the extraction procedure described in the US Environmental Protection Agency *Method 1311* produces an extract with a contaminant concentration greater than those prescribed in Table 1 of Schedule 4.

*Method 1311* is often called the *Toxicity Characteristic Leaching Procedure* or *TCLP*.

The *TCLP* applies to liquids, solids, and liquid/solid mixtures. If the solids separated from a liquid/solid mixture are less than 0.5% by weight, then the liquid alone is analysed for contaminants.



**Note:** The *Modified Leachate Extraction Procedure* given in Schedule 4 of the *HW Regulation* cannot be used to see if a waste is leachable toxic waste. The *Modified Leachate Extraction Procedure* is only used to see if wastes may be safely disposed of in a secure landfill.



**Note:** Most leachable toxic waste is dangerous goods under the *TDG Regulations* and is at least in class 9. The only leachable toxic wastes that are not dangerous goods are:

- those leaching lower levels of ethyl benzene, toluene, or xylenes than are captured by the *TDG Regulations* or
- those leaching copper, methoxychlor, silver, or zinc



**Tip:** The first paragraphs of the *TCLP* list some shortcuts. For example, if a total analysis for a waste shows it is impossible to exceed a listed leachate level, there is no need to use the procedure. Testing laboratories should be able to advise on other cases where the procedure does not have to be used.

#### **Waste Containing Tetrachloroethylene**

The *HW Regulation* defines *waste containing tetrachloroethylene* as: waste containing tetrachloroethylene in a concentration greater than 500 parts per million by weight.



**Note:** Wastes containing large amounts of tetrachloroethylene are dangerous goods under the *TDG Regulations* and are at least in class 6.1.

#### **Schedule 7 Wastes**

The *HW Regulation* defines 100 types of wastes listed in Schedule 7 of the regulation as hazardous waste. The wastes listed in Schedule 7 are mainly wastes from processes.



**Note:** Many of the process wastes listed in Schedule 7 could be dangerous goods under the *TDG Regulations*. The most likely classes are 3, 6.1, 8, or 9.

#### **pH Wastes**

Corrosive wastes are defined as hazardous waste based on their pH. A waste is hazardous waste if it has a pH of less than 2.0 or greater than 12.5:

- measured directly when the waste is liquid or
- measured in a 50% distilled water mixture or solution by mass when the waste is solid



**Note:** Many pH wastes are likely to be corrosive wastes under the *TDG Regulations* and at least in class 8.

#### **Waste Containing Polycyclic Aromatic Hydrocarbon**

The *HW Regulation* defines *waste containing polycyclic aromatic hydrocarbon (PAH)* as: waste containing PAH in a total concentration greater than 100 parts per million measured as PAH TEQ by weight.

*PAH TEQ* (toxicity equivalent) is a number that allows the toxicity of substances containing different PAHs to be compared. PAH TEQ is the amount of benzo[a]pyrene a substance would have to contain to have the same toxicity as the substance containing the different PAHs. Section 1 of the *HW Regulation* describes how to calculate PAH TEQ.

In summary, PAH TEQ is calculated by:

- multiplying the concentration of each compound listed in Schedule 1.1 of the *HW Regulation* by its toxicity equivalency factor and then
- adding all of the multiplied numbers together

If a measured concentration is below the detection limit of the analytical method, the concentration is assumed to be half of the detection limit.



**Note:** Wastes containing PAH could be dangerous goods under the *TDG Regulations*. The most likely classes are 4, 6.1, or 9.



**Penalties:** Improper classification of hazardous waste may lead to a variety of offences. Anyone not complying with a requirement for hazardous waste may be:

- fined up to \$1 000 000 and/or
- imprisoned for up to six months

Each day that an offence continues may result in another fine up to the maximum amount. See Part 10 of the *EM Act* or [Figure 24, Offences and Penalties](#), in Chapter 20.

## 6.0 Names for Hazardous Wastes

For management purposes and to assist emergency response personnel, all hazardous wastes must be properly named.



**Note:** Wastes cannot be properly named without going through the [Waste Evaluation Procedure](#) described in Section 5.0.

### 6.1 Hazardous Wastes That Are Dangerous Goods

#### General Rules

A UN number listed in Column 1 and a shipping name listed in Column 2 of Schedule 1 of the *Transportation of Dangerous Goods (TDG) Regulations* must be used for any waste that is dangerous goods.



**Tip:** Schedule 3 lists shipping names in alphabetical order with a cross-reference to the United Nations (UN) number. If looking for possible shipping names, Schedule 3 is usually quicker to search than Schedule 1. Schedule 1 must then be checked for full information.

All shipping names are written in upper case letters (capitals). Any text used to further describe a listed substance is written in lower case letters. The word “or” between shipping names indicates that any of the shipping names may be used.

Shipping names may be:

- written in the singular or the plural
- followed by the descriptive text if the descriptive text is in lower case letters and the shipping name is in upper case letters or
- put in a different word order as long as the full shipping name is used and the word order is a common one

The use of a different word order is only allowed for shipping names in English.

For example, for UN1826, the following are all correct shipping names:

- Nitrating acid mixture, spent
- Spent nitrating acid mixtures and
- SPENT NITRATING ACID MIXTURE with not more than 50 per cent nitric acid

**Specific Shipping Names**

The shipping name of a substance that is specifically listed in Schedule 1 is used for waste that:

- is accurately described by the shipping name and
- has properties so that the classification of the waste is exactly the same as the classification of the listed substance

If more than one shipping name describes a substance, the most specific shipping name must be used.

**Solutions and Mixtures**

In the *TDG Regulations*, the words *solution* and *mixture* are more restricted in meaning than in general usage. Unless they are already part of a shipping name, they mean only **one** of the dangerous goods specifically listed in Schedule 1 dissolved in water or mixed with another non-hazardous substance.

Some shipping names are specifically for solutions. Examples are:

- zinc chloride solution or
- ammonia solution

Such shipping names must be used if they apply.

In cases where solution or mixture is not part of a shipping name, the shipping name of a specifically listed substance must be used for solutions or mixtures of the substance, **as long as** the solution or mixture has properties so its classification **is exactly the same as** the classification of the listed substance. This means that the solution or mixture must have the same class and packing group as the specifically listed substance.

**Ex**

**Example:** What is the shipping name for a waste that is mostly gasoline but that contains dirt and water?

Neither dirt nor water is hazardous, so this is a mixture in the sense used by the *TDG Regulations*. In addition, if the mixture is mostly gasoline, the mixture will have the same flashpoint as normal gasoline. The mixture will therefore be in the same class and packing group as normal gasoline. The shipping name for this waste mixture is therefore: Gasoline.



**Note:** At the time of writing this guide, it is not technically correct to add the word *waste* to a shipping name when filling out the shipping document required by the *TDG Regulations*.

However, it is correct to add the word *waste* before the shipping name when filling out a manifest required by the *HW Regulation*, if this is not already part of or implied by the shipping name.

If a solution or mixture of a specifically listed substance no longer has exactly the same classification as the listed substance, then a generic shipping name must be used as described below. A generic shipping name must also be used for a mixture of two or more specifically listed substances.

**Generic Shipping Names**

A generic shipping name must be used for dangerous goods if no specific shipping name applies. Examples are:

- Solids containing a corrosive liquid, n.o.s.
- Corrosive liquid, flammable, n.o.s. and



- Environmentally hazardous substance, solid, n.o.s.

The abbreviation *n.o.s.* means *not otherwise specified*.



**Note:** Most generic shipping names must be completed by adding the technical name of the most dangerous substance that causes the substance to be dangerous goods. Generic shipping names that must be completed in this way are shown by special provision 16 (the number 16 listed in Column 5 of Schedule 1).



**Example:** What is the shipping name for a waste sorbent used to soak up a spill of fluid from a lead-acid battery?

The waste sorbent is not a fluid, so a shipping name such as Battery Fluid, Acid does not accurately describe the waste.

The listing that most accurately describes the waste is UN3244, solids containing corrosive liquid, n.o.s. The classification for this listing is class 8 (corrosive), packing group II. Special provisions 16, 26, and 58 apply to this listing.

Special provision 16 requires the shipping name to be completed by adding the technical name of the most dangerous substance that causes the substance to be dangerous goods. For acid battery fluid, this is sulphuric acid.

Special provision 26 does not apply to this example (it talks about acidic nickel sulphate).

Among other things, special provision 58 says that if the fluid in the solid is known to be in class 8, the solid containing the fluid does not have to be tested to check that it exceeds the criteria for class 8 and packing group II.

So for this waste, the complete shipping name is: Solids containing corrosive liquid, n.o.s. (sulphuric acid).



**Example:** What is the shipping name for waste alcoholic potassium hydroxide used for degreasing laboratory glassware?

This waste contains two specifically listed dangerous goods. There is no specific listing for this substance. Two listings that describe this waste in general terms are:

- UN2920, Corrosive liquid, flammable, n.o.s. and
- UN2924, Flammable liquid, corrosive, n.o.s.

The flashpoint of ethyl alcohol is about 13 °C. The potassium hydroxide does not change this very much, so the waste is in class 3 (flammable), packing group II.

All skin layers can be destroyed if alcoholic potassium hydroxide is left in contact with them for between 3 and 60 minutes, so the waste is class 8 (corrosive), packing group II.

The rules of precedence in section 2.8 of the *TDG Regulations* show that for this combination of hazards, flammability is the more serious hazard. Class 3 is therefore the primary classification and the substance causing this classification is the alcohol.

Class 3 is the primary classification for UN2924 and special provision 16 applies to UN2924. So the full shipping name is: Flammable liquid, corrosive, n.o.s. (ethyl alcohol).

**Ex**

**Example:** What is the shipping name for soil from a creosote operation that:

- contains traces of contaminants
- is being sent for disposal and
- produces a leachate containing 0.1 mg/L of benzo[a]pyrene when tested according to the *TCLP*

For soil containing only trace quantities of contaminants, classes 2 through 8 are not applicable.

Substances that are being sent for disposal and that produce a leachate concentration more than 0.001 mg/L of benzo[a]pyrene when tested according to the *TCLP* are in class 9, packing group III.

The correct listing for the soil is UN3077. Special provision 16 applies to UN3077 so the full shipping name is: Environmentally hazardous substance, solid, n.o.s. (benzo[a]pyrene).

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## 6.2 Hazardous Wastes That Are Not Dangerous Goods

Use the name that applies to the waste as given in the definition of hazardous waste and as discussed in step 5 of the [Waste Evaluation Procedure](#) in Section 5.0.

---

**Ex**

**Example:** What is the shipping name for waste hydraulic oil?

If good practices are followed to prevent flammable substances from being added to the oil (especially when it is waste), it is reasonable to assume that it is not flammable.

If the oil does not contain or leach environmentally hazardous substances at levels above those specified for class 9, the shipping name is: Waste oil.

**Ex**

**Example:** What is the shipping name for soil containing 5% oil but no environmentally hazardous substances at levels above those specified for class 9?

Although this soil qualifies for management as *hydrocarbon contaminated soil*, this is not a name used in the definition of hazardous waste. The shipping name is: Waste oil.

**Ex**

**Example:** What is the shipping name for waste sawdust containing a pesticide where the waste is not dangerous goods, but where the waste has an aquatic toxicity of 100 mg/L?

The aquatic toxicity of a substance is the concentration of the substance in water that kills a specified percentage of a specified organism in a specified time. The lower the number, the more toxic a substance is.

Because the example waste is more toxic than the limit of 500 mg/L given in section 42 of the *HW Regulation*, the shipping name is: Waste containing pest control products.

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Figure 1: Definition of Waste

<p>Waste includes:</p> <ul style="list-style-type: none"> <li>• air contaminants</li> <li>• litter</li> <li>• effluent</li> <li>• refuse</li> <li>• biomedical waste</li> <li>• hazardous waste or</li> <li>• any other substance prescribed by the Lieutenant Governor in Council or the minister under section 22, or, if either of them prescribes circumstances in which a substance is a waste, a substance that is present in those circumstances</li> </ul> <p>The types of waste referred to above are defined as waste whether or not they have any commercial value or are capable of being used for a useful purpose.</p>
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Figure 2: Definition of Hazardous Waste

<p><b>Types of wastes defined as hazardous wastes</b></p>	<p><i>Hazardous waste means:</i></p> <ul style="list-style-type: none"> <li>• dangerous goods that are no longer used for their original purpose if they meet the criteria for class 2, 3, 4, 5, 6, 8, or 9 of the <i>Transportation of Dangerous Goods Regulations</i>, including those that are recycled, treated, abandoned, stored or disposed of, intended for recycling, treatment, or disposal or in storage or transit before recycling, treatment, or disposal</li> <li>• PCB wastes</li> <li>• biomedical wastes</li> <li>• wastes containing dioxin</li> <li>• waste oil</li> <li>• waste asbestos</li> <li>• waste pest control product containers and wastes containing pest control products, including wastes produced in the production of treated wood products using pest control products</li> <li>• leachable toxic waste</li> <li>• waste containing tetrachloroethylene</li> <li>• wastes listed in Schedule 7</li> <li>• waste that is corrosive because it has a pH factor of less than 2.0 or greater than 12.5 measured directly when the waste is liquid or measured in a 50% distilled water mixture or solution by mass when the waste is solid or</li> <li>• waste containing polycyclic aromatic hydrocarbon</li> </ul>
<p><b>Types of waste excluded from definition as hazardous waste</b></p>	<p>Hazardous waste does not include:</p> <ul style="list-style-type: none"> <li>• household refuse that is collected from residential premises</li> <li>• domestic sewage</li> <li>• dangerous goods that are defective, surplus, or otherwise not usable for their intended purpose and that are in the process of being returned directly to a manufacturer or supplier</li> <li>• asphalts and tars used in the manufacture of asphaltic concrete and roofing materials</li> <li>• waste wood products treated with wood preservatives or wood protection products registered under the <i>Pest Control Products Act (Canada)</i> or</li> <li>• household hazardous waste that:             <ul style="list-style-type: none"> <li>○ is removed from a return collection facility in accordance with an authorization from the owner of the return collection facility and</li> <li>○ is to be reused for its originally intended purpose</li> </ul> </li> </ul>

Figure 3: Evaluation Flowchart

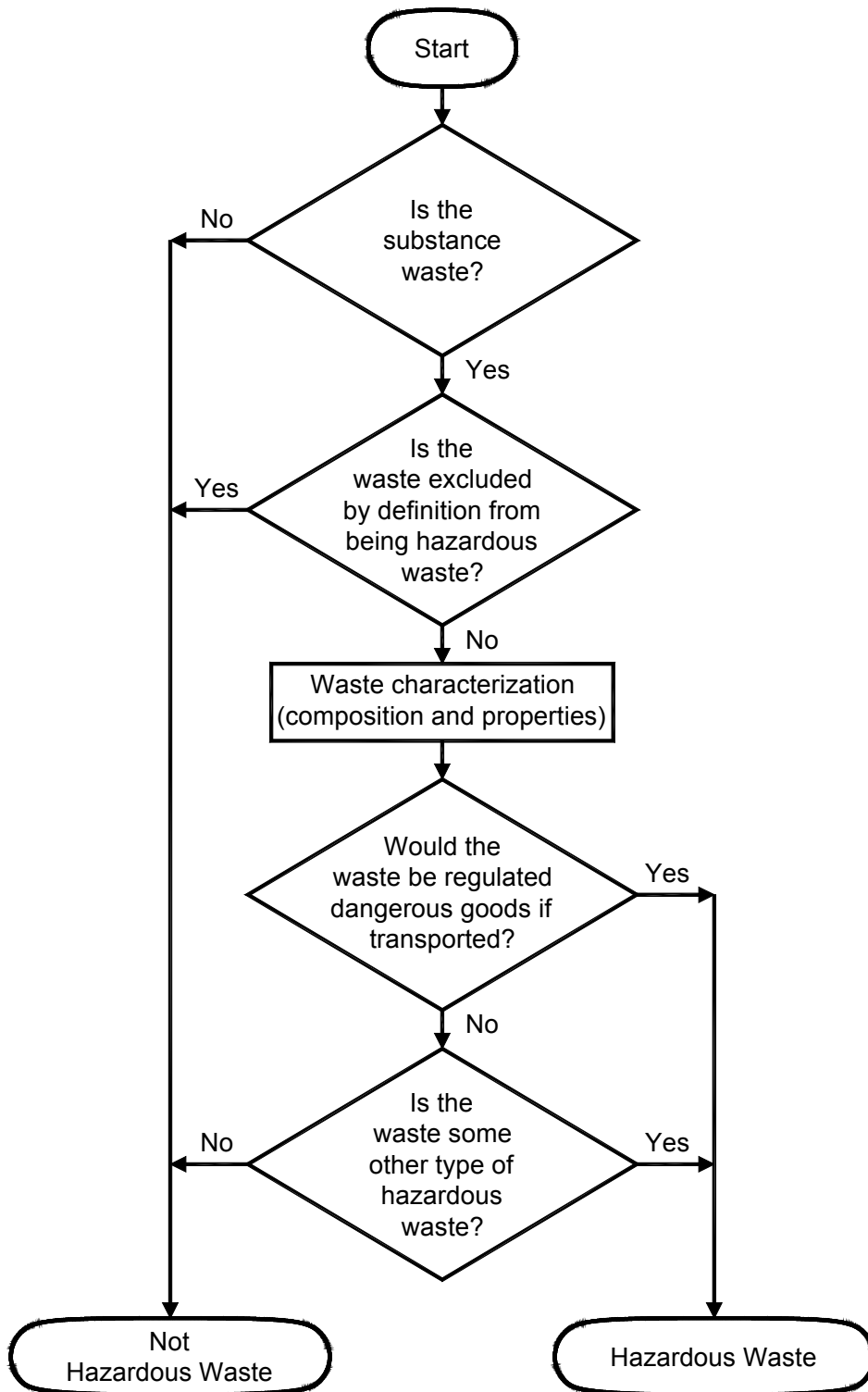


Figure 4: Summary of TDG Classes for Wastes

Class	Division	Description	
2	Gases	2.1	Flammable gases
		2.2	Non-flammable, non-toxic, non-corrosive gases
		2.3	Toxic gases (includes corrosive gases)
3	Flammable Liquids	Liquids that have a flashpoint of 60.5 °C or less	
4	Flammable Solids, Substances Liable to Spontaneous Combustion, and Substances That Emit Flammable Gases on Contact with Water	4.1	Solids that are: <ul style="list-style-type: none"> <li>• readily combustible</li> <li>• liable to cause fire during transport</li> <li>• desensitized explosives</li> <li>• self-reactive or</li> <li>• specifically listed in the <i>TDG Regulations</i> (Part 2)</li> </ul>
		4.2	Substances that are: <ul style="list-style-type: none"> <li>• pyrophoric (catch fire within 5 minutes of contact with air) or</li> <li>• self-heating (catch fire after prolonged contact with air)</li> </ul>
		4.3	Substances that: <ul style="list-style-type: none"> <li>• on contact with water give off flammable gases at a dangerous rate or</li> <li>• catch fire while being tested</li> </ul>
5	Oxidizing Substances and Organic Peroxides	5.1	Substances that make other substances burn more easily by yielding oxygen
		5.2	Substances that: <ul style="list-style-type: none"> <li>• are thermally unstable organic compounds containing oxygen in a "-O-O-" structure</li> <li>• are liable to decompose at increasing rate while giving off heat</li> <li>• are liable to decompose explosively</li> <li>• burn rapidly</li> <li>• are sensitive to impact or friction</li> <li>• react dangerously with other substances</li> <li>• cause damage to the eyes or</li> <li>• are listed in the <i>UN Recommendations</i>†</li> </ul>
6	Toxic and Infectious Substances	6.1	Substances that are liable to cause death or serious harm to human health if they: <ul style="list-style-type: none"> <li>• are swallowed</li> <li>• are breathed in or</li> <li>• come into contact with skin</li> </ul>
		6.2	Substances that are infectious
8	Corrosive Substances	Substances that: <ul style="list-style-type: none"> <li>• destroy or are known to destroy all layers of human skin or</li> <li>• are corrosive to metal when tested according to ASTM G 31-72</li> </ul>	
9	Miscellaneous Dangerous Goods	Substances that: <ul style="list-style-type: none"> <li>• are listed as class 9 in the <i>TDG Regulations</i> (Schedule 1)</li> <li>• contain genetically modified micro-organisms or</li> <li>• contain or leach environmentally hazardous substances at levels above those specified in the <i>TDG Regulations</i>—see Appendixes to Part 2</li> </ul>	

† *Recommendations on the Transport of Dangerous Goods*, Eleventh Revised Edition, 1999, United Nations





# GENERATOR REGISTRATION

To make things easier to understand, this chapter uses terms like *generator*, *generates*, and *generation* site. However, the requirements discussed apply equally to the corresponding terms related to storing, treating, recycling, disposing of, or shipping (consigning) hazardous wastes.

As elsewhere in this guide and unless noted otherwise, the word *person* is used in the legal sense and includes proprietorships, partnerships, and companies.

## 1.0 Requirement to Register

Section 43 of the *Hazardous Waste (HW) Regulation* requires any person in BC who carries out activities involving more than a *prescribed* quantity of hazardous waste to register with a director. Section 2.0, *Registration Quantities*, explains the quantities that are prescribed.

The activities that must be registered when they involve more than the prescribed quantity of hazardous waste are:

- production in a 30-day period
- storage
- treatment
- recycling or
- disposal

Registration is an important part of the cradle-to-grave management of hazardous waste and allows waste managers to make policy and operational decisions based on facts rather than speculation.

The only situations that do not require registration are:

- transportation of hazardous wastes into the province by generators outside BC or
- on-site recycling without any storage



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**Note:** At present, the requirement for registration unintentionally includes temporary storage that may occur while hazardous wastes are in transit. This issue will be addressed in a future amendment to the *HW Regulation*.

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### 1.1 Immediate Treatment or Disposal

Hazardous wastes must be registered even if they are immediately treated or disposed of without storage. In this case, the generator works out how much waste is generated over a 30-day period and registers that quantity.



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**Example:** A forest company produces a small amount of contaminated sawdust from a spray booth operation. The sawdust is hazardous waste. The waste is collected daily and burned in a high-temperature boiler. Does the company need to register?

The company must measure or estimate the amount of contaminated sawdust produced in a 30-day period. If the amount is more than the prescribed amount for that type of hazardous waste (100 kg for wastes containing pest control products), the company is required to register the waste.

---

### 1.2 *Generators Outside BC*

Generators outside BC who transport hazardous waste into the province do not need to register their wastes. However, these generators are encouraged to register voluntarily if they regularly ship hazardous wastes to BC. In this way their types and quantities of hazardous waste are included in the registration database.

When making a voluntary registration, out-of-province generators should indicate the registration number, if any, issued by their own jurisdiction. This number should be used in all correspondence with the Environmental Protection Division.

### 1.3 *On-Site Recycling Without Intermediate Storage*

Hazardous waste that is recycled on site without intermediate storage does not need to be registered. This exemption is intended to encourage on-site recycling wherever possible. In this context, holding tanks that are used to even out flow variations or for process reasons are not usually considered to be intermediate storage.

Hazardous wastes recycled on site do not have a significant impact on the waste management system. For this reason, information on them is not needed for policy or operational decision-making.

## 2.0 Registration Quantities

The *prescribed* quantity of a hazardous waste that must be registered is usually called the registration quantity. The registration quantity for a hazardous waste varies according to the hazard of the waste. Registration quantities are shown in [Figure 5, Registration Quantities](#).

In general, the registration quantity is the amount in the *Registration Quantity* column across from the type of waste shown in the *Waste Type* column. For liquids, the amount is in litres and for solids, it is in kilograms.

#### **Named Wastes**

When finding the registration quantity for a hazardous waste, look in the upper part of [Figure 5](#) first. If the waste is one of the *Named Wastes*, use the corresponding registration quantity.

Step 5 of the [Waste Evaluation Procedure](#) in Chapter 3 or section 1(1) of the *HW Regulation* gives the definition of each named waste type.



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**Note:** When finding the registration quantity, it does not matter if the hazardous waste is classified according to the *Transportation of Dangerous Goods (TDG) Regulations*. Use the quantity for a named waste type if the definition fits the waste.

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- Classified Wastes** If a hazardous waste is not one of the *Named Wastes*, find the registration quantity in the lower part of [Figure 5](#) corresponding to the class the waste is in.
- Step 4 of the [Waste Evaluation Procedure](#) in Chapter 3 describes how to find out which class(es) a hazardous waste is in.
- Wastes in More Than One Class** If a hazardous waste is in more than one class, the registration quantity is the smallest of the registration quantities for any of the classes the waste is in.

## Ex

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**Example:** What is the registration quantity for waste methanol?

Waste methanol is not one of the named waste types in the upper part of [Figure 5](#), so none of the registration quantities for those wastes apply.

For example purposes, whatever has made the methanol waste has not affected its properties. So, the waste is in classes 3 and 6.1 [Schedule 1 of the *TDG Regulations* for listing UN1230].

From [Figure 5](#) the registration quantity for class 3 is 500 L and for class 6.1 is 100 L. The registration quantity is the lesser of these amounts, which is 100 L. This is the case even though class 3 is the primary classification.

---

### 3.0 Allowable Time for Registration

Hazardous waste must be registered within 30 days of the date the waste is produced or is put into storage.

If a test is needed to see if the amount of hazardous waste generated in a 30-day period is more than the registration quantity, then the waste must be registered within 30 days of the end of the test period.

### 4.0 Completing the Initial Registration Form

- Forms Required** Use Form 1A, *Initial Generator Registration*, to register a hazardous waste. A copy of the form is shown in [Figure 6](#). Forms may be downloaded from the Hazardous Wastes page of the Ministry's web site or are available from any office of the Regional Operations Branch. Addresses and telephone numbers for these offices are listed in [Appendix A](#).
- Number of Forms** Use separate form(s) for each generation site. If all the hazardous waste generated on one site is managed on site or shipped to a single management site or single hazardous waste contractor, this may be registered using a single form.
- If the hazardous waste from one generation site is managed at more than one off-site management site, use a separate form for each different off-site management site.
- Companies Having More Than One Site** If the head office is responsible for all sites, then the head office must register. On the other hand, if local offices are responsible for their own sites, each local office must register.
- However a company registers, it must make sure that all hazardous wastes are registered, but that registrations are not duplicated.

**Instructions for  
Completing the Form**

The instructions below refer to the item numbers on the *Initial Generator Registration* form shown in [Figure 6](#). There are gaps in the numbering so that corresponding items on the *Generator Registration Update* form have the same numbers. The following example illustrates various points in filling out the form.

**Ex**

**Example:** A metal finishing operation uses sulphuric acid to remove rust from steel objects before galvanizing them (dipping them in molten zinc).

Batches of the spent acid are neutralized on site, which produces sludge. The sludge is stored until there is enough to filter to produce a filter cake.

The sludge and the filter cake are hazardous waste because they both contain and leach zinc. The sludge is shipped off site for disposal.

**4**

Enter the name of the hazardous waste generator.

**Company Name**

For a partnership or proprietorship, this is the name of the principal(s).

For companies, it is their legal name exactly as registered with the BC Registrar of Companies. If the generator conducts business under a separate unregistered company name or style, enter this also.

For example: John J. Jones dba Jones Brothers (*dba* is an abbreviation for *doing business as*).



**Note:** It is the person *responsible* for generating the waste who must register. For example, if hazardous waste is generated during demolition of a building by a contractor, the owner of the building is the generator of the waste.

**5****Corporate Registry  
Number**

The BC Registrar of Companies issues registration numbers to companies that are incorporated in BC. Registration numbers are also issued to partnerships or proprietorships if they register. The registration number is given on the certificate of incorporation or registration. Enter this number if it is known.

**6****Mailing Address**

Enter the generator address.

For companies, this is their legal address as registered with the BC Registrar of Companies. For out-of-province companies, enter the corporate head office mailing address. Make sure the postal code is correct.

**8****Physical State**

Use one of the letters below to show the physical state of each hazardous waste.

- L = liquid: very little or no solid material
- S = solid: no free liquid
- G = gas or
- X = sludge: solids mixed with free liquid



**Note:** If on-site management changes a waste in some way, register each changed form of the waste on a separate line in section 2 of the form.

If the waste is managed at another site, use another form.

In the example, spent sulphuric is treated on site and produces an unfiltered sludge. These wastes are shown on separate lines of the form in [Figure 6](#) because they are both managed on the generation site. A separate form (not shown) is used to register the filter cake because it is managed at a different site.

- 9**  
**Name of Waste**
- If the hazardous waste is one of the named wastes defined by the *HW Regulation* and shown in the upper part of [Figure 5, Registration Quantities](#), enter this. Step 5 of the [Waste Evaluation Procedure](#) in Chapter 3 or section 1(1) of the *HW Regulation* gives the definition of each named waste type.
- If the hazardous waste is not one of the named wastes, enter the shipping name according to the *TDG Regulations*. [Section 6.1, Hazardous Wastes That Are Dangerous Goods](#), in Chapter 3 explains how to find the shipping name.
- 10**  
**PIN**
- Enter the UN number for wastes that are dangerous goods according to the *TDG Regulations*. [Section 6.1, Hazardous Wastes That Are Dangerous Goods](#), in Chapter 3 explains how to find the UN number.
- Enter *N/A* for hazardous wastes that are not dangerous goods. This is the case for the leachable toxic waste shown in the example.
- 11**  
**TDG Class**
- Enter the primary TDG class for wastes that are dangerous goods according to the *TDG Regulations*. [Section 6.1, Hazardous Wastes That Are Dangerous Goods](#), in Chapter 3 explains how to find the primary class.
- Enter *N/A* for hazardous wastes that are not dangerous goods.
- 12**  
**Now in Storage**
- Enter the amount of any hazardous waste currently in storage or the maximum expected to be stored. The amounts must be in litres or kilograms. Enter the units used separately—see item 14, *Units*, below.
- Do not include:
- waste in tanks and/or ponds that are part of a treatment process or
  - waste in *temporary storage* (storage for not longer than 96 hours that is incidental to transport)
- In the example, the amounts of spent sulphuric acid and sludge in storage are both shown as 0 because these materials are in a treatment process. The filter cake will have to be registered if it is stored for longer than 96 hours before being removed from the site.
- 13**  
**Produced in 30-Day Period**
- Enter the amount of hazardous waste generated in 30 days or the maximum amount expected to be generated. The amounts must be in litres or kilograms. Enter the units used separately—see item 14, *Units* below.
- The amount generated in 30 days applies even if the waste is produced intermittently. The 30-day period begins on the day the waste is first produced.
- 14**  
**Units**
- Enter the units (L for litres or kg for kilograms) that were used to report the amounts in storage or generated.
- 15**  
**Handling Code**
- Enter the code from the list below that shows how the hazardous waste is managed:
- 01 = storage
  - 02 = thermal treatment
  - 03 = chemical treatment
  - 04 = physical treatment
  - 05 = biological treatment
  - 06 = landfill

- 07 = recycled
- 08 = other (specify)
- 09 = landfarming or
- 10 = off-site management

Enter the code for the method being used when the registration is completed.

If more than one handling code applies, enter the code for the last known operation applied to most of the hazardous waste.

Enter code 08 if no other code properly describes how the hazardous waste is managed. If using code 08, enter how the waste is managed in the space provided. An example could be shipment to a broker who bulks the waste with other hazardous waste and then ships the waste for disposal by means unknown to the generator.

**16**

Enter the code from the list below that shows how the hazardous waste is generated over time:

**Generation Code**

- A = waste is generated one time only
- B = waste is generated intermittently (not in every 30-day period) or
- C = waste is generated continuously (in every 30-day period)

**17**

Enter the type of business that generates the hazardous waste. Examples are: sawmill, metal finisher, restaurant, or petroleum refinery.

**General Business Type****18**

Enter the source or type of process generating the hazardous waste. Be as specific as possible for all of the wastes listed in the *Hazardous Waste Description* section of the form. If the hazardous wastes are from more than one operation, list and identify the source of each waste in sequence.

**Source of Hazardous Waste**

In the example, the sources are listed as: (a) acid cleaning and (b) acid neutralization. The letters in brackets identify the wastes listed in section 2 of the form.

**19**

Enter the address of the generation site as clearly as possible. Use a separate registration form for each different generation site.

**Generation Site**

For remote or rural locations, enter the latitude and longitude. If these are not available, give the location by distance and road name such as *5 km east of Anytown, BC on Hwy 99*. Do not enter post office box numbers.

**21**

Enter the legal name of the company managing the hazardous waste, if this is different from the company registering as the generator.

**Waste Managed By**

Use a separate form if there is more than one management company or address (see below).

**22**

Enter the address of the site where the hazardous waste is managed. This is the generation site if no waste leaves the site. If the waste is shipped off site, the management site is the first off-site place where the bulk of the waste is managed.

**Management Site**

Use a separate registration form for each hazardous waste handled at a different management site.

In the example, a separate form (not shown) is used to register the filter cake because this is shipped elsewhere for disposal.

24

**Certification**

Enter the name of the person who is certifying that the information provided on the registration form is correct.

All registration forms must be certified by a natural person (not a company). The certifying person may be an employee or an agent of the hazardous waste generator.

Agents who certify registration forms must:

- have knowledge of day-to-day changes in the quantity, composition, generation process, and method of management of the hazardous waste and
- add the name of their company after their name

Mail or fax the completed *Initial Generator Registration* form to a director. Addresses and fax numbers are listed on the inside of the front cover.

By registering within 30 days, a generator also complies with section 9(2) of the *Environmental Management Act*.



**Penalties:** Anyone not complying with a requirement of the *HW Regulation* may be:

- fined up to \$1 000 000 and/or
- imprisoned for up to six months

Each day that an offence continues may result in another fine up to the maximum amount.

## 5.0 After Registration

### **Confirmation of Receipt**

A letter is sent to the generator to confirm receipt of the *Initial Generator Registration* form. In this letter, the generator can expect to be asked to manage the hazardous waste according to the *HW Regulation*.

### **Technical Review and Data Entry**

The registration is reviewed by staff from the Environmental Protection Division. If anything needs to be clarified, the generator may be contacted. The data on the registration form is then entered into a computerized database.

### **Consignor Identification Number**

A unique five-digit *Consignor Identification Number* is issued to the generator (consignor) when the data is entered. The consignor identification number is also known as a BCG number or simply a registration number.

The registration number must be used on all manifests and other correspondence related to transporting or managing hazardous waste. It is used to prevent errors in identifying the generator.

## 6.0 Changes to Registration Information

Registration information must be kept current. An update must be submitted within 30 days of a change in any of the following:

- generator legal name
- generator legal address
- the maximum amount of hazardous waste managed at a site is more than 10% above the registered amount
- hazardous waste properties or description
- handling method
- generation site address
- company managing the hazardous waste or
- management site address

## 7.0 Completing the Registration Update Form

### Forms Required

Use Form 1B, *Generator Registration Update*, to update registration information. A copy of the form is shown in [Figure 7](#). Forms may be downloaded from the Hazardous Wastes page of the Ministry's web site or are available from any office of the Regional Operations Branch. Addresses and telephone numbers for these offices are listed in [Appendix A](#).

The explanations below refer to the item numbers on the *Generator Registration Update* form shown in [Figure 7](#). Often, the explanation for an item is the same as for the *Initial Generator Registration* form. If clarification is required, see the item with the same number in Section 4.0, *Completing the Initial Registration Form*.

The *Generator Registration Update* form may update an initial registration or subsequent updates. The term *previous generator registration* therefore means the initial or most recently submitted updated registration.

**1 and 2**

**Previous Generator Registration**

Enter the date of the previous generator registration that is being updated and the name of the person who certified it. This is the name and date in the *Certification* section of the previous generator registration report.

**3**

**Consignor Identification Number**

Enter the five-digit registration number (BCG number) issued by a director after the initial registration. Out-of-province consignors should continue to use the number issued by their own jurisdiction.

**4 and 6**

**Company Name and Address**

Enter the name and address of the generator as described for these items in Section 4.0.

**7**

**Former Identification of Waste**

If there is a change in the physical state, name, UN number, TDG class, maximum amount of hazardous waste stored or generated, handling code, or generation code, enter all the details for the waste that has changed. If there is no change, leave blank.



**Note:** If only the management site for a hazardous waste changes, enter the details of the waste for which the management site has changed under both *Former Waste Description* and *Present Waste Description*. This must be done to show that it is a currently registered waste that is going to a different management site, rather than a new waste going to a different management site.

- 8 to 16** Enter all details for any hazardous waste that is new or has changed as described for these items in Section 4.0. If details including management site for a particular waste have not changed, leave these items blank.
- Present Identification of Waste**
- 17** Enter the general type of business as described for this item in Section 4.0.
- General Business Type**
- 18** Enter the source of any hazardous wastes that has changed as described for this item in Section 4.0.
- Source of Hazardous Waste**
- 19** If there is a change in the address of the generation site, enter the address that was previously registered. If there is no change, leave blank.
- Former Generation Site**
- 20** Enter the address of the present generation site as described for this item in Section 4.0.
- Present Generation Site**
- 21** Enter the legal name of the company managing the hazardous waste if there is a change from that previously registered. Use a separate form if there is more than one management company or site.
- Management Company Name**
- 22** If there is a change in the address of the management site, enter the address that was previously registered. If there is no change, leave blank.
- Former Management Site**
- 23** Enter the address of the present management site as described for this item in Section 4.0.
- Present Management Site**
- 24** Certify the update as described for this item in Section 4.0.
- Certification**
- Note:** The system that a generator uses for managing hazardous waste may be reassessed after an update is submitted. This is more likely for updates where there is a change in quantity, waste classification, or handling practice. Improvements to a facility may be required if a director thinks this is necessary.
- However, a generator must not wait for action by a director. The generator is responsible for making sure that hazardous waste is managed at all times according to the *EM Act* and the regulations.
- Access to Information** Statistics and similar non-confidential data are normally made available to anyone upon request.

Figure 5: Registration Quantities

	<i>Waste Type</i>	<i>Registration Quantity</i> (kg or L as appropriate)
<b>Named Wastes</b>	Waste asbestos	1000
	Waste oil or waste oil contaminated with lead	5000
	Waste pest control products and wastes containing pest control products	100
	Waste pest control product containers	500*
	Leachable toxic waste	1000
	Waste batteries	2000
	Waste containing dioxin	5
	Waste containing polycyclic aromatic hydrocarbon	5
	Waste containing tetrachloroethylene	200
	Waste listed in Schedule 7	100
	pH wastes	100
<b>TDG Classified Wastes</b>	Class 2.1	500*
	Class 2.2	1000*
	Class 2.3	50*
	Class 3	500
	Class 4.1	1000
	Class 4.2	100
	Class 4.3	100
	Class 5.1	100
	Class 5.2	5
	Class 6.1	100
	Class 6.2	100
	Class 8	100
	Class 9	500

\* Total liquid capacity of containers



Figure 6: Initial Generator Registration Form



BRITISH COLUMBIA

Ministry of Environment

Schedule 5, Section 43  
Form 1A  
Under the authority of the  
Hazardous Waste Regulation

INITIAL GENERATOR REGISTRATION

SECTION 1		GENERATOR																	
Company Name		Shiny Galvanizing Inc. <b>4</b>				Corporate Registry Number: 999888 <b>5</b>													
Mailing Address		1378 Forge Place <b>6</b>		Galvtown	BC	CANADA	V9Z 1Z9												
		PO Box or Street		City	Province	Country	Postal Code												
SECTION 2		HAZARDOUS WASTE DESCRIPTION																	
Identification of Waste				Quantity															
Physical State	Name of Waste	PIN	TDG Class	Now in Storage	Produced in 30-day Period	Units L/KG	Handling Code	Generation Code											
a) LIQUID	Spent sulphuric acid	UN1832	8	0	5000	L	03	C											
b) SLUDGE	Leachable toxic waste (zinc)	N/A	N/A	0	2000	L	04	C											
c) <b>8</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>A</b> <b>16</b>										
d) SOLID			9			KG	01	A											
e) SOLID			9			KG	01	A											
SECTION 3		BUSINESS GENERATING HAZARDOUS WASTE																	
3a	General Business Type	Metal finishing <b>17</b>																	
3b	Source of Hazardous Waste	(a) Acid cleaning; (b) acid neutralization <b>18</b>																	
3c	Generation Site	1378 Forge Place <b>19</b>		Galvtown	BC	V9Z 1Z9													
		Address		City	Province	Postal Code													
3d	Waste Managed By	On site <b>21</b>																	
3d	Management Site	1378 Forge Place <b>22</b>		Galvtown	BC	CANADA	V9Z 1Z9												
		Address		City	Province	Country	Postal Code												
SECTION 4		CERTIFICATION																	
I CERTIFY THAT THE INFORMATION PROVIDED ON THIS FORM IS CORRECT AND COMPLETE.																			
Calvin Smith <b>24</b>		<i>Calvin Smith</i>			12-Mar-2005		(250) 987-6543												
PRINT NAME		SIGNATURE			DATE (DD/MMM/YYYY)		TELEPHONE NUMBER												
FOR MINISTRY USE ONLY																			
REGIONS				LM	<input type="checkbox"/>	VI	<input type="checkbox"/>	TH	<input type="checkbox"/>	CA	<input type="checkbox"/>	OP	<input type="checkbox"/>	OK	<input type="checkbox"/>	SK	<input type="checkbox"/>	KO	<input type="checkbox"/>
LATITUDE:		DEG	MIN	SEC	LONGITUDE:		DEG	MIN	SEC										
3PWASTE:		ENTRY#		DATE		INITIALS													
3PCW:		ENTRY#		DATE		INITIALS													
CORP REG #:		SIC CODE:		BCG #:															

ENV/L/P 0011 (04/92)

ORCS 66200-01

Figure 7: Generator Registration Update Form



Ministry of Environment

Schedule 5, Section 43  
Form 1B  
Under the authority of the  
Hazardous Waste Regulation

GENERATOR REGISTRATION UPDATE

This form replaces/renews/updates the following hazardous waste information reported on the previous Generator Registration Report:

<b>DATED:</b> (DD/MM/YYYY)	<b>1</b>	<b>BY:</b>	<b>2</b>	<b>for BCG#</b>	<b>3</b>
<b>SECTION 1 GENERATOR</b>					
Company Name	<b>4</b>				
Mailing Address	<b>6</b>		BC <input type="checkbox"/>	CANADA <input type="checkbox"/>	
	PO Box or Street	City	Province	Country	Postal Code
<b>SECTION 2 HAZARDOUS WASTE DESCRIPTION</b>					
<b>FORMER</b>	<b>Identification of Waste</b>			<b>Quantity</b>	
Physical State	Name of Waste	PIN	TDG Class	Now in Storage	Produced in 30-day Period
a) <input type="checkbox"/> <b>7</b>	<b>7</b>	<b>7</b>	9 <b>7</b>	<b>7</b>	<b>7</b>
b) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
c) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
d) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
e) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
<b>PRESENT</b>	<b>Identification of Waste</b>			<b>Quantity</b>	
Physical State	Name of Waste	PIN	TDG Class	Now in Storage	Produced in 30-day Period
a) <input type="checkbox"/> <b>8</b>	<b>9</b>	<b>10</b>	9 <b>11</b>	<b>12</b>	<b>13</b>
b) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
c) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
d) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
e) <input type="checkbox"/> SOLID			9		L <input type="checkbox"/> 01 <input type="checkbox"/> A <input type="checkbox"/>
<b>SECTION 3 BUSINESS GENERATING HAZARDOUS WASTE</b>					
3a	General Business Type	<b>17</b>			
3b	Source of Hazardous Waste	<b>18</b>			
3c	Generation Site	FORMER	<b>19</b>		
		PRESENT	<b>20</b>		
3d	Management Company Name	FORMER	<b>21</b>		
		PRESENT	<b>22</b>		
	Management Site	FORMER	<b>23</b>		
		PRESENT	<b>23</b>		
<b>SECTION 4 CERTIFICATION</b>					
I CERTIFY THAT THE INFORMATION PROVIDED ON THIS FORM IS CORRECT AND COMPLETE.					
<b>24</b>		SIGNATURE		DATE (DD/MM/YYYY)	TELEPHONE NUMBER
PRINT NAME					
<b>FOR MINISTRY USE ONLY</b>					
REGIONS	LM <input type="checkbox"/>	VI <input type="checkbox"/>	TN <input type="checkbox"/>	CA <input type="checkbox"/>	OP <input type="checkbox"/>
LATITUDE:	DEG	MIN	SEC	LONGITUDE:	DEG
SUPPLEMENTARY REPORT			ARCHIVE REPORT		
BCG#	ENTRY	DATE	INITIALS	BCG#	ENTRY
SPWASTE				SPWASTE	
SPCW				SPCW	
ADDITION	YES		NO	DELETION	YES
REPLACES BCG#				REPLACED BY BCG#	
SIC CODE			BCG#		



# CONTAINERS FOR HAZARDOUS WASTE

Containers are used in the storage and transportation of hazardous waste.

The *Hazardous Waste (HW) Regulation* defines a *container* as: a portable receptacle in which waste is stored, transported, treated, disposed of, or otherwise handled.

## 1.0 General Requirements

Section 50 of the *HW Regulation* specifies general requirements for containers. The intent is to make sure that hazardous waste is contained during storage or transport. The requirements apply to things like transformer carcasses used for storage or transport of hazardous waste even if they may not be thought of as containers.

### **Compatible Materials**

Sound containers that are compatible with their contents must be used. Materials are considered to be compatible if, under normal conditions of storage or transport:

- release of hazardous waste does not occur
- no heat, gas, corrosive, or toxic substance is given off and
- the effectiveness of the packaging is not reduced

Putting hazardous waste into a container is prohibited if the waste is incompatible with:

- another waste in the container
- a residue left in an unwashed container
- the container itself
- a packing material or
- any other substance in the container

### **Closure and Handling**

Containers of hazardous waste must be kept closed at *all material times during storage or transport*. This means that containers must be closed except when they are filled or emptied. In addition, containers must be stored, transported, and handled in ways that avoid leakage or rupture.

### **Prohibited Use for Food Storage**

Most important of all, storage of food, feed, or any product that may become part of the human food chain is prohibited in a container that has residues of hazardous waste in it.

### **Dangerous Goods**

Where hazardous wastes that are dangerous goods are transported, all of the requirements in Part 5 of the *Transportation of Dangerous Goods (TDG) Regulations* also apply. These include:

- the way containers are selected and used
- standards the containers may have to comply with
- display of certification marks
- filling limits
- loading and securing containers for transport and
- requalification of containers which are reused

Section 5.0, [Waste Evaluation Procedure](#), in Chapter 3 explains how to check if wastes are dangerous goods.




---

**Note:** Section 17.1 of the *HW Regulation* specifies special requirements for containers used to store PCB wastes. These requirements are discussed in Chapter 10 of this guide.

---

## 2.0 Labpacks

**Definition** The *HW Regulation* defines a *labpack* as: a drum or barrel with a maximum capacity of 454 L that:

- is used to transport several containers of hazardous waste for storage, recycle, or disposal and
- includes one or more inner linings that contain absorbent or cushioned packaging for safe storage or transport of the containers of hazardous waste

**Construction** Labpacks must:

- be made of metal
- be open-topped
- have a tight-fitting lid and gasket and
- have a liner not less than 4 mil thick

**Packing** Small containers put into labpacks must:

- be securely sealed
- not be leaking
- be inside a clear plastic bag not less than 4 mil thick if the waste is a liquid
- have a label with the correct shipping name to identify the contents and
- have the void spaces between containers filled with inert absorbent packing material such as vermiculite to act as a cushioning agent and to soak up any leakage of liquids

**List of Contents** A list must be kept of the contents and size of all small containers in the labpack. The list of contents must be:

- available for inspection by an officer while the labpack is in storage
- attached to the manifest when the labpack is transported and
- sent by the consignee (receiver) with the appropriate copy of the manifest to the Hazardous Waste Program of the Ministry of Environment




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**Penalties:** A person may be:

- fined up to \$1 000 000 and/or imprisoned for up to six months for not complying with a requirement of the *HW Regulation* or
- fined up to \$3 000 000 and/or imprisoned for up to six months for reckless disregard for safety causing harm

Each day that an offence continues may result in another fine up to the maximum amount.

---

### 3.0 Other Precautions

In addition to the above requirements, certain general safety precautions are recommended when dealing with hazardous wastes in containers.

**Reuse of Containers**

Containers may be reused for other hazardous waste shipments if:

- they are in good condition and
- any requalification requirements are met for wastes that are dangerous goods (see Part 5 of the *TDG Regulations*)

**Disposal of Containers**

If reuse or recycle of containers is not practical, they may be disposed of at a permitted disposal facility such as a municipal landfill provided that they:

- no longer contain enough waste to qualify as a hazardous waste or
- have been properly decontaminated with a suitable solvent (see Section 4.0, *Wastes Containing Pest Control Products*, in Chapter 18)

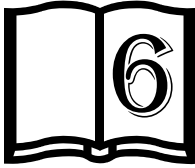
**Repacking**

Pouring material from one container to another increases the chance of spills and exposure to hazardous chemicals. Avoid repacking unless it is essential, such as when a container is leaking and no salvage drum is available.

**Good Hygiene**

Wear proper protective clothing and equipment when handling hazardous wastes. Use good hygiene procedures to avoid ingestion, absorption, and contact with hazardous wastes. Do not smoke, eat, or drink when handling hazardous wastes. Wash and clean up after handling hazardous waste.





# TRANSPORTING HAZARDOUS WASTE

Shippers (consignors/generators), carriers, and receivers (consignees) of hazardous wastes have many responsibilities, including those set out in:

- Section 10 of the *Environmental Management (EM) Act*
- *Hazardous Waste (HW) Regulation*
- *Transportation of Dangerous Goods (TDG) Act and Regulations*
- *Canadian Environmental Protection Act*
- *Export and Import of Hazardous Wastes (EIHW) Regulations* and
- *Interprovincial Movement of Hazardous Waste (IMHW) Regulations*

For more than *prescribed* quantities of hazardous wastes, these responsibilities include:

- use of consignor identification numbers
- licences for carrying hazardous wastes by road
- providing notification and getting authorization for international shipments
- making sure that receivers are allowed to receive hazardous wastes
- documentation of the shipment using manifests and other forms
- labelling and placarding of shipments and
- training of personnel

This chapter provides more details on these responsibilities.

Details of other important responsibilities are given in previous chapters, including:

- waste characterization and classification ([Chapter 3](#))
- generator registration ([Chapter 4](#)) and
- containers for hazardous waste ([Chapter 5](#))



**Note:** In this chapter the term *shipper* means the person who is shipping hazardous waste. In legal documents the shipper is called the consignor. In other chapters this person was referred to as a generator or a person storing hazardous waste.



**Note:** At the time of writing this guide, shipments of hazardous wastes that are dangerous goods need both a manifest prepared according to the *HW Regulation* and a shipping document prepared according to the *TDG Regulations*. Transport Canada and Environment Canada are currently discussing ways to do away with this duplication.

Refer to Part 3 of the *TDG Regulations* for instructions on completing a shipping document.

## 1.0 Consignor Identification Numbers

Under section 44 of the *HW Regulation*, a person must not offer for shipment or ship more than the registration quantity of a hazardous waste, without having a *Consignor Identification Number*. The consignor identification number is also known as a BCG number or simply a *registration number*.

Registration numbers are issued as part of the registration process. Shippers who have a registration number must use it any time they ship hazardous waste. See Section [6.0](#), *Completing a Manifest*.

If a shipper does not have a registration number and the amount of hazardous waste to be shipped is more than the registration quantity, the shipper must register the waste before shipping it.

If a shipper does not have a registration number and the amount of hazardous waste to be shipped is less than the registration quantity, the waste may be shipped without a registration number.



---

**Note:** The registration number is issued to the person or company *responsible* for the hazardous waste. For example, if hazardous waste is generated during demolition of a building by a contractor, the owner of the building is responsible for the waste. See [Chapter 4](#) for a discussion of registration, including [Figure 5](#), which shows registration quantities for different types of hazardous wastes.

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## 2.0 Transport Licences

### **Licence Requirements**

Under section 45 of the *HW Regulation*, a person carrying hazardous waste by road must in most cases have a transport licence issued by a director. A transport licence is not needed if:

- the amount of waste or the transport distance is so small that a manifest is not required (see Section 5.1, [When to Use a Manifest](#), later in this chapter)
- the waste is carried solely on a property controlled by the person storing or generating the waste
- the waste is carried by the person who generated it and the amount is smaller than the registration quantity for the type of waste concerned or
- the waste is not carried by road

To get a licence, applicants must show they have:

- a good knowledge of the regulations, based on a written test and
- adequate resources in the form of insurance and/or a security deposit to cover the costs in event of an accident or spill

If an applicant intends to carry only to a limited number of receiving facilities, it helps to have a letter from each receiving facility to confirm they can accept the type of hazardous waste to be carried.

Transport licences are issued by a director to the person or party responsible for the carrying function. In most cases, this is a company rather than an employee driver. A copy of the licence must be kept in the cab when a vehicle is carrying hazardous wastes.

### **Application Forms and Information**

All the forms and information to apply for a *Licence to Transport Hazardous Waste* can be downloaded from the Hazardous Wastes page of the web site of the Ministry of Environment. They are also available as a package from staff of the Hazardous Waste Program in Victoria.

The application package includes:

- an application form and instructions
- details of the security required
- form letters for receivers to confirm the types of waste they can accept and
- this guide as study material for the written test



**Making the Application** Make an appointment for and then write the test.

Complete the application form and then send the following to the Director, Environmental Management Branch in Victoria:

- the completed application form
- a copy of each vehicle's registration certificate or a list of the fleet
- proof of third party liability insurance in the amount advised
- acceptable financial security
- a contingency plan for spills prepared according to the instructions in the application package
- confirmation letters from receiving facilities if applicable
- any required licence fee and
- any additional information the director may ask for

**Powers of a Director** If a director is not satisfied that a carrier has the required knowledge, experience, or equipment to carry some types of hazardous waste, the director may:

- refuse to issue a transport licence for those wastes or
- place conditions on a licence to limit certain aspects of operation

A director may cancel or suspend a *Licence to Transport Hazardous Waste* if the holder of the licence does not comply with the *EM Act* or the regulations. Before a transport licence is suspended or cancelled, the licence holder may ask to make representations to the director or the director may hold a hearing on the matter.

A licence is void if hazardous wastes are carried in circumstances that are significantly different from the information provided in the application.

### 3.0 International Shipments

**Background** Canada has signed or supports international agreements to prevent problems when hazardous wastes are imported into, exported from, or pass through Canada. The regulatory mechanisms for doing this are provided by the *Export and Import of Hazardous Wastes (EIHW) Regulations*.

**Outline** The requirements under the *EIHW Regulations* vary somewhat according to the type of wastes, what is to be done with them, and whether the movement is import, export, or transit. In general, the process consists of:

- notifying Environment Canada of the intended movement, including all relevant details
- checking by Environment Canada and other authorities that:
  - the movement is accepted and in accordance with the laws of all countries involved
  - the parties involved are properly insured and authorized for what is intended and can do this without causing damage to human health or the environment and
  - contracts for the movement include provisions for completing paperwork and for resolving problems
- issuing of written confirmation by Environment Canada that the proposed movement is accepted and
- moving the wastes in accordance with the contract conditions, applicable regulations, and terms of the confirmation issued by Environment Canada

**Required Form** A notice form must be used to inform the Transboundary Movement Branch of Environment Canada of the intended movement. Notice forms are numbered so they are only available from the Branch at the address given in [Appendix A](#).

**Processing Time** Environment Canada has no control over the authorities who accept a proposed movement, so there is no defined time for processing a notification. It is suggested that the notice form be filed as soon as possible and at least 60 days before the proposed movement.

Confirmations that movements are accepted are usually valid for one year.

## 4.0 Authorization to Receive Hazardous Wastes

Before shipping more than the registration quantity of a hazardous waste, a shipper must check that the receiving site is authorized to accept it. The receiving site must:

- be registered if the waste is to be stored or treated at the site or
- have a permit, approval, order, or waste management plan if the waste is to be disposed of at the site

Likewise, a receiver may not accept hazardous waste if this will result in accumulation of more hazardous waste at the site than the site is authorized for by the *EM Act* and regulations.

## 5.0 The Manifest System

Section 10 of the *EM Act* requires use of a manifest to transport more than a *prescribed* quantity of hazardous waste. The shipper, carrier, and receiver must all use the manifest system.

The manifest is a key part of the system used to check that all hazardous wastes leaving a shipper's property are received safely at the intended destination. The system is often said to track the waste from cradle to grave.

**Required Forms** A manifest issued by the Ministry of Environment must be used for hazardous wastes shipped from sites in BC. These manifests and other forms used for transport are available from the Distribution Centre, Victoria, at the address given in [Appendix A](#). A fee is charged for manifests and other forms.

A manifest issued by Environment Canada or by another province must be used for hazardous wastes shipped from outside of BC.

Manifests are forms with multiple colour-coded copies. All information for tracking shipments of hazardous waste is recorded on the manifest.

**Instructions for Manifests** Instructions for completing and distributing copies of a manifest issued by the Ministry are given on the back of the form. Further explanations are given in Section [6.0, Completing a Manifest](#).

Instructions for completing and distributing copies of a manifest issued by Environment Canada or another province are those given in the *EIHW Regulations* or by the province concerned.

### 5.1 When to Use a Manifest

In most cases, a manifest is needed to transport:

- 5 kg or more of solid hazardous waste
- 5 L or more of liquid hazardous waste
- any quantity of gases in containers having a total liquid capacity of 5 L or more
- any quantity of solids or liquids containing 500 g or more of polychlorinated biphenyls (PCB) within BC or
- 500 g or more of solids, liquids, or mixtures of these containing 50 mg/kg of PCB outside of BC

A manifest is not needed for transport:

- solely within the boundaries of property owned, leased, or controlled by the person who produces or stores the hazardous waste, as long as the distance between the shipping and receiving sites is less than 100 km
- for a distance less than 3 km on a public road
- directly from a home or farm, by a home owner or farmer, to a facility operated by the government, a municipality, or an agent of these organizations
- of less than 210 L of waste oil or paint within BC or
- of less than 1000 kg of waste batteries within BC



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**Note:** The manifest quantities for waste oil, paint, or batteries apply even if these wastes are dangerous goods. However, transport of wastes that are dangerous goods may require a shipping document under the *TDG Regulations*.

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### 5.2 Responsibilities

The responsibility for completing and filing the manifest is divided between the shipper, the carrier, and the receiver. The *EM Act* prohibits a carrier or receiver from accepting more than the manifest quantity of hazardous waste unless there is a valid manifest with it.

#### **Shipper (Generator/Consignor)**

A person who owns or is responsible for a hazardous waste, and who wishes to ship the waste when a manifest is required, must:

- have and use his or her registration number, if the amount also exceeds the registration quantity for the type of waste concerned
- complete Part A of the manifest according to the instructions on the back of the manifest and as further explained in Section 6.1 later in this chapter
- make sure that the person transporting the waste has a BC *Licence to Transport Hazardous Waste* unless one is not needed (see Section 2.0 earlier in this chapter)
- make sure that the site that will receive the waste is allowed to accept it (see Section 4.0 earlier in this chapter)
- make sure that the carrier completes Part B of the manifest and takes copies 3 to 6 with the shipment and
- file and distribute other copies as described later in this chapter and on the back of the manifest




---

**Penalties:** A shipper failing to comply with manifest requirements, failing to make sure that a carrier has a transport licence, or failing to make sure that a receiving facility may accept a hazardous waste may be:

- fined up to \$200 000 and/or
  - imprisoned for up to six months
- 

**Carrier** Any person who is responsible for carrying hazardous waste must:

- have a BC *Licence to Transport Hazardous Waste* unless one is not needed (see Section 2.0 earlier in this chapter)
- have a contingency plan to assist in responding to a spill or similar emergency
- complete Part B of the manifest
- carry copies 3 to 6 with the shipment and give them to the receiver when delivering the shipment and
- file and distribute other copies as described later in this chapter and on the back of the manifest

To deal with an emergency at any location and time, the contingency plan must identify:

- the chain of command
- means of communication to summon help
- response equipment and
- the sequence of actions

A recommended format for such plans is available from the Hazardous Wastes page of the Ministry's web site or from Hazardous Waste Program staff in Victoria.




---

**Penalties:** A carrier failing to comply with manifest or transport licence requirements may be:

- fined up to \$200 000 and/or
  - imprisoned for up to six months
- 

**Receiver  
(Consignee)**

Any person who receives hazardous waste must:

- not accept more than the registration quantity of the waste unless allowed to do so (see Section 4.0 earlier in this chapter)
- complete Part C of the manifest received with the waste shipment
- return copy 4 of the completed manifest to the carrier and
- file and distribute other copies as described later in this chapter and on the back of the manifest




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**Note:** In all cases except where hazardous waste is received for *temporary storage*, the receiver must comply with the waste information requirements for all hazardous waste facilities. See [Chapter 8](#) of this guide or section 5 of the *HW Regulation*.

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**Penalties:** A receiver may be:

- fined up to \$200 000 and/or imprisoned for up to six months for accepting hazardous waste without a properly completed manifest or otherwise failing to comply with manifest requirements or
- fined up to \$300 000 and/or imprisoned for up to six months for accepting hazardous waste at a site where storage is prohibited or where treatment, recycling or introduction into the environment is not authorized

## 6.0 Completing a Manifest

A manifest is a six-sheet non-carbon copy form used to document all details relevant to a shipment of hazardous waste. The manifest may be completed neatly by hand, typewriter, or printer.



**Note:** However a manifest is completed, the information must be clear on the sixth copy. If completing by hand, use a ball-point pen and press hard!

The reverse side of the manifest provides instructions on how to complete the manifest and how to distribute the copies. The following sections give more detailed explanations.

### 6.1 Part A - Consignor (Generator) Instructions

Refer to [Figure 8, Manifest Form](#), to see the spaces identified by the numbers.

**1**

**Provincial ID No.  
(Consignor)**

Enter the registration number (BCG number) issued by the director when the hazardous waste was registered. The number is unique to the shipper of the waste and is used to minimize errors in the computerized waste tracking system.

The number is issued to the person, company, or division of a company that is responsible for the hazardous waste.

Enter the registration number on each manifest used for shipping hazardous waste. Out-of-province shippers should enter their own registration number if one is issued by their own authorities. Shippers who do not need a number should enter *N/A*. A school that generates or stores less than the registration quantity of hazardous waste in a 30-day period could be an example of such a shipper.

**2**

**Company Name**

Enter the name of the shipper. In the case of a partnership or proprietorship, this is the name of the principal(s). For a company, it is the registered company name. The name must be the same as the name used when the hazardous waste was registered and for which the registration number was issued.

The shipper is the person who owns or manages the hazardous waste and who is responsible for care and control of the waste before shipment. Normally this is the person managing the facility that the waste is being sent from.

Selling the waste may not change the shipper. A nominal sale of a waste prior to shipment is considered the first step of transporting the waste. In this case the vendor is still the shipper.

**3**

**Mailing Address**

Enter the business mailing address of the shipper. Proprietorships or partnerships without a business address must enter the home mailing address of a principal. Make sure that the postal code is correct.

4

Enter the physical site address, not a post office box or rural route number. Repeat the shipping site address if it is the same as the mailing address.

**Shipping Site Address**

For remote or rural site locations, enter the latitude and longitude. If these are not available, give the site location by distance and road name such as *5 km east of Anytown, BC on Hwy 99*. If there is no postal code for the shipping site, leave the space for this blank.

5

Enter the name of the person (company, partnership, or proprietorship) who is intended to receive the hazardous waste. This must not be left for the receiver to enter.

**Intended Consignee**

6

Enter the receiver's registration number for receiving facilities in BC. For receiving facilities out of BC, enter the registration, permit or other number issued by the authority for the receiving facility.

**Provincial ID No.  
(Consignee)**

The shipper must get this number from the receiver. This must not be left for the receiver to enter.

7

Enter the business mailing address of the intended receiver. This must not be left for the receiver to enter.

**Address of Intended  
Consignee**

8

Enter the physical location of the receiving site. Do not give the mailing address.

**Receiving Site  
Address**

For remote or rural site locations, enter the latitude and longitude. If these are not available, give the site location by distance and road name such as *5 km east of Anytown, BC on Hwy 99*. If there is no postal code for the shipping site, leave the space for this blank.

9

Enter the physical state of the hazardous waste as solid, liquid, or gas. If necessary, use the free liquid test described in Part 3 of Schedule 4 of the *HW Regulation* to distinguish between solid and liquid wastes.

**Physical State**

10

If the hazardous waste is one of the named wastes defined by the *HW Regulation* and shown in the upper part of [Figure 5, Registration Quantities](#), enter this as the shipping name. Step 5 of the [Waste Evaluation Procedure](#) in Chapter 3 or section 1(1) of the *HW Regulation* gives the definition of each named waste type.

**Shipping Name**

If the hazardous waste is not one of the named wastes, enter the shipping name according to the *TDG Regulations*, with the word *waste* or *recyclable* added unless this is already suggested by the name. Section [6.1, Hazardous Wastes That Are Dangerous Goods](#) in Chapter 3 explains how to find the shipping name.

11

Leave blank for waste being transported within or into BC. This space is used by some provinces to identify hazardous wastes according to another numbering system.

**Provincial No.**

12

Enter the UN number as the PIN (product identification number) for wastes that are dangerous goods according to the *TDG Regulations*. Section [6.1, Hazardous Wastes That Are Dangerous Goods](#) in Chapter 3 explains how to find the UN number.

**PIN**

Enter *N/A* for hazardous wastes that are not dangerous goods.

**13 and 14**  
**Quantity Shipped and  
Units**

Enter the amount of hazardous waste being shipped in kilograms or litres. Show the units as kg or L. Use decimal numbers for small amounts, not fractions.

**15**  
**Classification**

Enter the primary class followed by any subsidiary class(es) in brackets for wastes that are dangerous goods according to the *TDG Regulations*. Section 5.0, *Waste Evaluation Procedure* in Chapter 3 explains how to find the classes.

Enter *N/A* for hazardous wastes that are not dangerous goods.

**16**  
**Packing Group/  
Risk Group**

Enter the packing group or risk group for liquid or solid wastes that are dangerous goods according to the *TDG Regulations*. Section 5.0, *Waste Evaluation Procedure*, in Chapter 3 explains how to find the packing or risk group.

Enter the packing group as a roman numeral—that is, I, II, or III. It may happen that a waste is in more than one class and exceeds the criteria for different packing groups within the classes it is in. In this case, the waste is in the packing group with the lowest number.

For example, for a liquid that exceeds the toxicity criteria for packing group I and the corrosiveness criteria for packing group II, the packing group is I.

For infectious substances in class 6.2, enter the risk group as an arabic numeral—that is, 2, 3, or 4.

Enter *N/A* for hazardous wastes that are not dangerous goods and for gases (there are no packing groups for gases).

**17 and 18**  
**Packaging No. and  
Packaging Codes**

Enter the number of containers used to ship the hazardous waste in the column headed *No*. This helps the receiver to check that containers were not added or removed during shipment.

Enter the codes for the type of packaging used in the shipment in the column headed *Codes*. Use one of the following packaging codes:

- 01 = drum
- 02 = tank
- 03 = bulk
- 04 = carton
- 05 = bag
- 06 = roll-off (container or chassis) or
- 07 = other

**19**  
**Special Handling/  
Emergency  
Instructions**

List or attach any instructions that may help the carrier or emergency response personnel in case of a spill or other accident. Mark one of the boxes in the top part of the space to show if the instructions are *attached* on a separate sheet, or are listed *below* in the space provided.

Examples of instructions could be:

- who to contact in an emergency
- how to handle the material or container
- materials that should not come in contact with the hazardous waste and
- safety equipment required by response personnel

20

**Date Shipped**

Enter the shipping date numerically in year-month-day format. For example, 05-03-15 means 15 March 2005.

21

**Time**

Enter the time the shipment leaves the shipping site and mark the small box to show if the time is *A.M.* or *P.M.*

22

**Scheduled Arrival Date**

Enter the date the shipment is expected to arrive at the receiving site using year-month-day format.

23

**Authorized Person**

Print or type the name of the person authorized to act for the shipper and who takes on the shipper's responsibilities. The shipper's authority may not be delegated to anyone who is not responsible for a shipment.

24

**Signature**

All manifests must be certified by a natural person (not a company). The person signing Part A of the manifest is making the following legally binding statement:

*I declare that the information contained in Part A is correct and complete.*

Check over all the information in Part A to make sure that this is the case and then sign the manifest.

25

**Telephone No.**

Enter the full telephone number of the authorized person, including area code. The telephone number must be entered in case information is required quickly in an emergency or for clarification of shipment details.

35

**Reference No. of Other Manifests**

Enter the numbers of other manifests if more than one manifest has to be used. If there is not enough space to list the numbers of all manifests used, attach a separate list and enter *See attached list* in this space.

**Entry of Carrier Information**

After completing Part A of the manifest, the shipper must give the manifest to the carrier for completion of Part B.

**Distribution of Manifest Copies**

When the carrier has completed Part B of the manifest, the shipper must:

- give the carrier copies 3 to 6 of the manifest and any other documents required to go with the shipment
- keep copy 2 on file for two years, together with copy 6 when it is returned by the receiver and
- within three days of giving the waste to the carrier, mail copy 1 to:

Hazardous Waste Program  
Ministry of Environment  
PO Box 9342 Stn Prov Govt  
Victoria BC V8W 9M1



**Note:** The copies distributed must be the original coloured copies.

The Ministry does not accept faxed copies of manifests.

Refer to [Figure 9, Distribution of the Manifest](#), to see graphically how to distribute the copies.



**Additional Copy for Shipments to Other Provinces**

If the shipment is being sent to another province, the shipper must take a photocopy of copy 1 and within three days of giving the waste to the carrier, mail this photocopy to the authority of the receiving jurisdiction. The addresses of these authorities are listed on the back of the manifest.

**Additional Copies for Shipments out of Canada**

If the shipment is being exported from Canada, the shipper must take two photocopies of copy 1 and, within three days of giving the waste to the carrier, mail:

- one photocopy to the authority of the receiving jurisdiction and
- one photocopy to the Transboundary Movement Branch of Environment Canada at the address given in [Appendix A](#)

**6.2 Part B - Carrier Instructions**

Refer to [Figure 8, Manifest Form](#), to see the spaces identified by the numbers.

**26****Provincial ID No. (Carrier)**

Except as noted in Section 2.0, [Transport Licences](#), any person carrying a hazardous waste in BC must have a *Licence to Transport Hazardous Waste*.

Enter the number of this licence in the space marked *Provincial ID No.* in Part B of the manifest.

**27****Company Name**

When a transport licence must be used, enter the name of the hazardous waste carrier as it appears on the transport licence.

If the carrier is the generator carrying an amount of waste that does not need a transport licence (see Section 2.0, [Transport Licences](#)), enter the name of the generator.

**28****Carrier's Address**

Enter the business mailing address of the carrier. Make sure that the postal code is correct.

**29****Vehicle Identification**

Enter an identification number for each vehicle involved in the shipment. For transport by road, this is the vehicle licence plate number with a two-letter abbreviation in the column provided to identify the issuing province.

For other means of transport, similar unique numbers are acceptable.

**30****Point of Entry/  
Point of Exit**

Enter the border crossing point for international and interprovincial shipments.

**31****Date**

Enter the date that the carrier takes charge of the waste shipment. In most cases this is the shipping date entered by the shipper.

**32****Name of Authorized Person**

Print or type the name of the carrier or person authorized to act for the carrier. In most cases this is the driver or other person responsible for the shipment while it is being carried.

**33****Signature**

The person authorized by the carrier must sign the manifest. By signing the manifest, the carrier accepts the wastes and confirms that the shipment matches the description given by the shipper.

34

**Telephone No.**

Enter the full telephone number of the carrier, including area code. The telephone number must be entered in case information is required quickly in an emergency or for clarification of shipment details.

**Handling of Manifest Copies**

When the carrier has completed Part B of the manifest, the carrier must:

- return copies 1 and 2 to the shipper
- carry copies 3 to 6 with the shipment (see *Location of Manifest Copies in Transit* below)
- give a copy of the manifest and any other documents to any person who takes over control of the shipment
- give the manifest and any additional documents to the receiver when delivering the shipment and
- when copy 4 is returned by the receiver, keep it on file for two years

Refer to [Figure 9, \*Distribution of the Manifest\*](#), to see graphically how to distribute the copies.

**Location of Manifest Copies in Transit**

While the shipment is in transit, at least one copy of the manifest must be kept as described according to the situation:

- Trucks, tractor attached (including on board a ship or ferry with the driver):
  - in a pocket on the driver's door or within the driver's reach while the driver is in the cab or
  - in a pocket on the driver's door, on the driver's seat, or in a location clearly visible from the driver's door if the driver is not in the cab
- Parked trailers, no tractor attached:
  - in a readily visible and accessible waterproof receptacle attached to or near the trailer if the trailer is in an unsupervised area or
  - with the person in charge of the area if the trailer is in a supervised area
- Ships and ferries (including wastes in a truck or railcar):
  - on the bridge of the ship with the master or master in control of the ship (can be as an electronic copy)
- Ports or marine terminals:
  - in the office of the port or marine terminal manager where the wastes are located, provided there is a person in the office who can immediately give details of the information on the manifest and a telephone number for the office that has been approved by CANUTEC
- Railcars, attached to a train (including on board a ship or ferry with the crew):
  - with one of the train crew if they are with the train or
  - in the first locomotive if none of the train crew are with the train
- Parked railcars, not attached to a train:
  - with the person in charge of the area if the car is in a supervised area
  - in the office of the rail dispatcher for the area where the car is located, provided there is a person in the office who can immediately give details of the information on the manifest and a telephone number for the office that has been approved by CANUTEC or
  - in a readily visible and accessible waterproof receptacle attached to or near the railcar if the car is in an unsupervised area

### 6.3 Part C - Consignee (Receiver) Instructions

Refer to [Figure 8, Manifest Form](#), to see the spaces identified by the numbers.

- 35** Check this space to see if there is more than one manifest to record details of the shipment. This is very important when the shipment involves:
- Reference No. of Other Manifests**
- more than one carrier
  - shipments with more wastes than can be described on one manifest or
  - shipments where there is a transfer between carriers
- 36** Enter the registration number of the receiving facility.
- Provincial ID No. (Consignee)**
- 37** If the name and the mailing and site addresses including postal code are the same as entered by the shipper in Part A, mark the box in this space and go to item 43, *Date Received*.
- Consignee Information - Same as in Part A**
- If the information is significantly different in some way, complete the shaded areas of Part C (see items 39 to 42 below).
- 38** Enter the name of the receiving facility if this is different from that entered in Part A. For companies this is the registered company name.
- Company Name**
- 39** Enter the business mailing address of the receiving facility if this is different from that entered in Part A. Make sure that the correct postal code is entered.
- Address**
- 40** Enter the physical location of the receiving facility if this is different from that entered in Part A.
- Receiving Site Address**
- For remote or rural site locations, enter the latitude and longitude. If these are not available, give the site location by distance and road name such as *5 km east of Anytown, BC on Hwy 99*. If there is no postal code for the shipping site, leave the space for this blank.
- 41** Enter the city, province, and postal code of the receiving facility if this is different from that entered in Part A.
- City, Province, Postal Code**
- 42** Enter the receiving date numerically in year-month-day format. For example, 05-03-15 means 15 March 2005.
- Date Received**
- 43** Enter the time the shipment was accepted and mark the small box to show if the time is *A.M.* or *P.M.*
- Time**
- 44** Measure the amount received of each waste shown as more than 100 kg or 100 L. Enter these amounts in the same metric units as used by the shipper.
- Quantity Received**

45

Enter the units for the quantity received. Enter *kg* if the shipper entered *kg* in Part A or *L* if the shipper entered *L* in Part A.

**Units**

46

Enter any differences in the types or amounts of the wastes received compared to the information entered on the manifest by the shipper.

**Shipment  
Discrepancies**

If the waste is not as described on the manifest or if there is a difference of more than 5% in the amount of waste received, immediately telephone an Environmental Protection manager in the local office of the Regional Operations Branch and wait for further instructions.

Report any problems with the containers, the manifest, or any other aspect of the shipment to the local Environmental Protection manager. In some cases the receiver may have to contact the shipper for more information to account for differences. Make a note of any such contacts.

If a shipment is refused, enter the reason why. Attach another sheet to copy 3 of the manifest if more space is required to explain differences or problems.

47

Enter one of the handling codes below to show how it is proposed to handle the waste at the receiving site:

**Handling Code**

- 01 = storage
- 02 = thermal treatment
- 03 = chemical treatment
- 04 = physical treatment
- 05 = biological treatment
- 06 = landfill
- 07 = recycled or
- 08 = other (specify)

Enter code 08 if no other code properly describes how it is proposed to manage the waste. If using code 08, enter how it is proposed to manage the waste in the space provided (item 51). An example could be onward shipment to another facility. Where a series of management methods are proposed, enter the code for the final handling method expected to be used.

48

Mark the *Yes* or *No* column to show if the container and interior packaging used for the shipment have been decontaminated at the receiving site.

**Packaging  
Decontamination**

49

Mark the *Yes* or *No* column to show if the vehicle used for the shipment has been decontaminated at the receiving site.

**Vehicle  
Decontamination**

50

Enter how it is proposed to manage the waste if 08 was entered as the handling code for item 48.

**If Handling Code  
"Other" (Specify)**

51

If the shipment is being sent on to another facility, enter the next intended receiver of the waste. This situation arises most often where waste is collected by a broker before being sent to a final treatment or disposal facility.

**Transfers**

52

**Provincial ID No.**

If the shipment is being sent on to another facility, enter the registration number of the next intended receiver.

53

**Address**

If the shipment is being sent on to another facility, enter the address of the next intended receiver.

54

**Authorized Person**

Print or type the name of the person who is authorized to act for the receiver and who takes on the receiver's responsibilities. The receiver's authority may not be delegated to anyone who is not responsible for a shipment.

55

**Signature**

All manifests must be certified by a natural person (not a company). The person signing Part C of the manifest is making the following legally binding statement:

*I declare that the information contained in Part C is correct and complete.*

Check over all of the information in Part C to make sure that this is the case and then sign the manifest.

56

**Telephone No.**

Enter the full telephone number of the receiver, including area code.

**Distribution of Manifest Copies**

When the receiver has completed Part C of the manifest, the receiver must:

- return copy 4 to the carrier to keep on file for two years
- keep copy 5 on file for two years
- mail copy 6 to the shipper and
- mail copy 3 and any additional documents within three days to:

Hazardous Waste Program  
Ministry of Environment  
PO Box 9342 Stn Prov Govt  
Victoria BC V8W 9M1



**Note:** The copies distributed must be the original coloured copies.

The Ministry does not accept faxed copies of manifests.

Refer to [Figure 9, Distribution of the Manifest](#), to see graphically how to distribute the copies.

**Additional Copy for Shipments from Other Provinces**

If the shipment is being received from another province, the receiver must take a photocopy of copy 3 and, within three days of receiving the waste, mail this photocopy to the authority for the shipper. The addresses of these authorities are listed on the back of the manifest.

**Additional Copies for Shipments out of Canada**

If the shipment is being imported into Canada, the receiver must take two photocopies of copy 3 and, within three days of receiving the waste, mail:

- one photocopy to the authority for the shipper and
- one photocopy to the Transboundary Movement Branch of Environment Canada at the address given in [Appendix A](#)

## 7.0 Multiple Consignors

Section 47 of the *HW Regulation* provides an option for a single carrier to use one manifest when picking up the same type of hazardous waste in a bulk load from multiple shippers.

This is mainly to benefit recycling operations such as oil collectors, solvent reclaimers, or battery recyclers where a large number of pick-ups are made before a bulk load is complete.

**Required Forms** To use the multiple consignor option, the carrier must have a manifest and a multiple consignors form.

The carrier may use Form 3 of Schedule 5 of the *HW Regulation* as shown in [Figure 10, Multiple Consignors Form](#), or may use another form as long as it contains the same information.

**Modified Carrying Instructions** Complete Part A of the manifest as described in Section 6.1, [Part A - Consignor \(Generator\) Instructions](#), except for the following:

- Company Name (item 2): enter *Multiple*
- Shipping Site Address (item 3): enter *Multiple*
- Quantity Shipped (item 13): leave blank until the collection is completed and then enter the total from the multiple consignors form
- Time Shipped (item 21): enter the time of starting the collection round and
- keep all copies of the manifest until the collection round is complete and then distribute them with copies of the multiple consignors form as described in *Distribution of Form Copies* below

In the spaces provided on the multiple consignors form and as described for the corresponding manifest items, enter:

- Waste Name (Shipping Name, item 10)
- TDG Class (Classification, item 15)
- TDG/PIN (item 12)
- Reference Manifest Number (number of the manifest being used)
- Carrier's Company Name (item 28)
- Driver's Name (Name of Authorized Person, item 33)
- Vehicle Licence No. (Vehicle Identification, item 30) and
- Date (item 20)

Keep the multiple consignors form with the manifest and enter all the required information for each waste pick-up. When the pick-up is complete, enter the total from the multiple consignors form as the quantity shipped (item 13) on the manifest. Sign the multiple consignors form.

**Distribution of Form Copies** Distribute the copies of the manifest and the multiple consignors form as follows:

- attach copy A of the multiple consignors form to copy 1 of the manifest and mail them within three days to:

Hazardous Waste Program  
Ministry of Environment  
PO Box 9342 Stn Prov Govt  
Victoria BC V8W 9M1

- attach copy B of the multiple consignors form to copy 2 of the manifest
- have the receiver complete Part C of the manifest as described in Section 6.3, *Part C - Consignee (Receiver) Instructions*
- attach copy C of the multiple consignors form to copy 5 of the manifest and give to the receiver and
- keep copies 2, 4, and 6 of the manifest and copy B of the multiple consignors form on file for two years

## 8.0 Multiple Carriers

If more than one carrier is used for a single shipment to a receiving facility, the shipper must use a single manifest together with a multiple carriers form. This requirement is mainly to streamline the paperwork for inter-modal transport and is contained in section 47.1 of the *HW Regulation*.

**Required Forms** The shipper must have a manifest and a multiple carriers form.

The shipper may use Form 5 of Schedule 5 of the *HW Regulation* as shown in [Figure 11, Multiple Carriers Form](#), or may use another form as long as it contains the same information.

**Modified Shipping Instructions** The shipper must complete Part A of the manifest and distribute copies as described in Section 6.1, *Part A - Consignor (Generator) Instructions*, except for the following:

- Company Name on Part B of the manifest (item 27): enter *See attached form*
- Consignor on the multiple carrier form: enter the same name as entered for Company Name on Part A of the manifest (item 2)
- Reference Manifest No on the multiple carrier form: enter the number of the manifest
- attach all copies of the multiple carrier form to copies 3, 4, 5, and 6 of the manifest and give them to the first carrier and
- keep copy D of the multiple carrier form on file for two years with copies 2 and 6 of the manifest

**Modified Carrying Instructions** When accepting the waste, enter in the spaces provided on the form and as described for the corresponding manifest items (shown in brackets):

- Carrier Name (Company Name, Item 27)
- Carrier LT# (Provincial ID, Item 26)
- Vehicle Registration and Province or State (Registration No., Item 29)
- Date Carried Start and Finish: dates of accepting and passing on responsibility for the waste in year-month-day format
- Shipping Locations From and To: enter physical addresses or latitude and longitude for locations that do not have an address. If these are not available, give the site location by distance and road name such as *5 km east of Anytown, BC on Hwy 99* and
- Carrier's Signature: sign to certify that the information contained on the line is correct and complete

Keep the multiple carriers form with the manifest and give these to the next carrier or the intended receiver.

When the receiver sends photocopies of copy B of the multiple carrier form and copy 4 of the manifest, keep these on file for two years.

**Modified Receiving Instructions** The procedures for receiving the waste are the same as described in Section 6.3, *Part C - Consignee (Receiver) Instructions*, except for the following:

- send to each carrier a photocopy of copy B of the multiple carrier form attached to a photocopy of copy 4 of the manifest and
- keep copy C of the multiple carrier on file for two years with copy 5 of the manifest

## 9.0 Multiple Wastes

Section 47.2 of the *HW Regulation* provides an option for a shipper to use one manifest when there is not enough space on the manifest for all the hazardous wastes in the shipment. This option may only be used for cases where there is:

- one shipper
- one receiver and
- all waste is shipped to the receiver without any pick-ups or drop-offs

**Required Forms** To use the multiple wastes option, the shipper must have a manifest and a multiple wastes form.

The shipper may use Form 6 of Schedule 5 of the *HW Regulation* shown in [Figure 12, Multiple Wastes Form](#), or may use another form as long as it contains the same information.

**Modified Shipping Instructions** Complete Part A of the manifest as described in Section 6.1, *Part A - Consignor (Generator) Instructions*, except for the following:

- Shipping Name (item 10): enter *See attached form*

In the spaces provided on the multiple wastes form and as described for the corresponding manifest items, enter:

- Consignor on the multiple wastes form: the same name as entered for Company Name on Part A of the manifest (item 2)
- Reference Manifest No on the multiple carrier form: the number of the manifest
- Physical State (item 9)
- Shipping Name of Waste (item 10)
- PIN (item 12)
- Quantity Shipped and Units (items 13 and 14)
- Class (item 15) and
- Packaging No and Codes (items 17 and 18)

Follow the same procedures for the manifest copies as described in Section 6.1, *Part A - Consignor (Generator) Instructions*, except for the following:

- attach all copies of the multiple wastes form to copies 3, 4, 5, and 6 of the manifest and give them to the carrier and
- when copy 6 of the manifest and copy D of the multiple wastes are returned by the receiver, keep these on file for two years with copy 2 of the manifest



**Modified Carrying Instructions** Follow the same procedures for the manifest copies as described in Section 6.2, *Part B - Carrier Instructions*, except for the following:

- keep the multiple wastes form with the manifest and
- keep copy B of the multiple wastes form for two years, together with copy 4 of the manifest returned by the receiver

**Modified Receiving Instructions** Complete Part C of the manifest as described in Section 6.3, *Part C - Consignee (Receiver) Instructions*, except for the following, which are entered on the multiple wastes form as described for the corresponding manifest items:

- Quantity Received and Units (items 44 and 45)
- Shipment Discrepancy (item 46)
- Handling Code (item 47)
- Packaging/Container Decontamination (item 48) and
- Vehicle Decontamination (item 49)

Follow the same procedures for the manifest copies as described in Section 6.3, *Part C - Consignee (Receiver) Instructions*, except for the following:

- attach copy A of the multiple wastes form to copy 3 of the manifest
- attach copy B of the multiple wastes form to copy 4 of the manifest
- attach copy C of the multiple wastes form to copy 5 of the manifest
- attach copy D of the multiple wastes form to copy 6 of the manifest and
- keep copy C of the multiple carrier form with copy 5 of the manifest on file for two years

## 10.0 Rejected Shipments

It may happen that a receiver refuses to accept a shipment of hazardous waste. Sometimes the contract between the shipper and the receiver will say what to do.

However, a receiver must take further action if:

- a shipment arrives without a manifest or with an incomplete manifest
- the waste does not match the description on the manifest
- the amount of waste is more than 5% different from what is shown on manifest or
- the shipment is in a hazardous condition

In any of these cases, the receiver must:

- immediately notify the Environmental Protection manager in the local office of the Regional Operations Branch and wait for further instructions and
- note the differences or problems, on the manifest if there is one

If there is not enough space on the manifest, attach another sheet to copy 3 of the manifest.

The receiver should also contact the shipper to try to account for differences. The receiver should keep a note of any such contacts.

If the receiver decides to return the shipment after talking to the shipper and the Environmental Protection manager, the receiver must:

- let the Environmental Protection manager know of this decision by telephone
- note on Part C of the manifest that the shipment is being returned and
- distribute the manifest copies in the usual manner

## 11.0 Safety Marks

The *TDG Regulations* calls containers or packages *means of containment*. In most cases, means of containment for shipments of hazardous wastes that are dangerous goods must have safety marks. Safety marks include:

- shipping names
- UN numbers
- labels
- placards
- certification marks or specifications and
- other markings and symbols

Part 1 of the *TDG Regulations* lists the special cases where marks are not required or different marks may be used.

The shipper is responsible for making sure that containers or vehicles are properly marked.

The carrier is responsible for making sure that the marks are maintained in good condition during transport.

Safety marks must stay on containers until they have been emptied and cleaned. When no hazard remains, the person doing the emptying or cleaning must cover or remove marks other than certification or specification marks.

Part 4 of the *TDG Regulations* specifies the designs, colours, and sizes of hazard/class labels and placards. Labels and placards are available from companies specializing in supplies for shipping dangerous goods.

### **Small Containers and Packages**

The *TDG Regulations* define a *small means of containment* as having a cargo capacity of 450 L or less. Unless a special case allows something else, small containers used to transport hazardous wastes that are dangerous goods, or the small package they are in if they are packaged, must be marked with:

- shipping name (including the technical name of the most dangerous substance related to the primary class for listings that have special provision 16 in Schedule 1 of the *TDG Regulations*; see [Names for Hazardous Wastes](#) in Section 6.0 of Chapter 3)
- diamond-shaped hazard/class label for the primary class
- diamond-shaped hazard/class label(s) for any subsidiary class(es)
- UN number and
- certification mark if a standardized means of containment is required (see Part 5 of the *TDG Regulations*)

In addition, if a shipment will travel by ship or ferry and is or contains:

- a flammable liquid, it must be marked with the flashpoint or flashpoint range of the liquid and
- a marine pollutant or a severe marine pollutant, it may have to have a marine pollutant mark (see Part 4 of the *TDG Regulations*)

Safety marks must be arranged so that:

- they are on one side of a container or package, but not the top or bottom if the container or package may be stacked
- on the shoulder of a gas cylinder
- the shipping name (including technical name if applicable) is next to the primary label
- the UN number is on or next to the primary label
- subsidiary label(s) if applicable are next to the primary label
- the flashpoint or flashpoint range, if applicable, is next to the shipping name and
- a marine pollutant mark, if applicable, is next to the primary class label or the subsidiary class label(s) if there are any

***Large Containers,  
Road Vehicles, and  
Rail Cars***

Placards may be thought of as labels for large containers. Except for the placards used for infectious substances and some mixed loads, placards are large versions of the diamond-shaped hazard/class labels.

The *TDG Regulations* define a *large means of containment* as having a cargo capacity of more than 450 L. Unless a special case allows something else, large containers must be marked with placards if the hazardous wastes are dangerous goods that:

- require an Emergency Response Assistance Plan (ERAP)
- are liquid or gas in direct contact with a large container or
- have a total gross mass more than 500 kg

Placards must be displayed:

- before the container is loaded and
- on each of the four sides of the container

If a container has a permanent frame, the placards may be attached to the frame provided this results in their display in positions equivalent to the sides and ends of the container. In the case of a truck, this includes the front end of the truck.

Placards for subsidiary classes are not required unless the hazardous wastes require an ERAP and the subsidiary class is 4.3, or 6.1 packing group I.

A UN number must be displayed in a white space on each placard or on an orange panel next to each placard if any of the hazardous wastes are dangerous goods that:

- require an ERAP
- are liquid or gas in direct contact with a large container or
- are from one shipper, in an amount more than 4000 kg

A *DANGER* placard may be used to transport hazardous wastes having different UN numbers or classes as long as none of the wastes:

- require an ERAP
- are liquid or gas in direct contact with a large container or
- are from one shipper, in an amount more than 4000 kg

See Part 4 of the *TDG Regulations* for rules applicable to mixed loads of gases or large containers that are divided into compartments.

## 12.0 Training

The *TDG Regulations* require any person who handles, ships, or carries hazardous wastes that are dangerous goods to be trained or to work under the direct supervision of a trained person. The training must be in all topics that are part of the person's duties and must be up to date with the regulations. For ground transport, training is valid for three years.

Employers are responsible for:

- making sure that employees are properly trained
- keeping records of training and
- issuing Certificates of Training

The Certificate of Training must:

- show the name and address of the employer's place of business
- show the employee's name
- show the date the certificate expires
- show the topics the employee is trained in and
- be signed by the employee and the employer or an employee acting on behalf of the employer

Further details on training are given in Part 6 of the *TDG Regulations*.

Figure 8: Manifest Form

**MANIFEST - MANIFESTE**  
 This Manifest conforms to all Federal and Provincial transport and environmental legislation requiring manifesting.  
 Ce manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport, requérant un manifeste.

Manifest Reference No.  
N° de référence du manifeste **BC76900-0**

Reference nos. of other Manifests used / N°s de références des autres manifestes utilisés **35**

Provincial ID No. / N° d'id. provincial **36**

**C Consignee (Receiver) / Destinataire (Receptonnaire)**  
 Consignee information same as intended Consignee in Part A  
 L'information à fournir par le destinataire est la même qu'en A  
 Yes / Ou  No, complete the box below  
 Non, compléter la boîte ci-dessous

Company name / Nom de l'entreprise **37**

Address / Adresse **38**

City / Ville **39** Province **40** Postal code / Code postal **41**

Receiving site address / Destination de l'expédition **42**

City / Ville **43** Province **44** Postal code / Code postal **45**

Date received / Date de réception **46** Year / Année **47** Month / Mois **48** Day / Jour **49** Time / Heure **50** A.M.  P.M.

Identify any shipment discrepancy problems, amount, quantity, weight, volume, etc. / Indiquer toute différence relative à l'expédition. Annexe une feuille au besoin.

Units received / Quantité reçue **51** Units / unités **52** Packaging code / Code de conditionnement **53** Handling code / Code de manutention **54** Decontamination code / Code de décontamination **55** Comments / Commentaires **56** Yes / Oui **57** No / Non **58**

If handling code "Other" (specify) **59**  
 Si code de manutention "divers", spécifier **60**

If waste to be transferred, specify intended company name / (Si) les déchets doivent être transférés, préciser le nom du destinataire **61**

Address / Adresse **62** City / Ville **63** Province **64** Postal code / Code postal **65**

Provincial ID No. / N° d'id. provincial **66**

**B Carrier / Transporteur**  
 Company name / Nom de l'entreprise **67**

Address / Adresse **68**

City / Ville **69** Province **70** Postal code / Code postal **71**

Registration No. / N° d'immatriculation **72** Prov. **73**

Vehicle / Véhicule **74**

Trailer/Rail Car No. 1 / 1<sup>er</sup> remorque - wagon **75**

Trailer/Rail Car No. 2 / 2<sup>e</sup> remorque - wagon **76**

Point of entry / Point d'entrée **77**

Point of exit / Point de sortie **78**

**Carrier Certification:** I declare that I have received waste as offered by the consignor in Part A for delivery to the intended consignee and that the information contained in Part B is complete and correct. / Déclaration du transporteur: J'affirme avoir reçu les déchets offerts par l'expéditeur dans la partie A en vue de leur livraison au destinataire prévu et que les renseignements inscrits à la partie B sont exacts et complets.

Year / Année **79** Month / Mois **80** Day / Jour **81** Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) **82**

Signature **83** Tel. No. / N° de tél. **84**

Waste identification / Identification du déchet **85**

Provincial No. / N° (Québec-Ontario seulement) **86**

Classification **87**

Group / Groupe **88**

Packing group / Emballage **89**

Units shipped / Quantité expédiée **90** Units / unités **91**

Quantity received / Quantité reçue **92** Units / unités **93**

Packaging code / Code de conditionnement **94**

Contents / Contenu **95**

Special handling/Emergency instructions / Manutention spéciale/instructions d'urgence **96**

Attached / Ci-jointes  Below / Ci-dessous

Circulation no. - Québec only / N° de circulation - Réservée au Québec **97**

Date shipped / Date d'expédition **98** Year / Année **99** Month / Mois **100** Day / Jour **101** Time / Heure **102** A.M.  P.M.

Scheduled arrival date / Date d'arrivée prévue **103** Year / Année **104** Month / Mois **105** Day / Jour **106**

**Consignor Certification:** I declare that the information contained in Part A is correct and complete. / Déclaration de l'expéditeur: Je déclare que tous les renseignements à la partie A sont vérifiés et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie) **107**

Signature **108** Tel. no. / N° de tél. **109**

Physical state / Etat physique **110** 9 **111** 10 **112** 11 **113** 12 **114** 13 **115** 14 **116** 15 **117** 16 **118** 17 **119** 18

Figure 9: Distribution of the Manifest

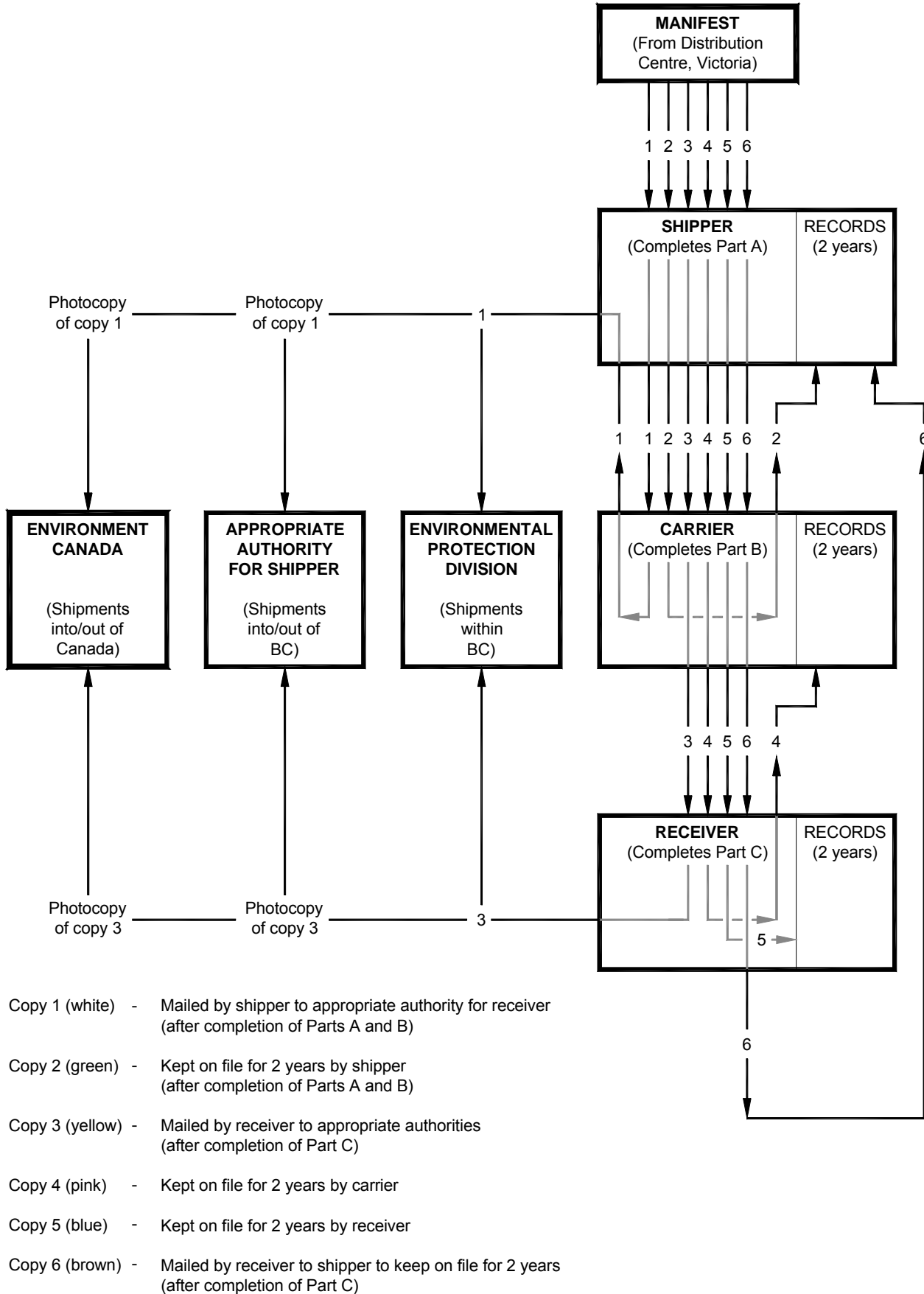


Figure 10: Multiple Consignors Form

Under the authority of the Hazardous Waste Regulation Schedule 5, Section 47



**COLLECTION POINT INFORMATION**

Waste Name		TGD Class		TGD/PIN		Reference Manifest Number		
Name	Address	City	Postal Code	Telephone	Consignor ID #	Consignor's Signature	Quantity kg/L	Cumulative Total, kg/L
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
<b>TOTAL:</b>								

**CARRIER INFORMATION:**

Carrier's Company Name:	Vehicle Licence Plate No.:
Driver's Name:	Driver's Signature:
DATE: (YYYY-MM-DD)	

**INSTRUCTIONS:**  
The Carrier Shall:

- (a) complete this form;
- (b) keep this form with the manifest; and
- (c) when the shipment has been completed:
  - Attach Copy A to Copy 1 of Manifest and mail to the appropriate authority in the jurisdiction where consignor is located
  - Attach Copy B to Copy 2 of Manifest and retain
  - Attach Copy C to Copy 5 of Manifest and deliver to consignee

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Figure 11: Multiple Carriers Form

**Manifest Supplement - Multiple Carriers, Form 5**  
Under the authority of the Hazardous Waste Regulation Schedule 5, Section 47.1



CONDITIONS: This form can only be used as an attachment to a HAZARDOUS WASTE MANIFEST under the following conditions:  
 (a) There is only one Consignor (Generator) and only one Consignee (Receiver) for the shipment described on the referenced manifest.  
 (b) There are no additions to or deletions of waste from the consignment after the shipment leaves the consignor's site.  
 (c) This form must be attached to the Reference Manifest and must be in the vehicle when the shipment is being transported.

CONSIGNOR		REFERENCE MANIFEST NO						
Carrier Name	Carrier LT#	Vehicle Registration (Licence Plate No.)	Province or State	Date		Shipping Locations		Carriers Signature
				Start (YYYY-MM-DD)	Finish (YYYY-MM-DD)	From	To	
I certify the above shipments have been made in compliance with the Hazardous Waste Regulation.								
Consignor Contact Name (Please Print)			Signature		Telephone Number		FAX Number	
							Date (YYYY-MM-DD)	

INSTRUCTIONS: When the shipment has been completed the Consignee (Receiver):

- Attaches Copy A to Copy 3 of Manifest and mails to the appropriate authority in the jurisdiction where consignee is located.
- Attaches copies of Copy B to copies of Copy 4 of Manifest and returns to each Carrier.
- Attaches Copy C to Copy 5 of Manifest and retains for 2 years.
- Attaches Copy D to Copy 6 of Manifest and mails to Consignor.

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Figure 12: Multiple Wastes Form

**Manifest Supplement - Multiple Different Wastes, Form 6**  
Under the authority of the Hazardous Waste Regulation Schedule 5, Section 47.2



CONDITIONS: This form can only be used as an attachment to a HAZARDOUS WASTE MANIFEST under the following conditions:

- (a) There is only one consignor (Generator) and only one Consignee (Receiver) for all of the waste listed on the referenced manifest and on this form.
- (b) There are no additions or deletions of waste from the consignment after the shipment leaves the consignor's site.
- (c) The form must be attached to the reference manifest and must be in the vehicle when the shipment is being transported.

CONSIGNOR:	REFERENCE MANIFEST NUMBER:
------------	----------------------------

Physical State	Shipping Name of Waste	TDG/PIN	Quantity Shipped	Units L/kg	Class	Packing Group	Packaging		Quantity Received	Units L/kg	Shipment Discrepancy*	Handling Code	Decontamination	
							No.	Code					Packaging /Container	Vehicle
													YES	NO

I certify the above shipments have been made in compliance with the Hazardous Waste Regulation.			
Consignor Contact Name (Please Print)	Signature	Telephone Number	FAX Number
		Date (YYYY-MM-DD)	

INSTRUCTIONS: When the shipment has been completed the Consignee (Receiver):

- Attaches Copy A to Copy 3 of Manifest and mails to the appropriate authority in the jurisdiction where Consignee is located.
- Attaches Copy B to Copy 4 of Manifest and returns to Carrier.
- Attaches Copy C to Copy 5 of Manifest and retains for 2 years.
- Attaches Copy D to Copy 6 of Manifest and mails to Consignor.

\*Identify any shipment discrepancy. Attach Addendum if necessary  
ENV/L/P 0016 (04/92) [APRIL 1994]





# HAZARDOUS WASTE MANAGEMENT OPTIONS

Management of hazardous wastes involves much more than just treatment or disposal. There are options for dealing with wastes from source through to disposal.

Some options are more desirable than others. This ranking of options is often referred to as the hierarchy for managing hazardous wastes.

## **Avoiding Generation**

The first and most preferred option in this hierarchy is to prevent generation of the waste in the first place. This may be achieved sometimes by changing a manufacturing process, using a less hazardous raw material or using production methods that do not generate hazardous wastes. This is often the safest and most economical method of dealing with hazardous wastes.

## **Recycling**

If generation of a hazardous waste cannot be prevented, the next option in the hierarchy is to recycle the waste. Many manufacturers have found that there is profit in their waste. In some cases it is profitable to use a waste from one source in another industry. Several waste exchange programs bring together waste producers and waste users based on this idea.

Information on recycling is available from the Recycling Council of British Columbia. The Council receives partial funding from the Ministry of Environment. Various grades of membership are available for individuals and organizations. Services provided by the Council include:

- operation of the Provincial Recycling Hotline
- maintenance of a waste exchange database and online catalogue
- maintenance of the Council web site and
- publication of newsletters for members

For further information, see the Council web site or contact them at the address given in [Appendix A](#).

## **On-Site Treatment**

Unfortunately, not all wastes can be eliminated, reduced, or recycled. The next option in the hierarchy is to treat wastes where they are generated. This avoids the risk of transporting the hazardous wastes.

Simple ways of treating wastes that can often be used where the wastes are generated include:

- neutralization of acids and alkalis
- precipitation and settling to reduce waste volumes or
- some forms of oxidation

[Figure 13, Examples of Options for Management of Hazardous Wastes](#), lists options for treating some common hazardous wastes.



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**Note:** Any system that involves a discharge or emission to the environment must meet the requirements of the *HW Regulation*. In some cases, authorization under the *Environmental Management Act* may be required.

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**Note:** Dilution is not considered treatment under the *HW Regulation*.

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Figure 23, *Authorizations for Management of Hazardous Waste*, summarizes the forms of authorization required for managing hazardous waste in various ways. For more information on authorizations, see [Chapter 19](#) of this guide.

**Off-Site Treatment**

The final option for managing hazardous wastes is to transport them to an off-site facility. A wider range of specialized management processes for treatment and disposal is available at such facilities. For some wastes, an off-site facility is the only option that is safe and economical.

Later chapters in this guide describe the requirements for the various types of hazardous waste management facilities in more detail. It is only said here that options at the top of the hierarchy are preferred.

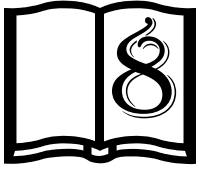
When developing the requirements in the *HW Regulation* for the various management options, several factors were considered. Of these, exposure of the public and risk to the environment were rated the most important. The preference given in the *HW Regulation* to on-site recycling facilities compared to off-site disposal facilities reflects this importance.

The amount of monitoring needed to protect the environment is also important. This in turn depends on factors such as the amount and properties of a waste, and for what time it must be managed. A small amount of slightly hazardous waste that is stored for a short time requires fewer precautions than a large amount of extremely hazardous waste that is stored permanently.

Figure 13: Examples of Options for Management of Hazardous Wastes

<i>Type of Hazardous Waste</i>	<i>Waste Management Options</i>
Acids and alkalis	<ul style="list-style-type: none"> <li>• recycling</li> <li>• neutralization</li> </ul>
Asbestos	<ul style="list-style-type: none"> <li>• solidification</li> <li>• containment during transport</li> <li>• landfill</li> </ul>
Chromium	<ul style="list-style-type: none"> <li>• recycling</li> <li>• chemical reduction to trivalent state</li> <li>• physical/chemical treatment</li> <li>• solidification and secure landfill</li> </ul>
Cyanides	<ul style="list-style-type: none"> <li>• recycling</li> <li>• chemical oxidation</li> <li>• physical/chemical treatment</li> <li>• solidification and secure landfill</li> <li>• high temperature incineration</li> </ul>
Fluorides	<ul style="list-style-type: none"> <li>• physical/chemical treatment</li> <li>• solidification and secure landfill</li> </ul>
Heavy metals	<ul style="list-style-type: none"> <li>• recycling</li> <li>• physical/chemical treatment</li> <li>• solidification and secure landfill</li> </ul>
Hydrocarbon contaminated soils	<ul style="list-style-type: none"> <li>• recycling</li> <li>• landfarming</li> </ul>
Infectious materials	<ul style="list-style-type: none"> <li>• biological treatment</li> <li>• thermal destruction</li> <li>• chemical disinfection</li> </ul>
Oils	<ul style="list-style-type: none"> <li>• recycling</li> <li>• physical/chemical treatment</li> <li>• biological treatment</li> <li>• incineration</li> </ul>
Organics (halogenated)	<ul style="list-style-type: none"> <li>• recycling</li> <li>• physical/chemical treatment</li> <li>• high temperature incineration</li> </ul>
Organics (non-halogenated)	<ul style="list-style-type: none"> <li>• recycling</li> <li>• biological treatment</li> <li>• physical/chemical treatment</li> <li>• incineration</li> </ul>
Pesticides	<ul style="list-style-type: none"> <li>• biological treatment</li> <li>• physical/chemical treatment</li> <li>• high temperature incineration</li> </ul>
Sulphides	<ul style="list-style-type: none"> <li>• physical/chemical treatment</li> <li>• chemical oxidation</li> </ul>





# ALL HAZARDOUS WASTE FACILITIES

This chapter describes the general requirements that all hazardous waste facilities must meet. These include standards for where facilities may be located as well as general safety and protective provisions.

Chapters 9 to 16 discuss the additional requirements that apply to specific types of facilities. For example, Chapter 9 discusses requirements for recycle facilities and Chapter 10 discusses requirements for short-term storage facilities.

If a facility meets the definition of more than one type of facility, the requirements for each type of individual facility apply. For example, an off-site treatment facility must meet the requirements for:

- all facilities in this chapter
- treatment facilities in Chapter 11 and
- short-term storage facilities in Chapter 10 if there is storage at the facility



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**Note:** To comply with the requirements of the *Hazardous Waste Regulation*, most hazardous waste facilities will also require some form of approval or authorization. See [Figure 23, Authorizations for Management of Hazardous Waste](#), for a summary.

---

## 1.0 Discussion of Definitions

Some of the more important legal definitions are discussed in this chapter. Review Part 1 of the *Environmental Management (EM) Act*, the *Hazardous Waste (HW) Regulation*, and the *Transportation of Dangerous Goods (TDG) Act* and *Regulations* for definitions that are not discussed below.

### **200-Year Floodplain**

Floodplain levels have been mapped for a number of major watercourses in BC. Maps may be downloaded from the Floodplain Mapping page of the Ministry of Environment's web site or are available from Crown Publications Inc. at the address given in [Appendix A](#).

The Resource Information Branch of the Ministry of Environment may be able to supply information for floodplains that have not been mapped. If they cannot help, a specialist consultant may be needed to determine the level of the 200-year floodplain.



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**Note:** *The HW Regulation* was amended to specify protection of facilities to the 200-year flood level instead of the 100-year flood level. Facilities that existed before the amendment may continue to be protected to the 100-year flood level.

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### **Approved**

This term is used frequently in the *HW Regulation* for situations where a site-specific or on-site review is required before the final conditions can be set.

Section 1(2) of the *HW Regulation* specifies that for something to be *approved* it must be in writing and it must be issued by a director. An *approval* in this context may take the form of an order, a permit, an approval issued by a director, a Waste Management Plan, a licence, or simply a letter. A director may set requirements or conditions when issuing an approval.

The terms *approved* and *approval*, as used in the *HW Regulation*, have a broader meaning than an *approval* under section 15 of the *EM Act*. An approval under section 15 of the *EM Act* is only one possible form of approval under the *HW Regulation*.

**Buffer Zone** A *buffer zone* is an area of land that separates a facility from surrounding land. Normally a buffer zone is vacant land that is not developed during the operating life of the facility. The main purpose of a buffer zone is to lessen the impact of a facility on the surrounding area. A buffer zone does not have to be owned by the facility owner, but it should be under the facility owner's control.

**Bulk Load** A *bulk load* is a shipment of hazardous waste in a container, and is made up of shipments from more than one shipper. The waste may be carried in one or more containers, but all of the waste in each container must be of the same type.

**Consignor, Carrier, and Consignee** In most cases it is not difficult to identify these parties for a shipment of waste. The *consignor* or shipper is the person who has the waste and is responsible for it before it is shipped. The *carrier* is responsible for transporting the waste to its intended destination. The *consignee* or receiver is the person the waste is sent to and who normally accepts the waste at the receiving site.

In some cases where a broker or agent is used for a shipment, things may not be quite so clear. This is especially the case if an agent is contracted to transport and dispose of a waste. Unless there is a contract that specifies otherwise, the shipper is responsible for the waste until it is accepted by the receiving facility. A common example is where a carrier completes Part A of a manifest for a shipper. In this case, unless a contract specifies otherwise, the shipper is still responsible for making sure that the information in Part A is correct.

Ownership of a hazardous waste is only one of the factors considered in determining a person's responsibility under the *HW Regulation*. The person who has *control and possession* of a waste is usually the first person to be held responsible for it. Federal authorities have interpreted the consignor to be the person in charge of the facility that a waste is sent from.

**Dangerous Goods** The *HW Regulation* defines *dangerous goods* as substances that are *regulated* dangerous goods under the *TDG Regulations*, except that the exemption from regulation in section 1.25 of the *TDG Regulations* does not apply.

Part 1 of the *TDG Regulations* lists a number of special cases where substances that meet the criteria for being dangerous goods are exempted from regulation. One of these special cases is given in section 1.25 of the *TDG Regulations*.

Section 1.25 exempts dangerous goods handled on a single industrial site from being regulated by the *TDG Regulations*. The section 1.25 exemption is reasonable for transport purposes but not for regulating hazardous waste. The definition of dangerous goods in the *HW Regulation* therefore excludes this exemption.

Some of the other exemptions from regulation in Part 1 of the *TDG Regulations* are also not appropriate for waste substances. The exemptions that are not appropriate for waste substances are usually those that apply only in specific cases such as transport by road or rail. If in doubt, consult Hazardous Waste Program staff to find out if an exemption is appropriate.



Section 5.0, [Waste Evaluation Procedure](#), in Chapter 3 of this guide provides more details on how to check if a substance is dangerous goods under the *TDG Regulations*.

**Dioxin TEQ** There are a large number of chlorinated compounds having either a dioxin or furan structure. The toxicity of these compounds varies considerably. *Dioxin TEQ* (toxicity equivalent) is a number that allows the toxicity of substances containing different dioxins and furans to be compared. Dioxin TEQ is the amount of the single most toxic dioxin a substance would have to contain to have the same toxicity as the substance containing the different dioxins and furans.

Section 1 of the *HW Regulation* describes how to calculate dioxin TEQ. In summary, dioxin TEQ is calculated by:

- multiplying the concentration of each compound listed in Schedule 1 of the *HW Regulation* by its toxicity equivalency factor and then
- adding all of the multiplied numbers together

If a measured concentration is below the detection limit of the analytical method, the concentration is assumed to be half of the detection limit.

**Disposal** *Disposal* is any introduction of waste into the environment, by means intended to minimize the effect on the environment.

**Facility** A *facility* can be any piece of equipment, process, or constructed works that is used to handle or deal with a hazardous waste. The most common types of facilities are listed in the definitions.

However, not every possible type of facility is defined. Even if a type of facility is not defined, the *HW Regulation* still applies, including the requirements of sections 3 to 14 and those in any permit, approval, or plan.

Although historical hazardous waste contaminated sites are not defined as facilities, any in-situ works or processes at such sites are facilities.

**Hazardous Waste** With the exception of the substances listed in the lower part of [Figure 2, Definition of Hazardous Waste](#), in Chapter 3, wastes that are dangerous goods regulated by the *TDG Regulations* are defined as *hazardous wastes*.

In addition, hazardous waste includes the following substances that are specifically defined in the *HW Regulation*: PCB wastes, biomedical wastes, wastes containing dioxin, waste oil, waste asbestos, waste pest control product containers and wastes containing pest control products, leachable toxic waste, waste containing tetrachloroethylene, wastes listed in Schedule 7 of the regulation, wastes that are corrosive because of their pH, and waste containing polycyclic aromatic hydrocarbons.

If a waste meets a definition for more than one type of waste, the definition having the strictest requirements applies. For this reason, hazardous wastes must **always** be checked to see if they are dangerous goods. See [Section 5.0, Waste Evaluation Procedure](#), in Chapter 3 for a detailed procedure to find out if a waste is a hazardous waste.

**Historical Hazardous Waste Contaminated Site** A *historical hazardous waste contaminated site* is any land or groundwater that was contaminated with hazardous waste on or before 1 April 1988 and to which no further hazardous waste is added. Such sites are not considered to be hazardous waste facilities.

**Hydrocarbon Contaminated Soil**

*Hydrocarbon contaminated soil* is a naturally occurring material such as soil or gravel that is contaminated only with a petroleum product. In this context, leaded compounds from leaded gasoline are included as petroleum products.

Special options are available for materials that meet the definition of hydrocarbon contaminated soil if the contaminant standards specified in Section 3.0 of Chapter 18 are not exceeded.

**Incinerator**

An *incinerator* is a type of thermal treatment facility that uses controlled conditions to burn wastes. Facilities that use processes such as pyrolysis or plasma arc are defined as thermal treatment systems rather than incinerators. This distinction is important as there is a difference between the requirements for these types of facilities.

**Indoor**

For the purposes of the *HW Regulation*, *indoor* means protected from the weather as in a building, but does not include shipping containers used for passive storage.

**In-Situ Management Facility**

An *in-situ management facility* can only occur on a historical contaminated site. These facilities are used to reduce the impact of contamination on such sites, without substantial physical alteration of the site. Examples are slurry walls to control the flow of groundwater or bioremediation to treat toxic contaminants.

**Labpack**

A *labpack* is a type of packaging used for storing or transporting smaller containers of hazardous waste. Section 2.0, *Labpacks*, in Chapter 5 of this guide details how labpacks must be constructed and packed, and how the contents must be listed and labelled.

**Land Treatment**

The most common forms of *land treatment* are *land farms* or *bio farms* that use natural or enhanced biological processes to treat a waste. The facility must be designed firstly to contain the waste and secondly to maximize the desired biological activity.

An area where waste is simply spread onto the ground without prior technical investigation or other management action is not acceptable land treatment.

**Leachable Toxic Waste**

*Leachable toxic waste* is defined in both the *HW Regulation* and the *TDG Regulations*. The procedure for testing if a material is leachable toxic waste is the same in both cases. The difference is that the *HW Regulation* defines more materials as leachable toxic waste than the *TDG Regulations*. This is because the *HW Regulation* sets levels for more substances than the *TDG Regulations*.

In general, leachable toxic wastes are substances that contain or release hazardous compounds above specified limits when contacted with slightly acidic water. The limits are specified in Table 1 of Schedule 4 of the *HW Regulation* and in Appendix 4 to Part 2 of the *TDG Regulations*.



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**Note:** If there is less than 0.5% by weight of solids in a liquid waste, the levels specified by the *HW Regulation* apply to the liquid alone.

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Substances that meet the *HW Regulation* definition of leachable toxic waste must be managed as hazardous waste. Only those substances that meet the *TDG Regulations* definition of leachable toxic waste must be transported as dangerous goods.

- Long-Term Storage** The *HW Regulation* recognizes that a secure landfill is not necessarily the only possibility for permanent holding (disposal) of a waste residue. This means that a waste facility operator has some flexibility in designing a final disposal option and allows use of innovative alternatives to a conventional secure landfill for disposal of residues such as incinerator ash or solidified inorganic waste.
- The concept of a long-term storage facility grew out of the idea of an above-ground secure landfill and evolved to include any type of above-ground structure designed to keep hazardous waste from being released to the environment over a very long period of time. It is possible that such a structure could even be more secure than a traditional secure landfill since all of the waste would be readily available for inspection, recycling, or removal if necessary.
- The *HW Regulation* does not specify the physical form of a long-term storage facility, but minimum design requirements are set. In theory such facilities could be as simple as a secure dedicated warehouse or as elaborate as a concrete mausoleum.
- Manage** The term *manage* is intended to include any activity that involves hazardous waste. It covers the full range of activity from the point of generation to the final disposal of any residues.
- Mobile Facility** Any facility that is designed to be transported from site to site is a *mobile facility*. Usually these are chemical or thermal treatment units mounted on trucks, trailers, or rail cars. The *HW Regulation* limits the number of hours of operation and the quantity of waste that may be treated at these facilities for them to be considered mobile.
- Officer** An *officer* is defined in the *EM Act* as a person designated in writing as an officer by a director, and includes a conservation officer. A peace officer is also an officer for purposes of vehicle inspection.
- On proof of identity, an officer has right of entry to any facility other than solely residential premises, for whatever investigation he or she deems appropriate.
- Owner** The term *owner* includes the operator of a facility. In cases where there is a contract between an owner and an operator, the responsibilities of the owner may rest solely with the operator or with the owner depending on the terms of the contract.
- Passive Storage** *Passive storage* means storage where the only activities that take place are: putting waste into storage, removing waste from storage, or inspecting the waste in storage. Passive storage excludes any other activity such as sampling of wastes, transfer of waste between containers, or ongoing filling or packing of containers.
- PCB** *PCB* means any chemical compound or a mixture of compounds described as chlorobiphenyls or polychlorinated biphenyls. PCB has the general molecular formula  $C_{12}H_{10-n}Cl_n$  where  $n$  may be any number from 3 to 10.
- PCB Equipment** Any manufactured item that contains or is contaminated with a PCB liquid or PCB solid is *PCB equipment*. While items of PCB equipment are often electrical components such as transformers or capacitors, the definition includes other items such as contaminated drums and containers.



**Note:** An item of equipment from which PCB liquid or PCB solid has been removed is still PCB equipment until it has been decontaminated by an approved protocol. This is because the removal is a treatment process and the equipment, until decontaminated, is a *residue* from the treatment. See *HW Regulation* section 19(2).

**PCB Liquid** Any liquid containing more than 50 parts per million (ppm) by weight of PCB is a *PCB liquid*.

**PCB Solid** Any material or substance other than a liquid containing more than 50 ppm by weight of PCB is a *PCB solid*. Absorbents or soils contaminated with PCB are typical examples.

**PCB Wastes** PCB liquids, PCB solids, and PCB equipment are grouped together, and all except PCB equipment that is actually in service are defined as PCB wastes.



**Note:** PCB equipment becomes PCB wastes as soon as it is removed from service. This is the case even if the intent is to treat, recycle, or reuse the equipment.

**Polycyclic Aromatic Hydrocarbon TEQ or PAH TEQ**

The term *polycyclic aromatic hydrocarbon* (PAH) and the alternative *polynuclear aromatic hydrocarbon* refer to a class of compounds that are described chemically as having a structure of three or more fused benzene rings.

The toxicity of these compounds varies considerably. *PAH TEQ* (toxicity equivalent) is a number that allows the toxicity of substances containing different PAHs to be compared. PAH TEQ is the amount of benzo[a]pyrene a substance would have to contain to have the same toxicity as the substance containing the different PAHs.

Section 1 of the *HW Regulation* describes how to calculate PAH TEQ. In summary, PAH TEQ is calculated by:

- multiplying the concentration of each compound listed in Schedule 1.1 of the *HW Regulation* by its toxicity equivalency factor and then
- adding all of the multiplied numbers together

If a measured concentration is below the detection limit of the analytical method, the concentration is assumed to be half of the detection limit.

**Principal Organic Hazardous Constituent or POHC**

*Principal organic hazardous constituents* (POHCs) are those compounds in a hazardous waste that are selected for measurement during tests to prove the capabilities of a treatment process. Although POHCs are mainly used in the testing of incinerators and other thermal treatment systems, they may also be selected and measured when other chemical or physical treatment processes are tested.

In all cases a director decides which chemical compounds will be used in a test. In some cases surrogate or substitute compounds may be specified as alternatives if a test with the waste itself is thought to be too risky or if monitoring complexities make it necessary.

**Product of Incomplete Combustion or PIC**

If an incinerator does not fully burn a waste, it may emit chemical compounds in the exhaust that are harmful derivatives of the original waste. These derivatives are called *products of incomplete combustion* (PICs).

In some cases PICs may be more harmful than the original material being burned. When a thermal treatment facility is being tested on a new waste material, it is important to identify all PICs that may be of concern.

**Recharge Area** A *recharge area* is an area of land that supplies water to an aquifer. Where an aquifer is exposed or open to the surface, the recharge area is the entire area above it. If an aquifer is *confined* by an overlying layer of impervious soil or rock, the recharge area may be a great distance from the area where the groundwater is used.

**Recycle** In the *HW Regulation*, *recycle* has a deliberately narrow definition. To be recycled, a hazardous waste or waste residue must be *wholly utilized*:

- in a process where the main purpose is not waste management or
- repackaged and offered for retail sale to meet a realistic market demand

The definition of *recycle* excludes processes that involve application to land, burning, or where the principal purpose is waste management.

Processes that produce a residue for disposal or that do not wholly utilize the material are actually treatment processes.

**Short-Term Storage** *Short-term storage* means any storage that is not *long-term storage* as discussed above or *temporary storage* as discussed below. In effect, this means any storage where there is an intention to later move or treat the waste, other than storage for less than 96 hours that may occur incidental to transport.

The *HW Regulation* does not specify a maximum time that a waste may be held in a short-term storage facility. However, the owner of a short-term storage facility must make provision for final disposal of all waste in storage to avoid having to meet the requirements of a long-term storage facility.

If the amount of waste stored at any time exceeds the registration quantity for the type of waste involved, the waste storage must be registered. Registration quantities are given in [Figure 5, Registration Quantities](#), in Chapter 4.

Facilities that are part of a treatment process where waste is held during treatment for process reasons or to even out flow variations are not considered to be short-term storage facilities.

**Temporary Storage** *Temporary storage* is storage of wastes for less than 96 hours that occurs incidental to transport—in other words, storage that occurs while waste is being readied for transport, while it is being transported, or before it is received at a receiving facility.

Although hazardous waste must always be properly contained, the siting, operational, and performance requirements in Parts 2, 3, and 4 of the *HW Regulation* do not apply to temporary storage. These exemptions are intended to encourage small generators to remove hazardous waste promptly from their sites and to avoid regulation of places where hazardous wastes may be held for a short time while being transported.



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**Note:** At present, the *HW Regulation* unintentionally requires registration of more than registration quantities in temporary storage. This issue will be addressed in a future amendment to the *HW Regulation*.

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**Treatment** *Treatment* is the use of a process or operation to change physical, chemical, or biological properties of a waste. The usual reason for treatment is to make hazardous waste less hazardous or to reduce its volume.

Under the *HW Regulation*, some activities, such as reclaiming of solvents or used oil, are treatment rather than recycling. Dilution is never a form of treatment under the *HW Regulation*.

**Waste Asbestos** Any waste containing 1% or more of friable asbestos fibres or asbestos dust is a hazardous waste. *Friable* means easily crumbled. The key phrase in this definition is *friable asbestos fibres or asbestos dust*. Any asbestos that is tightly bound in a solid such as cement or hardboard is not hazardous waste.

**Wastes Containing Dioxin** Wastes containing chlorinated dioxins and furans at levels higher than 100 parts per billion expressed as *dioxin TEQ* are defined as *wastes containing dioxins*. This definition captures wastes containing dioxins and furans that are not captured as toxic substances in class 6.1 of the *TDG Regulations*.

**Waste Containing Polycyclic Aromatic Hydrocarbon** Wastes containing polycyclic aromatic hydrocarbon at levels higher than 100 parts per million expressed as *PAH TEQ* are defined as *wastes containing polycyclic aromatic hydrocarbon*. This definition captures wastes containing PAH which are not captured as toxic substances in class 6.1 of the *TDG Regulations*.

**Waste Containing Tetrachloroethylene** Wastes containing more than 500 parts per million of tetrachloroethylene are defined as *wastes containing tetrachloroethylene*. This definition captures wastes containing tetrachloroethylene that are not captured as toxic substances in class 6.1 of the *TDG Regulations*.

**Waste Oil** *Waste oil* is defined as waste that contains more than 3% by weight of refined mineral oil where the oil has become unsuitable for its original purpose owing to impurities or loss of original properties.

In some cases, waste oil may be dangerous goods in class 3 because it is flammable, or dangerous goods in class 9 because it contains environmentally hazardous substances.

The definition does not include crude oil, any oil generated at a well site, substances classified as dangerous goods for any reason other than those listed above, or substances that also contain dioxins or furans in quantities greater than 100 parts per billion expressed as dioxin TEQ.

Some waste oil may qualify as hydrocarbon contaminated soil. Such waste oil may be eligible for the less restrictive management options for this type of waste.

**Waste Pile** A *waste pile* is a facility where solid hazardous waste is stored or treated. This definition does not include wastes in containers and therefore normally applies to bulk storage of wastes. The waste may be stored outdoors if the weather does not have a detrimental effect on it.

## 2.0 General Provisions and Exemptions

Except as discussed in this section, the *HW Regulation* applies to all hazardous waste facilities. General requirements and exemptions from the *HW Regulation* are briefly discussed below. In each case references to the applicable section of the *HW Regulation* are given.

### 2.1 Quantity

**HWR Section 2(5)** The *HW Regulation* does not apply to amounts of hazardous waste less than 5 L or 5 kg unless the waste contains PCB. When waste is generated, these amounts apply to the amount generated in 30 days. When waste is stored, these amounts apply to the total amount in storage at any time.

**HWR Section 17.1(1)** When PCB wastes are stored, the full requirements of the *HW Regulation* apply to:

- 1.0 kg or more of pure PCB
- 100 L or more of any liquid containing more than 50 ppm of PCB or
- 100 kg or more of any material other than a liquid, contaminated with more than 50 ppm of PCB

These amounts are the total of all amounts at a single location owned or controlled by the same person. They include PCB equipment.

**HWR Section 46(1)** A manifest must be used to transport:

- 5 kg or more of PCB solids
- 5 L or more of PCB liquids or
- an amount of a PCB solid or PCB liquid containing more than 500 g of PCB

### 2.2 On-Site Facilities Existing on 1 April 1988

**HWR Section 2(3)** An on-site facility is one where hazardous waste is managed on the same property where it was produced. The siting standards in the *HW Regulation* do not apply to any on-site hazardous waste facility existing on 1 April 1988 until the Minister of Water, Land and Air Protection orders otherwise.

### 2.3 Common Facility Definitions

**HWR Section 2(1)** Some types of hazardous waste facilities meet the definition of more than one type of facility. Such facilities must comply with all of the requirements for each type of facility for which they fit the definition.

For example, a mobile unit for treating PCB chemically must meet the requirements for mobile facilities and for treatment facilities, and the general requirements for all facilities found in sections 3 to 14 of the *HW Regulation*.

### 2.4 Temporary Storage

**HWR Sections 2(13) and 2(14)** Unless ordered otherwise by a director, facilities where only temporary storage of hazardous waste occurs are exempt from Parts 2, 3, and 4 of the *HW Regulation*.

These exemptions are intended to encourage small generators to remove hazardous waste promptly from their sites and to avoid regulation of places where hazardous wastes may be held for a short time while being transported.



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**Note:** At present, the *HW Regulation* unintentionally requires registration of more than registration quantities in temporary storage. This issue will be addressed in a future amendment to the *HW Regulation*.

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## 2.5 On-Site Volume Reduction

### **HWR Section 2(6)**

An on-site treatment facility used only to reduce the volume of a hazardous waste is exempt from the siting, operational, and performance requirements of the *HW Regulation* for a treatment facility. This exemption is intended to encourage waste generators to minimize the volume of waste sent off site for treatment by using operations such as bailing or compacting.



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**Note:** The conditions for this exemption are very restrictive. For example, compaction of oil filters does not qualify if it results in separation of oil from the filter carcasses.

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## 2.6 On-Site and Off-Site Recycling

### **HWR Section 2(7)**

An on-site recycle facility is exempt from the siting, operational, and performance requirements of the *HW Regulation* if the hazardous waste being recycled is normally contained in the raw materials used in or produced by an industrial process on the site.

For example, a lead smelter qualifies for the exemptions if scrap plates from waste batteries generated by the smelter are recycled by mixing them with the ore concentrate. By contrast, a forest company cannot claim the on-site recycle exemption for disposal of wood waste contaminated with pesticide in a pulp mill power boiler. In the first case, lead is both a component of the feed and a product of the smelter. In the second case, pesticides are neither a normal raw material for a boiler, nor products of a pulp mill.

An off-site recycle facility qualifies for the same exemptions as an on-site facility, as long as the amount of hazardous waste being processed there is less than 5% of all incoming raw materials.



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**Note:** The 5% applies to *all* incoming raw materials, not just the materials of the same type as the hazardous waste.

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In the example above, the lead smelter still qualifies for exemption from the *HW Regulation* if it keeps the amount of waste coming from off-site sources below 5% of all input materials. These exemptions are intended to encourage recycling.

## 2.7 Mining Wastes

### **HWR Section 2(8)**

As long as no other hazardous wastes are involved, many sections of the *HW Regulation* do not apply to waste rock or tailings from a mine even if the rock or tailings are hazardous waste. However, care must be taken to make sure that those requirements that do apply, such as a closure plan, are not overlooked. If a company proposes to dispose of any other hazardous waste in their tailings pond, a specific approval such as a permit or other form of authorization is required.



In cases where waste rock and tailings are known to be hazardous wastes, the Ministry will determine appropriate measures for environmental protection as part of the permit evaluation process.

## 2.8 Historical Hazardous Waste Contaminated Sites

### HWR Sections 2(11) 2(12)

Special allowances are made in the *HW Regulation* to reflect the realities of historical hazardous waste contaminated sites. There are exemptions from some siting standards and general operational requirements as long as:

- facilities for the management of the hazardous waste are on the historical site or on land approved by a director
- any requirements set by a director are complied with and
- approval is obtained before constructing or operating in-situ facilities



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**Note:** Some general requirements do still apply. Examples are the requirements for gathering waste information, having a closure plan, and complying with the performance standards for specific types of facilities.

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## 2.9 Substitutions

### HWR Section 2(9)

Except for cases exclusively reserved for the Minister, a director has broad authority in individual cases to substitute a different requirement for any requirement in the *HW Regulation*. Substitutions may be made if a director feels they are needed to protect the public or the environment or if the intent of the *HW Regulation* is met. A substitution may include withdrawal of an exemption granted somewhere else in the *HW Regulation*.

## 2.10 Management of Specific Hazardous Wastes

### HWR Sections 39.1 to 42.4

Sections 39.1 to 42.4 of the *HW Regulation* allow some other options for managing some specific hazardous wastes. Unless a director orders otherwise, Parts 2, 3, and 4 of the *HW Regulation* do not apply to facilities that manage these hazardous wastes according to the options specified.

The sections in which other options are set for specific types of wastes are:

- section 40: waste asbestos
- section 41: waste oil
- section 41.1: hydrocarbon contaminated soil
- section 42: pest control product wastes and containers
- section 42.1: waste paint and
- sections 42.2 to 42.4: household hazardous waste

### 3.0 Siting Standards

The siting requirements discussed in this chapter apply to most facilities, whether a facility is used for storage, treatment, or any other management option. Listed below are exceptions and what they relate to:

- section 2(2): off-site facilities existing before 1 April 1988
- section 2(3): on-site facilities existing before 1 April 1988
- section 2(6): on-site volume reduction facilities
- section 2(7): recycle facilities
- section 2(8): facilities for managing mine tailings or waste rock
- section 2(9): substituted requirements
- section 2(11): facilities for managing hazardous waste from historical contaminated sites
- section 2(13): temporary storage sites
- section 22: mobile facilities
- section 39.1: management of specific hazardous wastes
- section 40: management of waste asbestos
- section 41: management of waste oil
- section 41.1: management of hydrocarbon contaminated soil
- section 42: management of waste pest control products and containers
- section 42.1: recycling of waste paint
- section 42.3: return collection facilities for household hazardous waste
- section 48: storage of small quantities of hazardous waste
- section 51: changes to regulatory requirements based on an application and
- section 52: response to spilled or abandoned dangerous goods

#### 3.1 200-Year Floodplain

##### **HWR Section 3**

This requirement is intended to prohibit the operation of a facility in an area where it may be affected by a major flood, unless the facility is protected to prevent escape of the waste.

Floodplain maps may be downloaded from the Floodplain Mapping page of the Ministry of Environment's web site or are available for a fee from Crown Publications Inc. at the address given in [Appendix A](#).

If any difficulty is encountered in determining the 200-year flood level at a particular site, the Resource Information Branch of the Ministry of Environment may be able to help.

The owner of any operation built within a 200-year floodplain must show to the satisfaction of a director that the facility is *designed, constructed, operated, and maintained to prevent washout*.

To be consistent with existing floodplain maps, the *HW Regulation* was amended to specify protection of facilities to the 200-year flood level instead of the 100-year flood level. Facilities existing at the time of the amendment may continue to be protected to the 100-year flood level.

### 3.2 *Holocene Faults*

**HWR Section 3** Holocene faults are geological faults that have been active during the last 11 000 years. It is realized that geological faults are not always obvious or known, especially in areas where there has been little geological exploration. Information on faults may be available from the offices of the Geological Survey of Canada. See [Appendix A](#) for contact information.

### 3.3 *Tsunamis*

**HWR Section 3** Tsunamis or tidal waves are usually the result of earthquakes at sea and therefore only affect coastal waters. Low tidal areas and land close to long narrow fiords are especially prone to tsunamis. Facilities operating in such locations require protection by dikes or similar works to prevent washout.

### 3.4 *Slope Failure*

**HWR Section 3** Areas close to steep or unstable slopes are poor locations for a hazardous waste facility. A facility must be at least 100 m from any unstable slopes. A qualified geotechnical expert must be consulted if there are any questions about slope stability.

### 3.5 *Protected Wildlife Areas*

**HWR Section 3** Hazardous waste facilities may not be located in protected wildlife areas such as designated parks, wildlife preserves, or sanctuaries. Contact the nearest office of the Regional Operations Branch or the Parks and Protected Areas Branch in Victoria to identify boundaries of such areas.

## 4.0 Operational Requirements

With exceptions similar to those listed above in Section 3.0, [Siting Standards](#), the requirements discussed in this chapter apply to all facilities regardless of size or type.

### 4.1 *Plans*

**HWR Section 4** Plans for any new facility or modifications to existing works must be approved by a director. The plans include both those for construction or installation and those for operating the facility.

Operational plans must include:

- types and maximum amounts of wastes that will be stored, treated, recycled, or disposed of at the facility and
- details of proposed monitoring, reporting, and auditing

The intent is to make sure that the proposed works or modifications are able to manage the hazardous waste safely. When approval is given, the facility must be constructed, installed, and operated according to the approved plans and any requirements or conditions a director may set for the approval.

## 4.2 Waste Information

**HWR Section 5** Any facility managing hazardous waste must have complete information on the hazards and properties of the waste.

The amount of waste received must be measured whenever a manifest indicates that a shipment is more than 100 kg or 100 L. The Environmental Protection manager in the local office of the Regional Operations Branch must be contacted before accepting a shipment if:

- the amount received is more than 5% different from what is shown on the manifest
- the waste does not match the description on the manifest or
- there is no manifest with a shipment

## 4.3 Waste Record

**HWR Section 6** Records of hazardous waste received or stored at a facility must be kept on hand for inspection by an officer. When waste is shipped from a facility, all records relating to that waste must be kept for at least two years. These records must show clearly the amounts and location of wastes on hand at the facility, and how wastes that are no longer at the facility were disposed of.

The record-keeping system may be in the form of paper or computer files.

## 4.4 Weather Protection

**HWR Section 7** The level of weather protection at any facility must be suitable for the type of waste and the severity of the weather at the site. This means that buildings, covers, heaters, and the like are required for most hazardous waste facilities. Weather protection may not be needed for facilities such as lagoons or land farms if the waste is not affected by the weather or if the management facility itself provides adequate protection.

## 4.5 Access Security

**HWR Section 8** Hazardous waste facilities must be designed to prevent unauthorized access to the facility by people and animals. The degree of protection required depends on the types of waste and the opportunities for access. The *HW Regulation* specifies that there must be:

- a 24-hour surveillance system or a barrier with controlled means of access
- protection for all valves, electrical controls, and similar devices that would be accessible if an intruder was able to get through the surveillance system or barrier and
- signs warning of restricted access

Where a hazardous waste facility is located within the controlled access area of an industrial operation such as a refinery, separate access control to the facility is not required as long as the level of control to the whole property is consistent with the requirements of the *HW Regulation*. In such cases, a property owner may need to designate who is authorized to access the hazardous waste facility.

## 4.6 Fire Protection

**HWR Section 9** The *HW Regulation* specifies minimum requirements for a facility managing any ignitable or reactive hazardous waste. These include:

- protection of stored waste from sources of ignition by using separation distances or two-hour rated fire barriers, electrical grounding, and suitable warning signs
- provision of a 24-hour fire alarm system with heat and smoke sensors, capable of shutting down any forced air ventilation systems and summoning 24-hour external emergency response
- provision of a fire suppression system or equipment
- use of good housekeeping practices, non-combustible building construction, and indirect facility heating and
- avoidance of reactions likely to cause explosions or other undesirable emissions

The provincial *Fire Services Act* or municipal bylaws may have further requirements. The facility owner must make sure that any such requirements are also met.

Some requirements are specified in general terms because they depend on conditions that are specific to the site. In these cases, good engineering practice must be used to decide the required level of protection. For example, electrical grounding is not required where flammable waste is stored in closed drums. As another example, the separation distance or barrier between flammables and a source of ignition depends in part on the type of potential ignition source.

## 4.7 Spill Protection

**HWR Section 10** Facility owners must provide and maintain spill containment systems for any hazardous waste. These systems must be approved by a director. The level of protection must be suitable for the hazard posed by the waste, but at minimum should contain the waste on site.

The requirement for spill protection does not apply only to liquid wastes. Facilities that manage fine powders, dusts, and gases also require spill containment systems.

Spill protection systems must be checked at least monthly for any leaks or problems that could allow waste to escape or cause a health hazard. If any free liquid waste is stored at a facility, weekly inspections or a 24-hour spill alarm are required.

Records of system inspections must be kept. If any irregularities are found, these must be reported immediately to a director together with details of the actions taken to correct the problem.



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**Note:** A problem that results in a release of waste to the environment may need to be reported to the Provincial Emergency Program as specified in the *Spill Reporting Regulation*. See [Chapter 22](#) of this guide for further details.

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### **4.8 Contingency Plan**

**HWR Section 11** A contingency plan is a document that provides all relevant information to make an initial sustained response to any type of spill or emergency at a facility. The plan must contain:

- the names of the designated Emergency Response Coordinator and his or her alternate
- detailed procedures for facility evacuation and shutdown
- procedures for notification of emergency response teams and affected parties
- measures to lessen the impact of a problem, such as identification of choke points to contain runoff of fire water
- inventories of emergency equipment both on and off site
- identification of independent contractors with emergency response capabilities, such as backhoe operators and
- how communication will be maintained

The plan must be approved by a director, and kept up to date. Regular testing is also required.

### **4.9 Emergency System Testing**

**HWR Section 12** A facility must have its various emergency systems tested or inspected at least once per year to make sure that all protective measures are working properly. Records of each test must be kept, and if the facility manages more than 20 tonnes of waste per year, the record of tests must be sent to a director within 90 days of the test.

The intent of this requirement is to check that all equipment, plans, and procedures designed to handle an emergency are able to provide an adequate level of protection. Any problems identified during a test or inspection must be corrected as soon as possible.

### **4.10 Personnel Training**

**HWR Section 13** Every person who works at a hazardous waste facility in an operational capacity must receive formal training. The training must be given before the person starts work and must include:

- basic duties and responsibilities of the position
- proper use of protective clothing
- procedures for responding to fires, explosions, or spills
- operation of communications and alarm systems
- lessening of the impact of spills and spill clean-up equipment
- shutdown procedures and
- hazards of the wastes managed at the facility

The depth of training must be suitable for the hazards of the wastes managed at the facility.

To make sure that any new procedures, equipment, or responsibilities are not overlooked, all operational employees must receive an annual review of their initial training.

Records must be kept of the training given to employees operating a facility and must include for each:

- their duties and responsibilities
- the level of training received and
- the date of the last training session

#### 4.11 Closure

**HWR Section 14** Before start-up, every hazardous waste facility must have an approved closure plan. The plan must describe:

- how and when a facility will be closed
- the decontamination procedures that will be used
- how long it is expected that it will take to close the facility and
- what types and amounts of waste residues could be left after closure

The last point is important information for anyone interested in future development of the site.

Amendments to a closure plan must be sent to a director if there are any changes in a facility's design, operation, or intended closure date.

A facility owner must notify a director at least 90 days before starting to close a facility. The facility must then be closed according to the approved closure plan.



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**Penalties:** Anyone not complying with the *HW Regulation* may be:

- fined up to \$1 000 000 and/or
- imprisoned for up to six months

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Each day an offence continues may result in another fine up to the maximum.







## RECYCLE FACILITIES

In the *Hazardous Waste (HW) Regulation*, the term *recycle* has a very narrow definition. To meet the definition, a hazardous waste or waste residue must be wholly utilized:

- in a process where the main purpose is not waste management or
- repackaged and offered for retail sale to meet a realistic market demand

Processes that involve application to land, burning, or where the main purpose is waste management are excluded from being recycling.

In the definition, the words *wholly utilized* are key: there must be no residue left over after a waste has been processed. Processes that produce a residue for disposal or that do not completely use a waste are actually treatment. The narrow definition of recycle means that *recycle facilities* are also narrowly defined.

Examples of recycle facilities are:

- a smelter that recovers metals from plating wastes and that uses all of the waste in the process or
- a pulp mill that uses waste lime slurry from production of acetylene and that uses all of the sludge in the process

Examples of facilities or operations that are not recycle facilities are:

- a facility that distills solvent for future sale from a paint waste: this is not recycling because a residue is produced from the distillation
- a cement plant using waste oil for firing a kiln: this is not recycling because the definition of recycle excludes burning or
- a farm where waste organic phosphate is spread on agricultural land: this is not recycling because the definition of recycle excludes application to land

The operations above are treatment or disposal rather than recycling.

### **Exemptions**

To qualify for the exemptions for recycle facilities in section 2(7) of the *HW Regulation*, the materials in the waste or waste residue must normally be part of the raw materials for the recycle facility. In addition, for an off-site facility the waste or waste residue may not be more than 5% of all raw materials.

In the pulp mill example above, logs, water, and other materials used in the process may be used for calculating this percentage.

### **Operational Requirements HWR Section 15**

Recycle facilities have simple operational requirements. There must be an automatic means of stopping the process if there is an upset and the materials used in the process must be compatible with the hazardous waste. If liquid wastes are being transferred, dripless hose connections must be used.

### **Dripless Hose Connections**

A dripless hose connection is any type of connection that prevents spillage or release of drips to the environment. It is not a specific mechanical device. Anything that achieves this objective is acceptable.

Examples are:

- couplings with internal valves, similar to some safety air hose couplings
- use of purging before breaking a line or
- catch-pans



# SHORT-TERM STORAGE FACILITIES

*Short-term storage* means that a hazardous waste is being kept in a safe place before recycling, treatment, disposal, or management in some other way. Storage for 96 hours or less that occurs incidental to transport is not short-term storage; it is temporary storage.

The *Hazardous Waste (HW) Regulation* does not specify a maximum time that a waste may be held in a short-term storage facility. However, the owner of a short-term storage facility must make provision for final disposal of all waste in storage to avoid having to meet the requirements of a long-term storage facility.

If the amount of waste stored at any time exceeds the registration quantity for the type of waste involved, the waste storage must be registered. Registration quantities are given in [Figure 5, Registration Quantities](#), in Chapter 4.

Facilities that are part of a treatment process where waste is held during treatment for process reasons or to even out flow variations are not considered to be short-term storage facilities.

The definition of a short-term storage facility does not specify the use of a building, although this is often necessary to meet the requirements of the *HW Regulation*.

Since most PCB wastes are managed in short-term storage facilities, the special requirements for these materials are discussed in this chapter of the guide.

## 1.0 Operational Requirements

**HWR Section 16** Other than for PCB wastes, short-term storage facilities have simple operational requirements. For facilities that store free liquid hazardous waste, the requirements are to:

- have space for visual manual leak inspection
- have containment
- provide forced ventilation for indoor facilities unless the facilities are used only for passive storage
- provide overflow protection for tanks
- use dripless connections if detachable hoses or pipes are used
- make sure all equipment is compatible with the waste and
- make sure all transfer lines have protection to prevent release of waste

**Leak Inspection** The requirement for manual visual inspection usually rules out underground tanks. However, a tank inside a vault that allows the operator to check the tank and any associated piping for leaks would be acceptable.

**Containment** Containment must be impervious with sufficient capacity to hold the larger of:

- 110% of the largest volume of free liquid in any container or
- 25% of the total volume of free liquid in storage

*Impervious* is defined as having a permeability not greater than  $1 \times 10^{-7}$  cm/s when tested using a head of 0.305 m of water.

**Ventilation** The minimum ventilation rate for indoor facilities, other than those used for passive storage, is  $0.3 \text{ m}^3/\text{min}/\text{m}^2$  of air exhausted at all times.

**Overflow Protection** Overflow protection must be provided in one of three ways:

- fixed piping to an adjacent empty tank having a capacity not less than 20% of the capacity of the protected tank
- a level alarm set to alarm when the tank is 90% full or
- an automatic shutoff set to shut off waste flow into the tank when the tank is 95% full

**Dripless Hose Connections** A dripless hose connection is any type of connection that prevents spillage or release of drips to the environment. It is not a specific mechanical device. Anything that achieves this objective is acceptable.

Examples are:

- couplings with internal valves, similar to some safety air hose couplings
- use of purging before breaking a line or
- catch-pans

**Protection for Transfer Lines** Unless containment is provided to prevent release of hazardous waste, all transfer lines must be provided with automatic shutoff valves or similar devices to stop the flow of any hazardous waste in the event of an emergency.

Containment in this context includes measures such as double piping as well as conventional dikes.

## 2.0 Performance Standards

**HWR Section 17** The performance standards for short-term storage are that:

- emissions to the air must meet approved levels
- effluent from the facility must meet applicable discharge standards and
- some form of financial security may be required

**Air Emissions** Air emissions for storage facilities are set on a case-by-case basis. They must be approved in writing by a director.

**Effluent Discharges** Any effluent discharged from a storage facility must meet the applicable standards given in Schedule 1.2 of the *HW Regulation*. These standards are also shown in [Figure 14, Effluent Standards for Hazardous Waste Facilities](#).

The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.



**Note:** Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.

**Financial Security** A director may require the owner of a storage facility to give security as a performance guarantee. The form, amount, and conditions of the security are set by a director.

### 3.0 Additional Requirements for PCB Wastes

**HWR Section 17.1** The amounts of PCB wastes regulated by the *HW Regulation* are smaller than those for other types of wastes. If PCB wastes are stored, the full requirements of the *HW Regulation* apply to:

- 1.0 kg or more of pure PCB
- 100 L or more of any *PCB liquid* or
- 100 kg or more of *PCB solid*

These amounts are the total of all amounts at a single location that is owned or controlled by the same person, and include PCB equipment.

*PCB liquid* means any liquid containing more than 50 parts per million by weight (ppm) of PCB.

*PCB solid* means any material or substance other than a PCB liquid that contains or is contaminated with more than 50 ppm of PCB.



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**Note:** The federal *Storage of PCB Material Regulations* also apply to stored PCBs.

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#### 3.1 Packaging

##### **Drums for PCB Liquids**

If PCB liquids are stored in drums of capacity up to 205 L, the *HW Regulation* specifies that the drums must:

- be painted to prevent rusting
- be of 16 gauge or heavier steel if packed or stored after 1 April 1992
- be closed-top with double screw bungs and
- not be stacked more than two high

To minimize the risks associated with repacking PCB liquids, the *HW Regulation* allows lighter gauge steel drums for wastes placed in storage before 1 April 1992.

##### **Drums for PCB Solids**

If PCB solids are stored in drums of capacity up to 205 L, the *HW Regulation* specifies that the drums must:

- be painted to prevent rusting
- be of 18 gauge or heavier steel
- have a securely attached, close-fitting, removable steel lid and PCB-resistant gasket and
- not be stacked more than two high

##### **Other Containers**

Containers other than drums are acceptable. These may be stacked two high if they are specifically designed for this.



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**Note:** Containers used to transport materials containing more than 50 ppm of PCB must also meet the requirements of the *Transportation of Dangerous Goods (TDG) Regulations*. See Part 5 of the *TDG Regulations* for details.

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For drums, this means that they must be UN certified unless:

- they were packed before 15 August 2002 and met the requirements of the *TDG Regulations* when they were packed and
  - they are transported before 15 August 2005
- 

**Storage System**

All containers or equipment containing PCB must be on pallets, skids, or other type of storage system that allows for easy leak inspection and removal of the waste.

**3.2 Inventory and Fire Safety Plan**

A current inventory and site map showing where PCB wastes are stored at a facility and a fire protection plan acceptable to the local assistant to the fire commissioner must be kept on site. Copies of these must be provided to:

- a director and
- the local assistant to the fire commissioner

**3.3 Labelling**

Containers or equipment containing PCB must have Environment Canada labels or reasonable alternatives as follows:

- capacitors containing more than 0.5 kg of PCBs, except those stored in containers before 28 February 1989: serialized, black-and-white *CAUTION/ATTENTION PCB* label measuring 76 mm by 76 mm
- equipment containing PCBs in a concentration greater than 1% by weight: serialized, black-and-white *ATTENTION PCB* label measuring 150 mm by 150 mm
- equipment containing PCBs in a concentration greater than 50 ppm, but not greater than 1% by weight: *ATTENTION contaminated with PCBs* label
- containers containing PCBs in a concentration greater than 1% by weight: *ATTENTION PCB Waste* label and
- doors to storage sites, fencing, and other security barriers enclosing storage sites: black-and-white *ATTENTION PCB* label measuring 150 mm by 150 mm

**3.4 Storage Area****Containment**

Areas where undrained PCB equipment or PCB liquids are stored must have:

- spill containment or
- existing drains or other openings in the floor sealed to prevent escape of liquid

For a single item stored alone, the capacity of the containment must be 125% of the volume of PCB liquid in the item.

For more than one item stored together, the capacity of the containment must be the larger of:

- twice the volume of PCB liquid in the largest item or
- 25% of the volume of PCB liquid stored together

**Materials**

The floors or other surfaces on which undrained PCB equipment or PCB liquids are stored must be constructed of durable materials such as steel or concrete. Any floors or containment surfaces that are porous must be sealed.



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**Tip:** The fire protection for the storage area does not have to meet the requirements specified in section 9 of the *HW Regulation* if the PCB liquids are not ignitable and no ignitable liquids are stored with the PCB wastes.



**Tip:** Drums may be considered the required spill containment for capacitors or other items that are not leaking, if the containment capacity requirements are met.

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# TREATMENT FACILITIES

A *treatment facility* is a place where the physical or chemical properties of a hazardous waste are changed to reduce or eliminate one or more of its hazards. Treatment facilities may be located either at the point of generation or off site.

The requirements apply equally to both cases, with one significant exception: on-site treatment facilities are exempt from the siting, operational, and performance requirements of the *Hazardous Waste (HW) Regulation* if they are used only to reduce the volume of a hazardous waste. This is an incentive to industry to minimize the volume of wastes that would otherwise be sent to a central treatment facility.



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**Note:** Dilution is not considered treatment under the *HW Regulation*.

---

The following sections briefly discuss the operational requirements and the performance standards for treatment facilities.

## 1.0 Operational Requirements

**HWR Section 18** For treatment facilities the main operational requirements are to:

- have an automatic means to shut down the process equipment and waste feed systems in the event of a problem and
- conduct an approved demonstration trial before beginning operation at the facility

The intent of the operational requirements is to make sure that hazardous wastes processed at the facility do not endanger the environment or human health. Additional requirements may need to be included in the operational plan for a treatment facility before it is approved by a director.

**Demonstration Trial** Conducting a demonstration trial is a three-step process which consists of:

- providing all relevant information to a director for approval
- conducting the trial and
- reporting the trial results to a director

Relevant information includes details of:

- the waste to be treated
- the treatment process, including emissions or residues produced by the treatment, operating conditions, and discussion of any conditions likely to cause bad effects and
- the proposed method for conducting the demonstration trial, often called the *trial protocol*

To be an adequate test, the trial protocol must cover all worst-case conditions that could be occur. This may require more than one test.

The demonstration trial must be carried out according to the approved trial protocol. In some cases a representative of a director or other independent party may have to witness all or part of the trial.

If a director thinks that a trial could be dangerous, the facility operator may have to first conduct a trial using non-hazardous materials. After there is enough evidence to show that the process is safe with non-hazardous materials, the trial may proceed with hazardous wastes.

The results of the demonstration trial must be reported to a director for approval. Approval must be received before the facility starts operating.

## 2.0 Performance Standards

**HWR Section 19** The performance standards for treatment facilities are that:

- emissions to the air must meet approved levels
- effluent from the facility must meet applicable discharge standards and
- residues from the facility are managed at a hazardous waste management facility unless they are *delisted*

**Air Emissions** Air emissions for treatment facilities are set on a case-by-case basis. They must be approved in writing by a director.

**Effluent Discharges** Any effluent discharged from a treatment facility must meet the applicable standards given in Schedule 1.2 of the *HW Regulation*. These standards are also shown in [Figure 14, Effluent Standards for Hazardous Waste Facilities](#).

The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.




---

**Note:** Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.

---

Any effluent with contaminants exceeding the applicable standards must be further treated until it does meet the standards before being discharged.

Because Schedule 1.2 does not include every possible contaminant, a director may set additional standards for specific cases.

**Management of Residues** Solid residues from a treatment facility must be managed at a hazardous waste facility unless they are shown to be non-hazardous. On-site recycling, treatment at the same facility, or some other form of management, such as disposal in an off-site secure landfill, is acceptable. In some cases, residues may be delisted.

**Delisting of Residues** *Delisting* a residue means proving that the residue does not need to be regulated because it is not a hazard to human health or the environment. As such, deregulating a residue may be a better way of describing this process.

The process for deregulating a residue is specified in section 53 of the *HW Regulation*. Anyone wanting to deregulate a hazardous waste residue should contact a director. They will be advised if there is a protocol approved by a director for the type of residue concerned.



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**Note:** The deregulating process is stricter than the process for classifying hazardous waste. That is, a residue that does not exceed any criteria for classification as hazardous waste must still be managed as hazardous waste unless specifically deregulated. The operator of a treatment facility should therefore discuss residue deregulating requirements well before disposal becomes necessary.

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Deregulated residues may be disposed of in an authorized landfill other than a secure landfill or used in some other manner according to an approved management option.

Figure 14: Effluent Standards for Hazardous Waste Facilities

<i>Parameter</i>	<i>Discharges to the Environment or Storm Sewers</i>	<i>Discharges to Municipal or Industrial Effluent Treatment Works†</i>
Physical		
pH	6.5 to 8.5	5.0 to 11.0
Temperature	32 °C	-
Total suspended solids	20 mg/L	-
Toxicity (96-h LC <sub>50</sub> , rainbow trout)	100% effluent	50% effluent
Inorganics (mg/L)		
Aluminum, dissolved	0.5	2.0
Ammonia, total (expressed as nitrogen)	2.0	-
Antimony, dissolved	0.25	0.5
Arsenic, dissolved	0.1	0.3
Barium, dissolved	1.0	2.5
Boron, dissolved	10.0	15.0
Cadmium, dissolved	0.05	0.1
Chromium, dissolved (hexavalent)	0.1	0.2
Chromium, total	0.5	1.0
Cobalt, dissolved	0.1	0.3
Copper, dissolved	0.1	0.3
Cyanide (weak acid dissociable)	0.1	0.2
Fluoride, dissolved	15.0	18.0
Lead, dissolved	0.1	0.3
Manganese, dissolved	0.5	1.0
Mercury, total	0.001	0.01
Molybdenum, dissolved	0.5	1.0
Nickel, dissolved	0.5	1.0
Selenium, dissolved	0.05	0.1
Tin, dissolved	0.5	1.0
Zinc, dissolved	0.2	0.5
Organics (mg/L)		
Biochemical oxygen demand (BOD <sub>5</sub> )	20	-
Dioxin TEQ	0.000 000 000 015	0.000 000 000 015
Oil	10	60
Phenol	0.2	0.5
Polychlorinated biphenyls, total	0.005	0.005
Total chlorinated phenol	0.006	0.05
Total organic halogens (as chlorine)	1.0	1.0

† Local municipal requirements may be more restrictive.



# INCINERATORS AND OTHER THERMAL FACILITIES

A *thermal facility* is a treatment facility where elevated temperatures are used to reduce or eliminate the hazards of a hazardous waste. Treatment units that burn wastes in air or oxygen using a controlled flame are defined as *incinerators*.

Common examples of incinerators are rotary kilns and furnaces. These units are designed to mix air or oxygen and a fuel in a controlled manner so that heat output from the burning is maximized.

Systems using technologies such as plasma arc, infrared, or inductive heating are examples of thermal facilities that are not incinerators. In these processes heat is usually generated without using a fuel. In each of these cases, intense heat causes a molecular breakdown of the waste.

This chapter describes the requirements for incinerators and other thermal facilities. As is the case with treatment facilities, there are no special siting requirements for thermal facilities. If such requirements are needed, they may have to be included in the operational plan before it is approved by a director.



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**Tip:** Under section 39.1 of the *Hazardous Waste (HW) Regulation*, facilities burning waste oil not exceeding the specifications given in [Figure 19, Waste Oil Specifications for Use as Fuel](#), in Chapter 18 are exempt from the requirements of this section.



**Tip:** Industrial utility boilers used for destruction of wastes containing low levels of PCBs or pentachlorophenol and satisfying the performance requirements discussed in Section 1.6, [Alternative Performance Standards for Waste Destruction in Industrial Utility Boilers](#), in this chapter are exempt from specific requirements as noted.

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## 1.0 Operational Requirements

**HWR Section 20** For thermal facilities and incinerators, the operational requirements are to:

- provide detailed engineering and dispersion modelling information to a director before beginning construction or installation
- conduct an approved demonstration trial before beginning operation at the facility
- have, test, and report on automatic systems to stop the feed of hazardous waste if the approved operating conditions are not met
- inspect equipment daily
- keep the thermal facility or incinerator sealed or keep the pressure in it less than atmospheric
- record and report various process conditions and specified emissions from the system and
- monitor and report ambient air quality and weather conditions

### 1.1 *Engineering and Dispersion Modelling Information*

This section does not apply to industrial utility boilers used for waste destruction.

#### **Engineering Information**

The report submitted to a director before beginning construction or installation of a facility must include information on:

- equipment manufacturer
- technology used
- physical size and configuration
- any fuel and waste feed systems
- air supply systems
- automatic safety cutoff systems
- exhaust gas monitoring and pollution control systems
- burner design if the facility is an incinerator
- construction materials and
- process measurement and control systems

Any other information that may help in describing the process should also be included to provide a complete picture of the facility.

#### **Dispersion Modelling Information**

The report must contain a prediction of the maximum ground level concentration of any contaminants emitted to the atmosphere for various weather conditions. Computerized dispersion models are usually used for this purpose. The dispersion model and the calculations must be approved by a director.

### 1.2 *Demonstration Trials*

This section does not apply to industrial utility boilers used for waste destruction.

#### **Trial Protocol**

Demonstration trials must be conducted to demonstrate the effectiveness of the facility. The proposed method for conducting the demonstration trial, often called the *trial protocol*, must be approved by a director before the trial is run. However, the trials do not have to be run in BC. The results of trials in other jurisdictions may be accepted if the procedures meet a director's requirements.

To be an adequate test, the trial protocol must cover all worst-case conditions that could occur, including a trial with the most difficult waste intended for treatment at the facility. The principal organic hazardous constituents (POHCs) used in the trial are specified by a director.

If a director thinks that a trial could be dangerous, the facility operator may have to first conduct a trial using non-hazardous materials. After there is enough evidence to show that the process is safe with non-hazardous materials, the trial may proceed with hazardous wastes.

#### **Trial Objectives**

The objective of the demonstration trial is to show that the facility is capable of destroying or removing all hazardous constituents from the waste and to verify the concentrations of POHCs in any emissions, effluents, or solid residues.

#### **Destruction and Removal Efficiency**

The effectiveness of the process is measured by calculating the *destruction and removal efficiency* as shown below:

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} \times 100\% \quad \text{Equation 1}$$

where:

$DRE$  = destruction and removal efficiency in per cent

$W_{in}$  = inlet mass rate of a designated POHC in the waste feed

$W_{out}$  = outlet mass rate of the same POHC in the exhaust emissions

**Combustion Efficiency and Operating Conditions**

For incineration processes, the demonstration trial must show that the combustion of the waste is complete and efficient. Combustion efficiency is calculated according to the following equation:

$$CE = \frac{CO_2}{CO_2 + CO} \times 100\% \quad \text{Equation 2}$$

where:

CE = combustion efficiency in per cent

CO<sub>2</sub> = concentration of carbon dioxide in the exhaust gases

CO = concentration of carbon monoxide in the exhaust gases

When incineration is efficient, oxygen combines with carbon in the waste to form carbon dioxide. Carbon monoxide forms if there is poor mixing of gases or not enough oxygen. Combustion efficiency is a simple check on the completeness of the incineration process.

Calculation of combustion efficiency is not required for processes that produce carbon dioxide from sources other than combustion. An example is a lime kiln. In these cases the carbon dioxide produced by the other sources cannot be identified separately from that produced by the incineration. As a result, the carbon dioxide concentration coming from waste combustion cannot be measured.

**Process Measurements**

In each demonstration trial, the temperature of the reaction zone, the residence time of the waste in that zone, and the concentration of oxygen in the exhaust gases must be measured during the periods used to calculate the DRE. These parameters are important for setting the approved operating conditions.

**Identification of PICs**

The demonstration trial must identify any significant products of incomplete combustion (PICs) in any emissions, effluents, or solid residues. PICs are compounds that are not normally part of the original waste and may be as hazardous as or more hazardous than the original waste.

PICs are created from fragments of partially destroyed waste or fuel molecules that are not completely burnt. Incomplete burning most often occurs when incineration temperatures are low or if the waste is not heated for enough time. A director may set limits for PICs.

**Air Emission and Atmospheric Measurements**

During the trial, emissions to the air must be tested for the parameters specified in Schedule 2 of the *HW Regulation*. These are also shown in [Figure 15, Emission Standards for Incinerators and Other Thermal Facilities](#).

Atmospheric conditions and ambient concentrations of contaminants also need to be measured during the trial. Parameters that must be measured include:

- atmospheric temperature, pressure, wind direction, and speed
- concentrations of POHCs and PICs and
- any other parameters required by a director

These measurements are needed to verify the predictions of the dispersion model.

***Effluent Measurements***

Any effluent discharged from the facility during the trial must be tested to measure the concentrations of all POHCs, PICs, and other parameters specified in Schedule 1.2 of the *HW Regulation*. These parameters are also shown in [Figure 14, Effluent Standards for Hazardous Waste Facilities](#).

### **1.3 Safety Requirements**

***HWR Sections 20(4) to 20(6)***

As with other facilities, incinerators and thermal treatment units must have some automatic means of shutting down the operation if an upset occurs. The automatic cutoff system must be tested weekly and any problem with this system must be reported to a director.

The facility and all associated equipment must be inspected daily for leaks or other problems. Leaks and fugitive emissions must be controlled by keeping the works sealed or under slight negative pressure.

### **1.4 Monitoring Requirements**

***HWR Sections 20(8) to (11)***

A facility must operate within a specific set of conditions, which must be monitored. Process parameters that the *HW Regulation* specifies must be measured continuously include:

- combustion zone temperature
- waste feed rate
- exhaust gas flow rate and
- concentrations of carbon dioxide, carbon monoxide, and oxygen in the exhaust gas

Other emissions from the process may have to be measured from time to time. Where this is required, the results must be reported to a director within 60 days of doing the tests.

Monitoring of ambient air quality and atmospheric conditions is also required. Results of this monitoring must be reported to a director within 60 days of the end of each calendar quarter.

### **1.5 Performance Requirements**

***HWR Section 21***

Hazardous waste incinerators and other thermal facilities must be able to meet the performance and emission standards discussed below, in addition to any conditions imposed by a director.

***Air Emissions and Operating Conditions***

Air emissions must not exceed the standards specified in Schedule 2 of the *HW Regulation*. These are also shown in [Figure 15, Emission Standards for Incinerators and Other Thermal Facilities](#).



The destruction and removal efficiency, and for incinerators the combustion efficiency, must not be less than the standards listed in [Figure 16, \*Efficiency Standards for Incinerators and Other Thermal Facilities\*](#), for each parameter. In addition, the operating conditions must be maintained at the values able to achieve these efficiencies as shown in the demonstration trials.

***Effluent Discharges***

Any effluent discharged from a thermal facility must meet the applicable standards given in Schedule 1.2 of the *HW Regulation*. These standards are also shown in [Figure 14, \*Effluent Standards for Hazardous Waste Facilities\*](#).

The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.




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**Note:** Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.

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Any effluent with contaminants exceeding the applicable standards must be further treated until it does meet the standards before being discharged.

Because Schedule 1.2 does not include every possible contaminant, a director may set additional standards for specific cases.

***Management of Residues***

As with other treatment facilities, solid residues such as ash or scrubber water sludge must be managed at a hazardous waste facility, unless they are shown to be non-hazardous. On-site recycling, treatment at the same facility, or some other form of management, such as disposal in an off-site secure landfill, is acceptable. In some cases, residues may be delisted.

***Delisting of Residues***

*Delisting* a residue means proving that it no longer poses a hazard to human health or the environment. As such, deregulating a residue may be a better way of describing this process.

The process for deregulating a residue is specified in section 53 of the *HW Regulation*. Anyone wanting to deregulate a hazardous waste residue should contact a director. They will be advised if there is a protocol approved by a director for the type of residue concerned.




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**Note:** The deregulating process is stricter than the process for classifying hazardous waste. That is, a residue that does not exceed any criteria for classification as hazardous waste must still be managed as hazardous waste unless specifically deregulated. The operator of an incinerator or other thermal treatment facility should therefore discuss residue deregulating requirements well before disposal becomes necessary.

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Deregulated residues may be disposed of in an authorized landfill other than a secure landfill or used in some other manner according to an approved management option.

### 1.6 *Alternative Performance Standards for Waste Destruction in Industrial Utility Boilers*

#### **HWR Section 21(2)**

Under certain conditions, industrial utility boilers such as pulp mill power boilers may be used to destroy wastes containing low levels of PCB or pentachlorophenol. Pentachlorophenol is sometimes called PCP.

In these cases a demonstration trial is not required and the boiler does not have to meet the performance standards specified in [Figure 15, \*Emission Standards for Incinerators and Other Thermal Facilities\*](#), and [Figure 16, \*Efficiency Standards for Incinerators and Other Thermal Facilities\*](#), as long as:

- the PCB or PCP content of the waste is less than 500 parts per million (ppm)
- the minimum rated capacity of the boiler is 15 MW
- the boiler is operated at a minimum of 90% of the design steam generating capacity when waste is fed into the boiler
- the mass flow of the wastes does not exceed 10% of the mass flow rate of fuel
- the carbon monoxide concentration in the exhaust gas is not greater than 50 ppm when using liquid or gaseous fuels or 100 ppm when using solid fuel
- the excess oxygen is a minimum of 3% when waste is burned and
- the concentration of carbon monoxide and oxygen in the exhaust gas are monitored in an approved manner



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**Note:** The following requirements and standards for thermal facilities still apply:

- submission of a detailed information report prior to use with waste
  - alarm and automatic shutoff to stop the waste feed when the required operating conditions are not met
  - inspection, monitoring, and reporting and
  - performance standards for discharging liquid effluents and managing solid residues
-

**Figure 15: Emission Standards for Incinerators and Other Thermal Facilities**

<i>Parameter</i>	<i>Maximum Concentration<sup>(1)</sup></i> (mg/m <sup>3</sup> unless shown otherwise)	<i>Averaging Period<sup>(2)</sup></i>	<i>Monitoring Method<sup>(3)</sup></i>
Carbon monoxide	55	4-hr RA	C
Hydrogen chloride	50	8-hr RA	C
Hydrogen fluoride	4	A	A
Nitrogen oxides (as NO <sub>2</sub> )	380	A	A
Opacity	5%	1-hr RA	C
Particulate matter	20	A	A
Sulphur dioxide	180	A	A
Total hydrocarbon (as methane)	32	A	A
Trace metals <sup>(4)</sup> :			
Class I (lead, antimony, copper, manganese, vanadium, zinc)	3.6	A	A
Class II (arsenic, chromium, cobalt, nickel, selenium, tellurium)	0.7	A	A
Class III (thallium, cadmium, mercury)	0.15	A	A

**Notes:**

- (1) Concentrations are corrected to 11% oxygen and standard conditions of 20 °C, 760 mm of mercury and dry basis
- (2) Averaging period codes:
  - RA = Rolling average, which is the moving time period over which the continuous monitoring data is averaged
  - A = As approved by a director
- (3) Monitoring method codes:
  - C = continuous
  - A = as approved by a director
- (4) The concentrations prescribed apply to each individual metal

**Figure 16: Efficiency Standards for Incinerators and Other Thermal Facilities**

<i>Parameter</i>	<i>Standard</i>
Destruction and removal efficiency for:	
Principal organic hazardous constituents	99.99%
Polychlorinated biphenyls	99.9999%
Polychlorinated dibenzofurans	99.9999%
Polychlorinated dibenzo-p-dioxins	99.9999%
Combustion efficiency for:	
Incinerators	99.9%





## MOBILE FACILITIES

*Mobile facilities* are most commonly either treatment or incineration units. Some are mounted on a truck or trailer and may operate for a short time before moving on to another location. Some mobile facilities take considerable time and effort to set up or take down and could be more appropriately considered transportable. If a mobile or transportable unit operates at one location for less than 1800 hours in a three-year period and processes less than 1000 tonnes in that same period, the facility qualifies for special consideration under the *Hazardous Waste Regulation*.

### ***Regulatory Differences for Mobile Facilities***

The main regulatory difference between facilities that qualify as mobile and those that do not relates to siting standards. The Minister may allow less restrictive siting standards for a mobile facility. Because a mobile facility is not in any one place for long, safe operation is possible with less strict requirements.

For example, a mobile facility could be operated without undue risk within a 200-year flood zone if it is known that floods are not a risk during the period of operation.

There are two additional operational requirements for mobile facilities:

- all hoses, pipes, and containers used for any hazardous waste or hazardous chemical must be drained before the unit is transported and
- testing of the emergency system must be done annually and repeated each time the unit is moved to a new location

### ***Performance Standards***

The performance standards for mobile facilities are the same as those for each individual type of facility. Thus, a mobile incinerator must meet the same performance standards as a stationary incinerator and a mobile treatment facility must meet the requirements for a stationary treatment facility.





# PILES, SURFACE IMPOUNDMENTS, & LAND TREATMENT

Piles, surface impoundments, and land treatment works are types of hazardous waste facilities where the waste is stored or treated on or in the ground. In these facilities the ground acts to provide extra containment or is a medium for biological treatment. In each of these types of facility, air pollution from vaporizing liquids or blowing solids may also be produced. Additional requirements may need to be included in the operational plan to address these issues before it is approved by a director.

A *waste pile* is a facility for storing or treating solid or *non-flowing* wastes. The main concern from an environmental point of view is the possibility of rain or snow mixing with the waste to form a leachate. The leachate could eventually move through the waste to contaminate the soil or underlying groundwater.

A *surface impoundment* is a man-made excavation or diked area used for short-term storage of either liquids or solids. They are usually mainly made of earthen materials. Surface impoundments must also be designed and operated to prevent or at least to minimize the generation of leachate.

In a *land treatment facility*, organic waste is spread on land so that air, sunlight, and microbial organisms are freely available to decompose the waste biologically. Although the waste may contain some inorganic materials, the organic materials are the main target for treatment.

In most cases, the wastes from these three types of facilities are later removed for treatment or disposal at another location. So, like most hazardous waste facilities, these facilities must be managed with final cleanup and remediation of the site in mind.

## 1.0 Siting Requirements

***HWR Section 28*** Section 28 of the *HW Regulation* lists the additional siting requirements that must be met by any waste pile, surface impoundment, or land treatment facility. These requirements are mainly intended to protect groundwater and surface water. For this reason, these facilities are prohibited:

- in or near wetlands
- in the case of waste piles or surface impoundments, in any place where there is less than 3 m of low-permeability soil between the bottom of these facilities and the seasonally high water table
- in the case of land treatment facilities, in any place where there is less than 1 m of low-permeability soil between the bottom of these facilities and the seasonally high water table
- in the recharge area of any high-capacity wells or of a significant number of low-capacity wells
- where there would be less than 5 m of low-permeability soil between the bottom of any of these facilities and the bedrock if the bedrock is fractured or porous
- within 150 m of any permanent surface water or
- within the watershed of a designated community water supply

## 2.0 Operational Requirements

**HWR Section 29** Waste piles, surface impoundments, and land treatment facilities need almost constant attention to make sure they are operating properly. Specific requirements are summarized below.

**Inspection and Repair** Waste piles, surface impoundments, and land treatment facilities must be:

- inspected during installation to make sure there are no problems that would later make any liners leak
- inspected weekly during operation and immediately after any storm or catastrophic event to make sure everything is in good order and to see if leachate is collecting and
- immediately repaired if any problems are found

**Monitoring and Reporting** Waste piles, surface impoundments, and land treatment facilities must be monitored according to a program approved by a director. Requirements for the program include:

- setting up of sampling wells so that the quality of the groundwater that would be expected to be affected in event of a problem can be compared with the quality of the unaffected groundwater
- measures to prevent contamination of the sampling wells
- selection of the parameters that must be measured
- at least quarterly sampling of the wells
- measurements of groundwater levels
- detection and measurement of leachate or any liner leakage and
- reporting of all data to a director

The monitoring requirements are designed to provide a reliable means for detecting problems with the liner system. If problems are detected, they must be reported to a director within three days.

**Leachate and Runoff Collection** Any facilities for storing leachate or runoff must be emptied regularly so there is always enough capacity to collect leachate or runoff if the need arises.

## 3.0 Performance Standards for Waste Piles

**HWR Section 30** Because waste piles are used to store solids, the performance standards do not specify that there must be liners under them. However, this may be the easiest way to meet the standards, which are summarized below.

**Prohibited Materials** The following types of materials must not be stored in a waste pile:

- wastes that are or contain liquids
- ignitable or reactive wastes or
- liquids in containers

**Leachate Collection and Leak Detection** Waste piles must have systems approved by a director that are kept in good operating order and that are used to:

- contain the waste or any leachate generated at the site
- detect leaks through any required liners and
- collect leachate



<b>Groundwater Non-Compliance</b>	A waste pile is out of compliance if groundwater monitoring shows a statistically significant difference in any chemical parameter associated with the waste. Statistical methods approved by a director must be used for deciding if differences are significant.
<b>Site Drainage</b>	A waste pile must have a system to prevent storm water draining into the pile. The systems must be designed for storm events that occur on average only once every 25 years.
<b>Effluent Discharges</b>	<p>Any effluent discharged from a waste pile must meet the applicable standards given in Schedule 1.2 of the <i>HW Regulation</i>. These standards are also shown in <a href="#">Figure 14, Effluent Standards for Hazardous Waste Facilities</a>.</p> <p>The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.</p> <hr/> <p><b>!</b> <b>Note:</b> Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.</p> <hr/> <p>Any effluent with contaminants exceeding the applicable standards must be further treated until it does meet the standards before being discharged.</p> <p>Because Schedule 1.2 does not include every possible contaminant, a director may set additional standards for specific cases.</p>
<b>Dust Control</b>	A cover or other means of controlling dust may be required if waste stored on a pile could be blown away easily. The need for a cover depends on the nature of the waste.
<b>Closure</b>	<p>While a waste pile is operating, the eventual closure of the facility must be kept in mind. This closure must follow a written plan that is approved before any waste is accepted and includes:</p> <ul style="list-style-type: none"><li>• removal of any remaining hazardous waste and</li><li>• cleaning up the underlying soil to an approved depth</li></ul>

## 4.0 Performance Standards for Surface Impoundments

<b>HWR Section 31</b>	Because surface impoundments are used to store liquids, they require special attention including use of a liner system. The performance standards that particularly apply to surface impoundments are summarized below.
<b>Prohibited Materials</b>	Storage of ignitable or reactive wastes in surface impoundments is prohibited.
<b>General Features</b>	<p>Surface impoundments must have:</p> <ul style="list-style-type: none"><li>• at least 0.5 m of freeboard</li><li>• an inner fenced buffer area 20 m wide immediately around the impoundment and</li><li>• devices to immediately stop the flow of waste into the impoundment in the event of problems</li></ul>

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**Liner System** Surface impoundments must have a liner system approved by a director that:

- prevents escape of waste during operation or closure
- consists of either 0.5 m of clay or a 1 mm–thick synthetic membrane
- has chemical and physical properties so it is not damaged by the waste, operating conditions, or weather and
- is placed on base materials so that the liner is supported and not damaged by pressure gradients, compression, uplift, or settlement

**Other Standards** Performance standards related to groundwater non-compliance, leak detection and leachate collection systems, storm water management, effluent discharges, dust control, and closure are similar to those for waste piles—see section 31 of the *HW Regulation* or Section 3.0, [Performance Standards for Waste Piles](#), above.

### 5.0 Performance Standards for Land Treatment Facilities

**HWR Section 32** Climate and soil conditions greatly affect land treatment. For this reason, every waste treated at a particular land treatment facility must be specifically approved by a director for treatment at that facility. Restrictions on the types of wastes that may be treated at a facility are usually included in the operational plan for the facility.

Performance standards related to groundwater non-compliance, leak detection and leachate collection systems, storm water management, effluent discharges, dust control, and closure are similar to those for waste piles—see section 32 of the *HW Regulation* or Section 3.0, [Performance Standards for Waste Piles](#), above.



# SECURE LANDFILLS

A secure landfill is often the final disposal option for any wastes that cannot be further reduced or made less hazardous. It is a facility designed, constructed, and operated to keep wastes confined for an indefinite period of time with little likelihood of future removal. For this reason, secure landfills have some of the strictest requirements under the *Hazardous Waste (HW) Regulation*. Some of these requirements are shown in [Figure 17, Secure Landfill Requirements](#).

## 1.0 Permit Requirement

To operate, a secure landfill must have a permit issued under section 14 of the *Environmental Management Act*. Among other things, the permit may require any of the following:

- submission of plans and specifications for the landfill
- repair, alteration, or improvement of the landfill
- financial security in whatever form or amount or under whatever conditions a director decides
- monitoring according to specified methods of any aspect of operation that a director thinks is important
- studies or reporting of information specified by a director or
- recycling or recovery of reusable resources

## 2.0 Siting Requirements

### ***HWR Sections 3 and 25***

Secure landfills must meet very strict siting requirements. Some of the requirements are those that all types of hazardous waste facilities must meet. They are given in section 3 of the *HW Regulation* and are discussed in Section 3.0, [Siting Standards](#), in Chapter 8.

Additional requirements specific to secure landfills are given in section 25 of the *HW Regulation* and are summarized below.

### ***Wetlands***

A secure landfill may not be located in a wetland or in an area adjacent to a wetland. A *wetland* is any land like a tidal flat, marsh, or bog that is often flooded with water.

### ***Severe Earthquake Zones***

Location of a secure landfill in a severe earthquake zone is prohibited. This is defined as an area where there is a 10% probability that a predicted peak ground acceleration of more than 8% of gravity will be exceeded in 50 years.

Information on ground acceleration during earthquakes may be accessed from the Earthquake Information page of the Pacific Geoscience Centre web site. Calculations for specific sites are available for a nominal fee from the Centre. Contact information for the Centre is given in [Appendix A](#).

### ***Separation from Ground and Surface Water***

The bottom liner of a secure landfill must be separated from the seasonally high water table by at least 3 m of soil with permeability less than  $1 \times 10^{-6}$  cm/s. If the underlying rock is fractured or permeable, this separation must be increased to at least 5 m.

In addition, a secure landfill may not be located:

- in the recharge area of any high-capacity wells or of a significant number of low-capacity wells
- within 300 m of any surface water or
- within the watershed of a designated community water supply

**Allowable  
Precipitation**

Rain or snow falling on a secure landfill after it has been closed must not generate leachate. This restriction is expressed in the following equations.

On a monthly basis:  $P_t < E_t + W_s$  Equation 3

On an annual basis:  $P_t < E_t$  Equation 4

where:

$P_t$  = the precipitation falling on the surface of the closed landfill

$E_t$  = the maximum water loss from the surface of the closed landfill by evaporation and transpiration and

$W_s$  = the water holding capacity of the soil used for the final cover.

Before a secure landfill may be located in a given area, there must be data for all the variables in these equations. If the data do not exist for the site, they must be measured at the proposed site or calculated from data collected in areas with similar weather conditions.

**Buffer Zone**

There must be an approved buffer zone around a secure landfill to separate it from other land uses in the area. The zone must be controlled or owned by the facility operator or the government.

The *HW Regulation* does not specify the size of the buffer zone because it depends on the local situation. For example, a secure landfill near a salmon spawning area would have a larger buffer than one located away from any environmentally sensitive areas.

### 3.0 Operational Requirements

**HWR Section 26**

Because secure landfills are intended to be permanent, they have the strictest operational requirements of any facilities covered by the *HW Regulation*. Although in some cases allowance is made to recover wastes in the future, wastes are not usually ever removed. The operational requirements must therefore make sure that the facility will always contain the waste. The full requirements are given in section 26 of the *HW Regulation*. These are summarized below.

**Inspection and Repair**

Secure landfills must be:

- inspected during installation to make sure there are no problems that would later make the liners and covers leak
- inspected weekly during operation and immediately after any catastrophic event such as a severe storm, earthquake, or forest fire, to make sure everything is in good order and to see if leachate is collecting and
- immediately repaired if any problems are found

- Monitoring and Reporting** Secure landfills must be monitored according to a program approved by a director. Requirements for the program include:
- setting up of sampling wells so that the quality of the groundwater that would be expected to be affected in event of a problem may be compared with the quality of the unaffected groundwater
  - measures to prevent contamination of the sampling wells
  - selection of the parameters that must be measured
  - at least quarterly sampling of the wells
  - measurements of groundwater levels
  - detection and measurement of leachate or any leakage into the space between the liners and
  - reporting of all data to a director
- The monitoring requirements are designed to provide a reliable means for detecting problems with the liner system. If problems are detected, they must be reported to a director within three days.
- Cover When Filling Cells** While cells are being filled with waste, there must be some way to prevent generation of leachate. The simplest concept for doing this is to use a cover to keep out rain or snow, but other effective means may be used.
- The system must be kept in place until the final cover of the secure landfill is placed on each cell.
- Waste Location** In case a particular waste needs to be found at some future time, records must be kept of the contents of each landfill cell. These records may be in the form of a three-dimensional map or similar system.
- Leachate and Runoff Collection** Any facilities for storage of leachate or runoff must be emptied regularly so there is always enough capacity to collect leachate or runoff if the need arises.

## 4.0 Performance Standards

- HWR Section 27** As with the siting and operational requirements, the performance standards for secure landfills are intended to completely and permanently contain the wastes put in them. Section 27 of the *HW Regulation* specifies multiple levels of protection for a secure landfill as shown in [Figure 17, Secure Landfill Requirements](#), and as highlighted below.
- Prohibited Materials** Schedule 3 of the *HW Regulation* prohibits disposal of some types of hazardous wastes in a secure landfill. In summary, these are:
- wastes that are liquids or that contain free liquids, whether or not these wastes are in containers
  - empty waste containers, unless they are compacted as much as possible
  - ignitable or reactive wastes
  - wastes containing more than 1% total organic carbon, other than organic carbon that occurs naturally in soil or in a substance that is not hazardous waste
  - wastes containing more than 1000 mg/kg of halogenated organic compounds
  - radioactive wastes or
  - wastes that produce undesirable leachate easily on contact with water
- These above wastes are better handled at other facilities and could cause problems if put in the landfill.

A modified leachate extraction procedure given in Schedule 4 of the *HW Regulation* is used to test for undesirable leaching.

**Dual Liner System** Secure landfills must have a dual liner system that:

- prevents escape of waste during operation or closure
- uses either 0.5 m of clay or a 1 mm–thick synthetic membrane for each liner
- has chemical and physical properties so that neither liner is damaged by the waste, operating conditions, or weather and
- is placed on base materials so that the liners are supported and not damaged by pressure gradients, compression, uplift, or settlement

**Leachate Collection and Leak Detection** Secure landfills must have systems for:

- detecting liquid in the space between the two liners
- collecting leachate from above the upper liner and
- storing removed leachate

The leachate collection system must:

- be installed at a slope greater than 2%, in a porous layer at least 0.75 m thick having a permeability greater than  $1 \times 10^{-3}$  cm/s
- have chemical and physical properties so that the system is not damaged by the waste, any leachate, or the weight of material in the landfill and
- not clog during the life of the landfill

**Groundwater Non-Compliance**

A secure landfill is out of compliance if groundwater monitoring shows a statistically significant difference in any chemical parameter associated with the waste. Statistical methods approved by a director must be used for deciding if differences are significant.

**Site Drainage** A secure landfill must have systems to:

- prevent storm water draining onto any cell and
- collect and control water draining from any cells

These systems must be designed for storm events that occur on average only once every 25 years.

**Effluent Discharges** Any effluent discharged from a secure landfill must meet the applicable standards given in Schedule 1.2 of the *HW Regulation*. These standards are also shown in [Figure 14, Effluent Standards for Hazardous Waste Facilities](#).

The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.



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**Note:** Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.

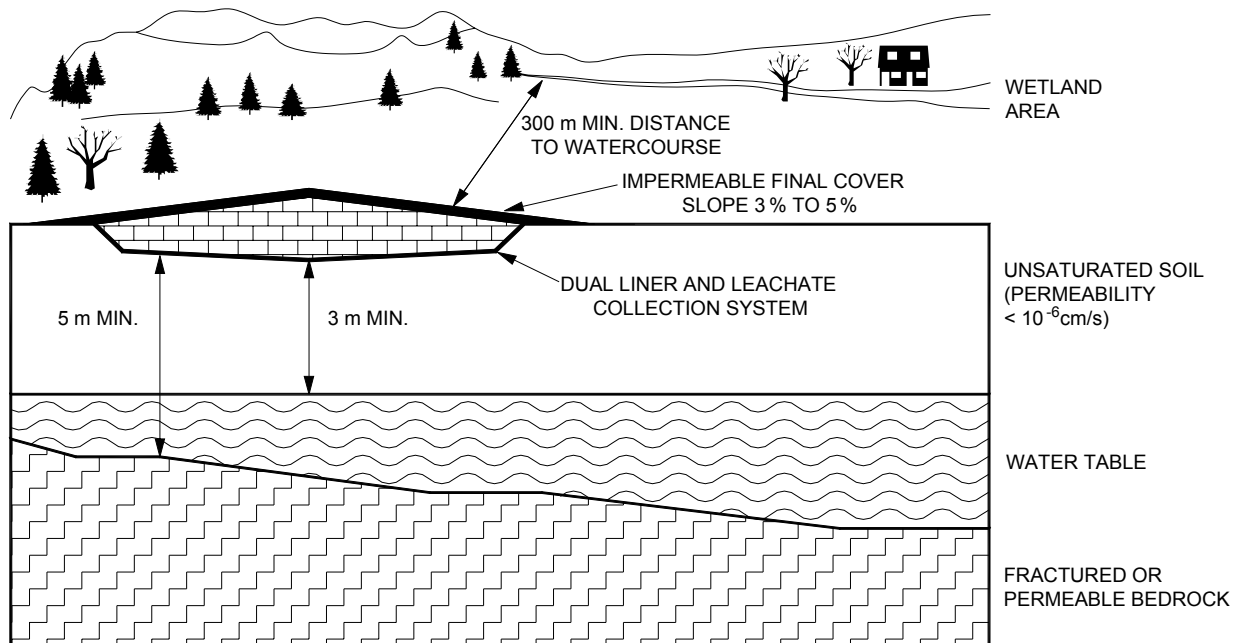
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Any effluent with contaminants exceeding the applicable standards must be further treated until it does meet the standards before being discharged.

Because Schedule 1.2 does not include every possible contaminant, a director may set additional standards for specific cases.

- Dust Control** A cover or other means of controlling dust may be required if waste put into a secure landfill could be blown away easily.
- Plan for Maintenance After Closure** Before a secure landfill is closed, a director must approve a plan for how it will be maintained after closure. The plan must give details for maintaining:
- the final cover
  - the leak detection system
  - the leachate collection system
  - the groundwater monitoring system
  - the drainage control system and
  - survey benchmarks
- Closure** The final closure of a secure landfill must be planned during the design phase, well before disposal of any waste occurs.
- The whole landfill or any cell must be closed by:
- making sure that all systems for collecting, storing, and monitoring leachate will work properly over the long term with minimum maintenance and
  - placing a final cover
- The final cover must require minimum maintenance and have:
- a 0.75 m–thick foundation layer to make sure the cover will be structurally sound
  - an impervious middle layer consisting of 0.5 m of clay or a 1 mm–thick synthetic membrane
  - a 0.5 m–thick top layer of soil that will not contaminate any water filtering into it and that is suitable for long-term plant growth
  - a slope of 3% to 5% so that ponds do not form on the surface and
  - vegetation that is suitable for the area, that is established by agronomic practices approved by a director, and that does not produce roots that will grow through the top soil layer
- Finally, title for the property must be transferred to the Crown after any requirements of the plan for maintenance after closure have been complied with.

Figure 17: Secure Landfill Requirements

**PROHIBITED AREAS:**

- areas within 200-year floodplains unless protected
- areas within 100 m of a holocene fault
- areas prone to tsunamis
- areas prone to slope failure
- designated wildlife areas
- wetlands and areas adjacent to wetlands
- areas with a probability of 10% exceedence in 50 years, of a peak seismic acceleration greater than 8% of gravity
- recharge areas for high-capacity wells
- recharge areas for wells supplying fish hatcheries and other domestic and industrial uses
- designated community watersheds

**MUST HAVE:**

- monthly precipitation < (evaporation + soil storage capacity)
- annual precipitation < evaporation
- buffer zone
- dual liners, each 0.5 m clay or 1 mm synthetic membrane
- leachate detection and collection system
- portable cover or equivalent over working surface
- closure plan
- final cover consisting of 0.75 m soil, followed by 0.5 m clay or 1 mm synthetic membrane, followed by 0.5 m soil with shallow rooting vegetation





# LONG-TERM STORAGE FACILITIES

Over the years, many designs have been proposed for systems to contain wastes for a very long time. These designs are as simple as using abandoned underground salt mines and as novel as using deep seabed burial.

Sections 33 to 35 of the *Hazardous Waste (HW) Regulation* allow for at least one design of a long-term storage facility as an alternative to a secure landfill. The concept of this design is a permanent, above-ground structure used only for waste disposal.

Long-term storage facilities could take the form of a concrete monolith, a fortified bunker, or some other type of similar structure. Long-term storage facilities have the advantages that if needed:

- the environment around the waste in storage can be controlled and modified and
- visual inspections and maintenance can be carried out

## 1.0 Security Requirement

**HWR Section 35(8)** To operate a long-term facility, a director may require financial security. This security may be in whatever form or amount or under whatever conditions a director decides.

## 2.0 Siting Requirements

**HWR Section 33** The overall objective for a long-term storage facility is the same as for a secure landfill: total long-term containment of wastes. However, for a long-term facility, design can control factors that for a secure landfill must be controlled by siting. As a result, the siting requirements for long-term storage facilities are less strict than for secure landfills.

This is especially the case for the requirements relating to:

- control of groundwater and surface water
- severe earthquake zones and
- precipitation

Requirements specific to long-term storage facilities and additional to those for all types of hazardous waste facilities are given in section 33 of the *HW Regulation* and are summarized below.

**Wetlands** A long-term storage facility may not be located in a wetland or in an area adjacent to a wetland. A wetland is any land such as a tidal flat, marsh, or bog that is flooded with water.

**Separation from Groundwater and Surface Water** The bottom of a long-term storage facility must be separated from the seasonally high water table by at least 3 m of soil with permeability less than  $1 \times 10^{-6}$  cm/s. If the underlying rock is fractured or permeable, this separation must be increased to at least 5 m.

In addition, a long-term storage facility may not be located:

- within 100 m of any surface water or
- within the watershed of a designated community water supply

### 3.0 Operational Requirements

**HWR Section 34** The operational requirements for long-term facilities are very similar to those for secure landfills. The full requirements are given in section 34 of the *HW Regulation*. These are summarized below.

**Inspection and Repair** Long-term storage facilities must be:

- inspected during installation to make sure the liners and other building components are constructed as intended
- inspected weekly during operation and immediately after any catastrophic event to make sure everything is in good order and
- immediately repaired if any problems are found

**Monitoring and Reporting** Long-term storage facilities must be monitored according to a program approved by a director. Requirements for the program include:

- setting up of sampling wells so that the quality of the groundwater that would be expected to be affected in event of a problem may be compared with the quality of the unaffected groundwater
- measures to prevent contamination of the sampling wells
- selection of the parameters that must be measured
- at least quarterly sampling of the wells
- measurements of groundwater levels and
- reporting of all data to a director

The monitoring requirements are designed to provide a reliable means for detecting problems. If problems are detected, they must be reported to a director within three days.

**Waste Location** In case a particular waste needs to be found at some time in the future, records must be kept of the location of all wastes in the facility. These records must be in tabular and graphic form, and referenced to permanent benchmarks.

### 4.0 Performance Standards

**HWR Section 35** As with the siting and operational requirements, the performance standards for long-term storage facilities are intended to completely and permanently contain the wastes put in them. The full requirements are given in section 35 of the *HW Regulation*. These are summarized below.

**Prohibited Materials** Schedule 3 of the *HW Regulation* prohibits disposal of some type of hazardous wastes in a long-term storage facility. In summary, these are:

- wastes that are liquids or that contain free liquids, whether or not these wastes are in containers
- empty waste containers unless they are compacted as much as possible
- ignitable or reactive wastes
- wastes containing more than 1% total organic carbon, other than organic carbon that occurs naturally in soil or in a substance that is not hazardous waste
- wastes containing more than 1000 mg/kg of halogenated organic compounds
- radioactive wastes or
- wastes that produce undesirable leachate easily on contact with water

The above wastes are better handled at other facilities and could cause problems if put in the landfill.

A modified leachate extraction procedure given in Schedule 4 of the *HW Regulation* is used to test for undesirable leaching.

**Liner System** Long-term storage facilities must have at least a single liner system that:

- prevents escape of waste during operation or closure
- consists of either 0.5 m of clay or a 1 mm–thick synthetic membrane
- has chemical and physical properties so that the liner is not damaged by the waste, operating conditions, or weather and
- is placed on base materials so that the liner is supported and not damaged by pressure gradients, compression, uplift, or settlement

**Groundwater Non-Compliance** A long-term storage facility is out of compliance if groundwater monitoring shows a statistically significant difference in any chemical parameter associated with the waste. Statistical methods approved by a director must be used for deciding if differences are significant.

**Site Drainage** A long-term storage facility must have a system to prevent storm water draining into the facility. The system must be designed for storm events that occur on average only once every 25 years.

**Effluent Discharges** Any effluent discharged from a long-term storage facility must meet the applicable standards given in Schedule 1.2 of the *HW Regulation*. These standards are also shown in [Figure 14, Effluent Standards for Hazardous Waste Facilities](#).

The standards that apply depend on whether the effluent is discharged to the environment or to effluent treatment works.




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**Note:** Schedule 1.2 specifies minimum standards. Operators of municipal or industrial treatment works may specify more restrictive standards for discharges into their works.

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Any effluent with contaminants exceeding the applicable standards must be further treated until it does meet the standards before being discharged.

Because Schedule 1.2 does not include every possible contaminant, a director may set additional standards for specific cases.

**Plan for Maintenance after Closure** Before a long-term storage facility is closed, a director must approve a plan for how it will be maintained after closure. The plan must give details for maintaining:

- the entire structure, including making repairs if needed
- the groundwater monitoring system
- the drainage control system and
- permanent benchmarks used for locating wastes

**Closure** After any requirements of the plan for maintenance after closure have been complied with, title for the property must be transferred to the Crown.





## PROHIBITED MANAGEMENT PRACTICES

The *Hazardous Waste (HW) Regulation* specifically prohibits a number of practices. These prohibitions are found in sections 36 to 39.

### **HWR Section 36**

Mixing of hazardous waste with other materials including water, rain water, or waste, or dividing hazardous waste *to evade this regulation or similar regulations in another jurisdiction* is prohibited.



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**Note:** In section 36, *to evade this regulation* are key words.

For example, removal of some waste for laboratory analysis so it can be treated properly is *division*, but this is not intended to evade the *HW Regulation*.

Similarly, there is *mixing* when collecting a bulk load of oil. This does not evade the *HW Regulation* if the mixing is not intended to make part of the load suitable for a purpose that it could not otherwise be used for.

In contrast, dividing and storing a waste in multiple parts to avoid registering it, is *division* with intent to evade the *HW Regulation*.

Similarly, mixing a small amount of highly contaminated oil into a bulk load of waste oil so that the highly contaminated oil can be burnt as a fuel, is *mixing* with intent to evade the *HW Regulation*.

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### **HWR Section 37**

Injection of hazardous waste into underground rock or soil formations for treatment, storage, or disposal is prohibited by the *HW Regulation*.

However, section 7 of the *Oil and Gas Waste Regulation* makes some limited exceptions to this general prohibition. These exceptions relate to water produced by an oil or gas well, or used to maintain or increase production from an oil or gas well.

### **HWR Section 38**

Operation of any hazardous waste facility on a fresh water body is prohibited. However, the *HW Regulation* makes it clear that this does not prevent hazardous waste from being transported over fresh water.

### **HWR Section 39**

Discharge of any hazardous waste into any municipal landfill or sewer system is prohibited unless it is expressly authorized by a permit, approval, regulation, or waste management plan approved by the appropriate authority. For example, in the case of permits or approvals, this is a director.





## SPECIFIC HAZARDOUS WASTES

Sections 39.1 to 42.4 of the *Hazardous Waste (HW) Regulation* allow alternative options for managing six specific types of hazardous wastes:

- waste asbestos
- waste oil
- hydrocarbon contaminated soil
- wastes containing pest control products, including waste containers for these products
- waste paint and
- household hazardous waste

The above wastes are common and make up a large part of all hazardous waste. The options for these wastes allow them to be managed safely without excessive administration. In addition, for residual amounts of solvents, flammable liquids, oils, oil filters, oil containers, paints, pesticides, and pharmaceuticals, return to a retailer may be possible as part of a product stewardship program required by the *Recycling Regulation*.

### 1.0 Waste Asbestos

The *HW Regulation* defines any waste containing 1% or more of friable asbestos fibres or asbestos dust as hazardous waste. *Friable* means easily crumbled. The key words in this definition are *friable asbestos fibres or asbestos dust*. Any asbestos that is tightly bound in a solid such as cement or hardboard is not hazardous waste.

The Workers' Compensation Board test method *Asbestos in Bulk Samples—Dispersion Staining* can be used to find out if the *HW Regulation* applies to a particular asbestos waste.

#### **HWR Section 40**

Release of fibres or dust that could be inhaled is the main concern with waste asbestos. The *HW Regulation* therefore provides an option to eliminate this hazard during transport and disposal. Waste asbestos that is not mixed with any other hazardous materials may be transported and disposed at any authorized landfill provided that all of the following conditions are met:

- the asbestos is completely contained during handling, storage, and transport
- the asbestos is buried immediately at the landfill with 0.5 m of cover material and
- the disposal is approved by the landfill operator and a director

Examples of acceptable ways of completely containing the waste asbestos are:

- saturating the asbestos with water and sealing it into a non-leaking drum or
- putting dry asbestos into a 6-mil plastic bag that is sealed, and then sealing this inside a non-reusable drum or a second 6-mil plastic bag



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**Note:** Section 39.1 of the *HW Regulation* relaxes the siting, operational, and performance requirements contained in Parts 2, 3, and 4. Other parts of the *HW Regulation* still apply. In addition, in some cases a director may decide that a particular exemption should not apply. If the alternative requirements cannot be met, waste asbestos must be managed in the same way as any other hazardous waste.

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## 2.0 Waste Oil

*Waste oil* is defined as waste that contains more than 3% by weight of refined mineral oil where the oil has become unsuitable for its original purpose owing to impurities or loss of original properties.

Diesel fuel, kerosene, home heating oil, cutting oil, hydraulic oil, and automotive lubricating oil and non-hazardous materials containing more than 3% of these oils are all hazardous wastes when they are no longer used for their original purposes.

In the past, waste oil was often poured down sewers, burned as a fuel, or spread on roads as a dust suppressant. It was then realized that the contaminants in waste oil may be dangerous to human health and the environment. Typical contaminants include flammable solvents, heavy metals, and halogenated organics such as PCBs. All of these get into the oil during manufacturing, use, or improper handling. Because of these contaminants, waste oil must be closely regulated.

If the non-hazardous material containing one of the above oils is soil, sand, or similar naturally occurring material, the waste oil may qualify for management as *hydrocarbon contaminated soil*. See Section 3.0, [Hydrocarbon Contaminated Soil](#), next in this chapter for more details.

If waste oils are contaminated with hazardous materials, the situation is more complex. See Section 5.0, [Waste Evaluation Procedure](#), in Chapter 3 for the steps needed to check if the waste qualifies as waste oil or if it is some other type of hazardous waste.



**Tip:** Waste oil that is in class 3 or class 9 under the *Transportation of Dangerous Goods Regulations* still qualifies for the uses allowed in section 41 of the *HW Regulation* as long as it meets the definition for waste oil and any specifications that apply for the use concerned. However, waste oil in either of these classes may need extra precautions to make sure they are used safely.

### **HWR Section 41**

The *HW Regulation* allows the use of waste oil for various purposes as long as the conditions for the type of use are met. These are summarized below.

#### **Manufacture of Pavement**

Waste oil used in making pavement must meet the specifications given in [Figure 18, Waste Oil Specifications for Manufacture of Pavement](#).

#### **Incineration as a Fuel**

Waste oil burnt as fuel must meet the specifications given in [Figure 19, Waste Oil Specifications for Use as Fuel](#), for the type of fuel use concerned.

Because burning releases contaminants directly to the atmosphere, the specifications in [Figure 19](#) are very strict. They are so strict that in most cases waste oil must be re-refined before it may be used as a fuel. The benefit is that facilities using such oil are not regulated as thermal facilities or incinerators.



**Note:** Mixing or blending may not be used to upgrade the specifications of waste oil for fuel use. Any oil sold for this use must be analyzed and shown to meet the applicable specifications prior to sale.



**Note:** Historically, under certain conditions waste oil was authorized for use in road construction, repair or dust suppression. This authorization was withdrawn effective 1 October 1992.






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**Note:** Section 39.1 of the *HW Regulation* relaxes the siting, operational, and performance requirements contained in Parts 2, 3, and 4. Other parts of the *HW Regulation* still apply. In addition, in some cases a director may decide that a particular exemption should not apply. If the alternative requirements cannot be met, waste oil must be managed in the same way as any other hazardous waste.

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### 3.0 Hydrocarbon Contaminated Soil

The *HW Regulation* defines *hydrocarbon contaminated soil* as “soil, sand, gravel, rock or similar naturally occurring materials which is contaminated only with a petroleum product...” This definition means that some hazardous wastes that meet the definition of waste oil or leachable toxic waste under the *HW Regulation* are also hydrocarbon contaminated soil.

#### **HWR Section 41.1**

The *HW Regulation* allows the use of various options for managing hydrocarbon contaminated soil as long as the conditions for managing the soil are met. These are summarized below.

#### **Use in Manufacture of Asphalt**

Hydrocarbon contaminated soil may be used for making asphalt as long as:

- the soil is hazardous waste only because it contains one or more of the contaminants listed in [Figure 20, Standards for Management of Hydrocarbon Contaminated Soil](#)
- no contaminant exceeds the standards specified in [Figure 20](#) and
- on any day, the amount of contaminated soil is not more than 10% of all materials put into the asphalt plant

#### **Treatment and Short-Term Storage**

Hydrocarbon contaminated soil may be treated or put into short-term storage as long as:

- the soil is hazardous waste only because it contains one or more of the contaminants listed in [Figure 20, Standards for Management of Hydrocarbon Contaminated Soil](#)
- no contaminant exceeds the standards specified in [Figure 20](#)
- the treatment and short-term storage occurs on the site where the contaminated soil was generated or at an authorized landfill or storage facility
- notification is provided to a director and management is in accordance with the requirements of a director and
- the contaminated soil is spread in single layers, each of which is not more than 0.3 m thick in any year

Hydrocarbon contaminated soil that has been treated so that it is no longer hazardous waste may be disposed of in a landfill if the disposal:

- is approved by the landfill owner and a director before it takes place and
- is in accordance with the requirements specified by a director




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**Note:** Section 39.1 of the *HW Regulation* relaxes the siting, operational, and performance requirements contained in Parts 2, 3, and 4. Other parts of the *HW Regulation* still apply. In addition, in some cases a director may decide that a particular exemption should not apply. If the alternative requirements cannot be met, hydrocarbon contaminated soil must be managed in the same way as any other hazardous waste.

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## 4.0 Wastes Containing Pest Control Products

Pesticides are products widely used in industry and the home for controlling pests. The *HW Regulation* defines a *pest control product* as any of the thousands of products registered under the federal *Pest Control Products Act*. The *HW Regulation* allows for disposal of wastes containing pesticides in a manner that is safe but yet does not require an undue amount of administrative supervision. This includes waste containers that were used for pesticides.

Although the *HW Regulation* does not apply to amounts of wastes less than 5 L or 5 kg, it is good practice to follow the procedures in this chapter for household amounts as well. This includes returning residual amounts of pesticides to a retailer as part of a product stewardship program required by the *Recycling Regulation* or taking them to a household hazardous waste collection facility if they were used in a home.

The *HW Regulation* also states that pesticide containers are not hazardous wastes if they are emptied and:

- rinsed in the ways discussed in this section or
- labelled *Domestic* by the manufacturer

**HWR Section 42** Section 42 defines some terms relating to disposal. These are reviewed below.

**Appropriate Solvent** An appropriate solvent is any solvent such as water that dissolves the pesticide. It should be compatible with the carrier fluids in the pesticide and should not be a hazardous waste itself.

**Empty** Under the *HW Regulation*, to *empty* a container means to do one of the following:

- drain a liquid container into a mixing tank for not less than 30 seconds
- shake residues from an inner liner into a mixing tank or
- use all of the contents of a pressurized container without puncturing it

**Rinse** Under the *HW Regulation*, to *rinse* a container means to do all of the following in order:

- fill not less than 20% of the container with an appropriate solvent
- close and shake the container so that all inside surfaces are contacted with the solvent and
- empty the container as defined above

**Pressure Rinse** Under the *HW Regulation*, to *pressure rinse* a container means to use a pressurized spray of appropriate solvent for 30 seconds to rinse the inside of a container.

**Disposal of Containers** Before a pesticide container may be disposed of in approved landfill, it must be rinsed as specified in [Figure 21, Methods for Rinsing Waste Pesticide Containers](#), according to the type of container concerned.

For example, pressurized containers such as spray cans and containers that are labelled *Domestic* do not need to be rinsed. Any container not described in the table must be rinsed by a method approved by a director.

If reuse or recycle of containers is not practical, empty rinsed containers may be disposed of by burial as long as:

- the place of burial is on land owned or leased by the person owning the container, or in a tree farm licence owned, leased, or maintained by the person owning the container
- the place of burial is on flat ground, not in a swale, and at least 200 m from surface water or a well
- the ground does not consist of gravel, sand, or similarly porous material and
- the containers are covered with at least 0.5 m of soil immediately after burial

Empty rinsed containers may also be recycled, but such containers may not be suitable for all purposes.

#### **Disposal of Rinse Solution**

Wherever possible, the rinse solution should be used in the mixing of the pesticide. If this cannot be done, the rinse solution may be disposed without further approval, as long as:

- the place of disposal is on the land where the pesticide was used
- the place of disposal is on flat ground, not in a swale, and at least 200 m from surface water or a well and
- the ground does not consist of gravel, sand, or similarly porous material



**Note:** Section 39.1 of the *HW Regulation* relaxes the siting, operational, and performance requirements contained in Parts 2, 3, and 4. Other parts of the *HW Regulation* still apply. In addition, in some cases a director may decide that a particular exemption should not apply. If the alternative requirements cannot be met, wastes containing pesticides must be managed in the same way as any other hazardous waste.

## 5.0 Waste Paint

Waste paint and related materials are hazardous waste if they are no longer used for their original purpose and are dangerous goods regulated by the *Transportation of Dangerous Goods (TDG) Regulations*. These materials could be in TDG classes 3, 8, or 9. See Section 5.0, [Waste Evaluation Procedure](#), in Chapter 3 for the steps needed to check if wastes are dangerous goods regulated by the *TDG Regulations*.

#### **HWR Section 42.1**

Section 42.1 of the *HW Regulation* allows the use of less strict options for treating or recycling waste paint that is hazardous waste as long as the conditions for the method of management are met. These are summarized below.

#### **Treatment**

Facilities treating waste paint and related materials qualify for less strict management options as long as they are owned and operated by a paint manufacturer or formulator.

#### **Recycling**

Facilities recycling waste paint and related materials qualify for less strict management options as long as:

- contaminants in the waste paint do not exceed the specifications given in [Figure 22, Waste Paint Specifications for Recycling](#)
- records of the amounts of waste paint recycled are maintained for two years from the date the paint is recycled and
- the amounts recycled are reported to a director within 31 days of the end of the calendar year



**Note:** Section 39.1 of the *HW Regulation* relaxes the siting, operational, and performance requirements contained in Parts 2, 3, and 4. Other parts of the *HW Regulation* still apply. In addition, in some cases a director may decide that a particular exemption should not apply. If the alternative requirements cannot be met, waste paint and related materials must be managed in the same way as any other hazardous waste.

## 6.0 Household Hazardous Waste

Small quantities of hazardous wastes are generated in household activities ranging from home maintenance and decorating to gardening and car repairs.

**HWR Section 42.2** The *HW Regulation* provides exemptions to encourage collection of these wastes while making sure that they are managed safely.

**Exemptions** Return collection facilities are exempt from the siting, operational, and performance requirements contained in Parts 2, 3, and 4 of the *HW Regulation* as long as they:

- comply with the alternate requirements in sections 42.3 and 42.4 of the *HW Regulation* and
- store less than 25 000 kg or 25 000 L of household hazardous waste

In addition, the requirements in section 10 of the *Environmental Management Act* to use a manifest and a transport licence do not apply as long as household hazardous waste is transported directly to a facility from:

- a residence on a residential property by the resident or
- a farm by the farmer

**HWR Section 42.3** The requirements to set up and operate a return collection facility are summarized below.

**Information** At least 30 days before a collection facility is set up, the following information must be provided to a director and to the municipality and regional district where the facility is proposed:

- street address of the facility
- type and maximum amount of waste to be stored at the facility
- name and contact details for the facility owner
- name and contact details for a person available 24 hours in case of emergency and
- name of each carrier and hazardous waste management company that, at the start-up of the facility, will be responsible for the waste after it leaves the facility

**Registration** A registration number must be applied for, also at least 30 days before a facility is set up. This number is applied for by completing an *Initial Generator Registration* and sending it to a director. See Section 4.0, [Completing the Initial Registration Form](#), in Chapter 4 for details.

If there is a significant change in any of the information sent to a director on the *Initial Generator Registration*, a *Generator Registration Update* must be completed and sent to a director. See Section 6.0, [Changes to Registration Information](#), in Chapter 4 for details.

In some cases, a director may require other information to be filled in on different forms.

**Siting** A return collection facility may not be set up or operated within protected wildlife areas such as designated parks, wildlife preserves, or sanctuaries. Contact the nearest office of the Regional Operations Branch or the Parks and Protected Areas Branch in Victoria to identify boundaries of such areas.

**Facility Requirements** A return collection facility must comply with:

- the *British Columbia Building Code* and the *British Columbia Fire Code*, if the waste is stored indoors and
- all land use, building, and zoning requirements of the municipality and regional district where the facility is located

In addition, a return collection facility must have:

- protection so that collection and storage of waste is not adversely affected by the weather
- security to prevent entry of unauthorized people or animals
- an impervious spill containment system, with a capacity to hold 110% of the largest volume of free liquid in any container or tank
- a suitable controlled forced air ventilation system, if the waste is stored indoors and
- signs at each entrance

The signs at each entrance must:

- identify the facility as a return collection facility
- show the hours of operation
- list, along with any safety warnings, the types of waste accepted at the facility
- give the name and telephone number of the owner of the facility
- give a 24-hour emergency contact number and
- prohibit drop-off of materials outside the facility

**HWR Section 42.4** The operational requirements for a return collection facility are summarized below.

**Waste Records** The owner of a return collection facility must keep records of household hazardous waste stored at the facility. These records must be available for inspection by an officer at any time up to two years after the waste is removed from the facility. These records must include:

- the description, name, and state (solid, liquid, gas, or combination) of each waste
- the UN number, classification, and packing group if the wastes are dangerous goods as defined by the *Transportation of Dangerous Goods Regulations* and
- the amount of each waste in storage, updated at least weekly

**Storage Arrangement** Containers of hazardous waste must be stored with enough space between them so they can be inspected visually for leaks or spills.

**Facility Inspections** Return collection facilities must be inspected at least weekly for any sort of problems that could allow escape of waste or that could harm human health or the environment.

Records must be kept of these inspections. The records must show:

- the date and details of any problems found and
- the date and details of corrective action taken

***Contingency Plan***

A contingency plan must be prepared for return collection facilities. The plan must:

- be kept current
- provide details of what to do in an emergency and
- be tested if required by a director

***Employee Training***

Every person working in a return collection facility must have proper training related to the wastes they are expected to handle. At least one person must have proper training relating to all wastes handled at the facility.

***Closure***

Before a return collection facility can be closed, the owner must:

- give notice to a director at least 90 days before the intended closure
- prepare a plan for closing the facility and
- get the closure plan approved by a director

The facility must then be closed according to the approved closure plan.

**Figure 18: Waste Oil Specifications for Manufacture of Pavement**

<i>Parameter</i>	<i>Allowable Level</i> (Levels are maximums in mg/L unless otherwise indicated)
Flashpoint	60 °C minimum
Total arsenic	20
Total cadmium	3.0
Total organic halogens (as chlorine)	2000
Total chromium	10
Total lead	1000
Total polychlorinated biphenyls	5.0
Total zinc	1000

**Figure 19: Waste Oil Specifications for Use as Fuel**

<i>Parameter</i>	<i>Allowable Level for Fuel in a Cement Kiln</i> (Levels are maximums in mg/L)	<i>Allowable Level for Fuel in Uses Other than Cement Kilns</i> (Levels are maximums in mg/L)
Total arsenic	20	5.0
Total cadmium	3.0	2.0
Total organic halogens (as chlorine)	3000	1500
Total chromium	10	10
Total lead	1000	50
Total polychlorinated biphenyls	500	3.0

**Figure 20: Standards for Management of Hydrocarbon Contaminated Soil**

<i>Parameter</i>	<i>Maximum Value</i> (Dry weight basis in mg/kg unless otherwise indicated)
Total benzene	25
Total ethylbenzene	250
Total toluene	150
Total xylene	250
Total oil	10%

**Figure 21: Methods for Rinsing Waste Pesticide Containers**

<i>Type of Container</i>	<i>Rinsing Method</i>
Rigid plastic or metal (non-pressurized)	Pressure rinse, or single rinse three times
Rigid plastic or metal (pressurized)	No rinsing required
Glass bottle	Rinse three times
Paper bag	Rinse
Plastic bag	Rinse
Containers labelled <i>Domestic</i>	No rinsing required
Any container type not listed above	As approved

**Figure 22: Waste Paint Specifications for Recycling**

<i>Parameter</i>	<i>Allowable Level</i>
Total polychlorinated biphenyls	2 mg/L
Total lead	1.00% by weight
Total mercury	75 mg/L
Total organic chlorides (as Cl)	1.00% by weight





# PERMITS AND OTHER FORMS OF AUTHORIZATION

The discharge of any waste to the environment is prohibited unless it is authorized by the *Environmental Management (EM) Act* or any of the regulations under the act. Similar authorization is required for any facility used to manage hazardous waste in any way or to store more than the registration quantity of any hazardous waste.

Types of authorizations include permits, orders, approvals, or compliance with specific regulations or waste management plans. A list and brief explanation of the various forms of authorization is given below:

**Regulations** *Regulations* are requirements issued by the Lieutenant Governor-in-Council, usually for specific types of waste or for administrative procedures that affect large sectors of the population.

**Permits** Permits are authorizations issued by a director for discharge of a specific type and amount of waste at a specific place.

**Approvals** Approvals are short-term authorizations similar to permits but valid for 15 months or less. They are usually used for testing equipment or discharges for a short time.

**Waste Management Plans** A waste management plan is an authorization issued by the Minister to a municipality for wastes managed by that municipality.

**Orders** Orders are instructions to take action beyond the terms of any other form of authorization. Section 5 of the *EM Act* gives the Minister broad authority to issue any order considered necessary to protect the environment. The orders a director may issue are specified in the *EM Act* or in regulations under the Act.

**Transport Licence** A transport licence is an authorization to transport hazardous waste issued by a director.

## 1.0 Applications for Permits

**EMA Sections 14 to 20** The process of applying for permits and other forms of authorization for management of hazardous wastes is the same as for non-hazardous wastes. Permits, approvals, and orders normally contain terms and conditions that apply to a specific case. These are in addition to the requirements of the *Hazardous Waste (HW) Regulation*.

For example, a permit restricts the type and amounts of waste that may be disposed of at a specific facility. Monitoring and reporting requirements are also specified in a permit. This is in contrast to a regulation that specifies requirements that apply more generally.

To apply for a permit:

- get the appropriate application forms from a director (see [Appendix A](#) for office locations)
- complete the forms, including signing and dating them
- post one copy of the completed form on a billboard at the site

- send two copies of the completed form and a site plan to a director within 15 days of signing the application
- publish the application and provide notice to the public as instructed by a director and
- provide any additional information as required by a director

The following sections describe the procedures followed in any permit application.

## 2.0 Publication and Notification

The public must be notified of all applications for permits. The requirements for notification are given in the *Public Notification (PN) Regulation*.

### **Site Notice**

Copies of the application for a permit must be posted on the proposed waste management site at a place that is very visible to the public. The *PN Regulation* specifies the required:

- size of the billboard
- wording on the billboard
- type size of the wording and
- colours of the wording and billboard

### **Publication in British Columbia Gazette**

When the completed application is received by a director, it is checked for completeness and then automatically published in the British Columbia Gazette. At the same time, a decision is made on what further notice should be given to the public.

### **Other Notification**

In virtually all cases, the application must be published in a local newspaper or displayed at a Canada Post office. In some cases a director may require copies of the application to be delivered directly to anyone who may be affected by the discharge or emission. The Ministry of Environment may also refer applications to other government agencies and First Nations for review.

## 3.0 Review

Ministry staff review each permit application before a formal decision is made. This review looks at the proposed management system and how it meets the requirements of the *EM Act* and regulations. Depending on the type and size of the facility, an assessment according to the regulations under the *Environmental Assessment Act* may be required.

The applicant may be asked to supply more information. Sometimes delays at the review stage can be avoided if the applicant meets with Ministry staff before sending the application.

Usually the review requires a detailed site inspection and is completed after all information and comments have been received from the public and other government agencies.

The process for permits may take anywhere from three or four months to a year or more, depending on how much information is available and how complex the application is.

Approvals and orders are generally processed in less time because there is no mandatory public notification or referral process, and the discharges are temporary in nature.



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**Note:** As a general rule, Ministry files are open to the public and anyone with a valid interest in a specific file may view the information in that file.

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#### 4.0 Concerned Persons

Any persons who feel that the authorization of a waste discharge would adversely affect them may notify a director of their concerns within 30 days of the last date of posting or publication of an application. Affected persons must state in writing how they are or would be affected. Any information that may affect the decision of a director should be brought to the director's attention at this time.

A director may require the applicant to meet with any concerned persons to explain and clarify the intent of the application. Such meetings may be very small and informal or more formal if there are a large number of concerned persons.



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**Note:** A director's decision on a permit application is made based on protection of human health and the environment. Issues such as land use, job creation, economic conditions, and the like are not considered when making the decision. These issues are better dealt with elsewhere, such as in municipal council hearings, before the ombudsman, in the courts, or in the legislature.

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#### 5.0 Notice of a Director's Decision

After making a decision on an application, a director will notify the applicant and anyone recognized as a concerned person. This notification of a director's decision may be either by mail or by a notice published in a local newspaper.

#### 6.0 The Appeal Process

Anyone dissatisfied with the decision of a director may appeal to the Environmental Appeal Board. Decisions made by the Minister or the Cabinet may not be appealed to the appeal board.

An appeal is started by sending written notice of *intent to appeal* to the Chair of the Environmental Appeal Board. Notices of appeal must be sent within 30 days of the notice of the director's decision. Appeals to the Environmental Appeal Board must be accompanied by a fee of \$25 payable to the Minister of Finance.

When considering an appeal, the appeal board may hold a hearing, confirm or vary the decision being appealed, or make a new decision. If a hearing is held, the appeal board will notify the parties concerned of the date, time, and location.

The *Environmental Appeal Board Procedure Regulation* under the *EM Act* gives details of the procedures to be followed when the decision of a director is appealed. All hearings before the Environmental Appeal Board are open to the public, and transcripts are made of all proceedings and testimony. When the decision is reached on an appeal, written reasons are given and notice of the decision is sent to those involved in the appeal.

An appeal does not suspend or delay a decision under appeal unless the person or board hearing the appeal takes steps to set aside the original decision.

Decisions of the Environmental Appeal Board are considered final except for any possible legal challenges. Although there is no formal appeal beyond the Appeal Board, the Cabinet may on its own initiative alter a decision of the Environmental Appeal Board.

## 7.0 Specific Exemptions

It is realized that the general requirements of the *HW Regulation* may not be reasonable in all cases. Examples are hazardous wastes arising from accidental spills or wastes classified as hazardous wastes when the wastes can be shown not to pose any significant risk to health or the environment.

Other cases may arise from technological developments or be specific to a particular case. These cases are dealt with in Part 9 of the *HW Regulation* as described below.

### 7.1 Application for Change in Requirements

**HWR Section 51** A person who feels that the normal requirements of the *HW Regulation* are not reasonable or should not apply in a particular case may request a change in requirements. The request is made by completing a copy of Form 4 in Schedule 5 of the *HW Regulation* and sending it to a director.

The applicant must show with reports, test data, or similar information why the *HW Regulation* is not reasonable or should not apply. To be successful, the applicant must to the satisfaction of a director show one of the following:

- the waste is not hazardous
- the facility where the waste is managed provides better protection than that offered by the *HW Regulation* or
- natural, site-specific conditions make the waste less hazardous

The public must be notified of applications for changes in requirements in ways similar to those used when applying for a permit.

### 7.2 Spills or Abandonment of Dangerous Goods

**HWR Section 52** An officer responding to a spill or abandonment of dangerous goods is exempt from the administrative requirements of Part 7 of the *HW Regulation*. These requirements relate to registration, registration numbers, transport licences, manifesting, and the like.

Section 52 also allows a director to exempt a person from requirements of the *HW Regulation* in similar cases. These exemptions allow for rapid response to emergency incidents requiring management of hazardous wastes.



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**Note:** In most cases, the *Spill Reporting Regulation* requires spills to be reported. If dangerous goods are spilt while they are being transported, reporting is also required by the *Transportation of Dangerous Goods Regulations*. The exemptions under section 52 may depend on such reports having been made.

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### 7.3 *Delisting*

**HWR Section 53** The process of showing that hazardous wastes or residues from treatment of hazardous wastes do not pose any significant risk to human health or the environment is called *delisting*. As such, deregulating a residue may be a better way of describing this process. Section 53 of the *HW Regulation* gives a director the powers to approve methods for delisting.

Hazardous wastes, classes of hazardous wastes, or residues from treatment or incineration of these wastes may only be delisted by a director based on tests carried out according to an approved method. An example of a case where delisting could be successful is using flyash from incineration of hazardous waste to make concrete blocks.

Figure 23: Authorizations for Management of Hazardous Waste

<p><b>Authorization Required for Facilities</b> (EM Act sections 5, 6, 7, 8, 9, 14, and 15)</p>	<p>All hazardous waste facilities must be operated in accordance with any of the following that apply:</p> <ul style="list-style-type: none"> <li>• a permit</li> <li>• an approval</li> <li>• an order or</li> <li>• an approved waste management plan</li> </ul> <p style="text-align: center;">and</p> <ul style="list-style-type: none"> <li>• the EM Act and</li> <li>• the HW Regulation</li> </ul>
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<p><b>Exemptions</b> (HW Regulation section 2)</p>	<p>The following operations are exempt from the HW Regulation:</p> <ul style="list-style-type: none"> <li>• facilities handling less than 5 L or 5 kg of wastes except PCBs and</li> <li>• facilities handling less than 1 kg of PCB, or 100 L or 100 kg of PCB-contaminated materials</li> </ul> <p>The following operations are exempt from many requirements of the HW Regulation:</p> <ul style="list-style-type: none"> <li>• on-site treatment for volume reduction only</li> <li>• on-site recycle facilities if the material is part of the process feed or the process product</li> <li>• off-site recycle facilities if the material is less than 5% of the process feed</li> <li>• temporary storage facilities</li> <li>• facilities managing mine tailings and waste rock and</li> <li>• on-site or approved off-site facilities managing hazardous waste from historical contaminated sites, including in-situ facilities if approved by a director before starting construction or operation</li> </ul>
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<p><b>Registration of Hazardous Waste</b></p>	<p>Persons who in 30 days generate or at any time store, treat, recycle, or dispose of more than the registration quantity of hazardous waste must:</p> <ul style="list-style-type: none"> <li>• be registered if they have been carrying out any of these activities</li> <li>• register within 30 days if newly carrying out any of these activities and</li> <li>• use their registration number (also known as a BCG number or consignor identification number) when shipping hazardous waste</li> </ul>
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<p><b>Transport of Hazardous Waste</b></p>	<p>Carriers must have a licence to transport hazardous waste by road.</p> <p>Transport licences are not required:</p> <ul style="list-style-type: none"> <li>• for transport solely on the generator's property or</li> <li>• by generators carrying their own waste in quantities less than the generator registration quantity</li> </ul>
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Facilities	Compliance Date	
	Existing on 1 April 1988	New
On Site	<ul style="list-style-type: none"> <li>• siting, operational and performance requirements: on a date set by the Minister</li> </ul>	1 April 1988
Off Site	<ul style="list-style-type: none"> <li>• siting, operational and performance requirements: on a date set by the Minister</li> </ul>	1 April 1988



## ENFORCEMENT AND PENALTIES

Regulations relating to hazardous waste are enforced by the Regional Operations Branch and the Conservation Officer Service. Complaints are investigated and spot-checks are made of waste management facilities, industrial operations, and vehicles.

### ***EMA Sections 107 to 112***

Environmental Protection Officers and Conservation Officers have the right to enter non-residential property at any reasonable time to investigate works and activities that could cause waste or pollution. In carrying out such inspections, officers may examine or remove records, conduct investigations, take samples for analysis, or take other measurements as necessary.

The *Environmental (EM) Management Act* allows officers to stop road or rail vehicles or vessels at any reasonable time and to request they be opened for inspection. If needed, a justice may issue warrants to enter property and vehicles.

Police officers may also inspect vehicles to check compliance with the *EM Act*. As a result, a vehicle and its cargo may be seized or ordered to be dealt with in any manner considered necessary. Any costs incurred in the disposal or handling of an impounded vehicle or waste will be charged to the owner.

### ***EMA Sections 115 to 117 and 120***

[Figure 24, \*Offences and Penalties\*](#), shows a list of offences and maximum penalties possible under the *EM Act*, the *Hazardous Waste Regulation*, or the *Spill Reporting Regulation*.

Figure 24: Offences and Penalties

<b>Section of EMA</b>	<b>Offence</b>	<b>Maximum Penalty</b>
6(2), 6(3), 6(4)	Causing or allowing introduction of waste into the environment without authorization.	\$1 000 000
7(1)	Not keeping hazardous waste confined in accordance with the <i>HW Regulation</i> .	\$1 000 000
7(2)	Releasing hazardous waste from confinement without authorization.	\$1 000 000
8	Constructing, establishing, altering, enlarging, extending, using, or operating a hazardous waste facility not in accordance with the <i>HW Regulation</i> .	\$1 000 000
9(1)	Storing hazardous waste not in accordance with the <i>HW Regulation</i> , an order, or an approved waste management plan.	\$1 000 000
9(3)	Not complying with a written order from a director to store hazardous waste in accordance with the <i>HW Regulation</i> or an approved waste management plan.	\$200 000
9(4)	Not complying with a written order from a director to dispose of hazardous waste in a specified way.	\$1 000 000
10(1)(a)	Failure of a shipper to comply with manifest requirements.	\$200 000
10(1)(b)	Failure of a shipper to make sure that a carrier has a transport licence.	\$200 000
10(1)(c)	Failure of a shipper to make sure that a receiving site or facility can accept hazardous waste.	\$200 000
10(2)	Failure of a carrier to comply with manifest or transport licence requirements.	\$200 000
10(3)(a)	Accepting hazardous waste without a properly completed manifest.	\$200 000
10(3)(b)	Failure of a receiver to comply with manifest requirements.	\$200 000
10(3)(c)	Accepting hazardous waste at a site where storage is prohibited, or where treatment, recycling, or introduction into the environment is not authorized.	\$300 000
79(5)	Not reporting a spill or unauthorized introduction of waste into the environment.	\$200 000
120(4)	Knowingly entering untrue or misleading information on a manifest.	\$200 000
120(5)	Resisting an officer performing duties under the <i>EM Act</i> or not complying with a requirement of an officer imposed by the Act.	\$200 000
120(6)	Releasing waste into the environment without complying with the requirements of a permit or approval.	\$1 000 000
120(7)	Not complying with requirements of a permit or approval.	\$300 000
120(10)	Not complying with a requirement imposed under the <i>EM Act</i> when ordered to do so by a director.	\$300 000
120(11)	Failure of a municipality to submit or comply with a waste management plan.	\$300 000
120(12)	Not complying with any requirement of the <i>HW Regulation</i> .	\$1 000 000
120(13)	Not complying with a requirement of the <i>HW Regulation</i> relating to the amount or characteristics of a waste introduced into the environment.	\$1 000 000
120(18)	Not complying with a substituted requirement under the <i>HW Regulation</i> .	\$1 000 000
126	Causing intentional damage to the environment or reckless disregard for safety causing harm.	\$3 000 000

**Other Relevant Provisions**

121(1)	When individuals are responsible for actions that cause a corporation to commit an offence, they commit an offence whether or not the corporation is convicted.
121(2)	If it is proved that an employee or agent of a corporation has committed an offence related to storing, shipping, or receiving hazardous waste, this is proof that the corporation has committed the offence unless the corporation can prove otherwise.
122	For offences under section 120, fines up to the maximum amount shown can be imposed for each day that the offence continues.
125	Additional fines may be imposed, equal to the monetary gain resulting from commission of an offence. In addition to the fines shown, individuals can be sentenced to prison for up to six months for any offence under section 120 and up to three years for an offence under section 126.





## CONTINGENCY PLANNING

Contingency planning is the process of considering what problems could occur and then putting in place:

- procedures to minimize the risk of their occurrence and
- procedures to follow in case their occurrence cannot be prevented

The aim of contingency planning is to minimize the impact of a problem event on the environment. Contingency planning can also benefit the person preparing the plan by reducing the cost of cleaning up after a problem event.

Contingency planning applies not only to hazardous wastes but also to any substance that may cause pollution.

### **EMA Section 79**

The *Environmental Management Act* gives broad powers to the Minister of Water, Land and Air Protection for managing the environment. These powers include requiring anyone who has control over a polluting substance to:

- undertake investigations of the potential risk of escape of the substance
- construct works to prevent or reduce the impact of escape of the substance
- prepare an approved contingency plan in event of escape of the substance
- test a contingency plan to see how effective it is and
- carry out the procedures in the contingency plan in the event of escape of the substance, at the expense of the persons owning, controlling, or preparing the contingency plan for the substance



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**Note:** In most cases, the *Spill Reporting Regulation* requires spills to be reported. If dangerous goods are spilt while they are being transported, reporting is also required by the *Transportation of Dangerous Goods Regulations*.

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Staff in the offices of the Regional Operations Branch review each contingency plan and assist with the development of completion schedules and information on regulatory requirements. Site inspections are normally conducted and improvements recommended where necessary.

Essential elements of a contingency plan are given elsewhere in this guide. For hazardous waste facilities, see Section 4.8, *Contingency Plan*, in Chapter 8. For transporting hazardous waste, see Section 5.2, *Responsibilities*, in Chapter 6 under carrier's responsibilities.

Anyone needing help in preparing a contingency plan should contact the nearest office of the Regional Operations Branch.





## SPILLS AND OTHER EMERGENCIES

The *Spill Reporting (SR) Regulation* requires reporting of spills of any materials that could cause pollution. Under the *SR Regulation*, a spill is any unauthorized release to the environment of a material where the amount is equal to or greater than that shown in [Figure 25, Reportable Amounts of Spilled Substances](#), in the *SR Regulation* column.

### **Reporting Spills to the Provincial Emergency Program**

Spills must be reported by the person who was in charge of the material before it was spilled, or by anyone observing a spill, if it appears that the spill has not been reported. The report must be made to the Provincial Emergency Program or to the local police or nearest detachment of the RCMP. The telephone number for contacting the Provincial Emergency Program is 1-800-663-3456.

Where possible, the report should include the following information:

- the name and telephone number of the person reporting the spill
- the name and telephone number of the person who caused the spill
- the time and place at which the spill occurred, together with a description of the area surrounding the spill
- the type and quantity of material spilled
- the cause and effect of the spill
- details of any response action underway, including a list of agencies on the scene or advised of the spill and
- details of further action required

Containment and clean-up should begin as soon as possible to protect human health and the environment. If the person causing the spill or local response agencies cannot respond adequately, the Minister of Water, Land and Air Protection may step in to take control. In such cases the Ministry will seek to recover the costs of actions taken from the person who caused the spill. If needed, the minister may declare an environmental emergency under the *Environment Management Act* and order services, labour, equipment, or access to land to prevent or control a spill.

In addition, the agencies listed below should also be immediately advised according to the type of incident concerned:

### **Spills to Marine Waters**

Spills to marine waters must be reported to the Canadian Coast Guard in Vancouver at 604-666-6011. *Marine waters* mean salt waters.

### **Spills or Imminent Spills of Dangerous Goods in Transport**

Spills or imminent spills of dangerous goods in transport in BC must be reported to:

- the Provincial Emergency Program at 1-800-663-3456 and the local police
- the employer of the person having control of the dangerous goods and
- the shipper of the dangerous goods

Additional reporting is required as specified in section 8.1(5) of the *Transportation of Dangerous Goods Regulations* depending on the mode of transport or other circumstances.



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**Note:** The amounts of substances that must be reported under the *SR Regulation* and the *TDG Regulations* are not the same in all cases.

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***Motor Vehicle  
Accidents***

Motor vehicle accidents must be reported to the local police and the local fire department, if necessary.

**Figure 25: Reportable Amounts of Spilled Substances**

<i>Spilled Substance</i>	<i>Class</i>	<i>SR Regulation</i>	<i>TDG Regulations</i>
Explosive	1	Any	Any quantity that could pose a danger to public safety or 50 kg
Flammable gas, other than natural gas	2.1	10 kg, if the spill results from equipment failure, error, or deliberate action or inaction	Any quantity that could pose a danger to public safety or any sustained release of 10 minutes or more
Natural gas	2.1	10 kg, if there is a break in a pipeline or fitting operated above 100 psi that results in a sudden and uncontrolled release of natural gas	
Non-flammable, non-toxic compressed gas	2.2	10 kg, if the spill results from equipment failure, error, or deliberate action or inaction	
Toxic gas	2.3	5 kg, if the spill results from equipment failure, error, or deliberate action or inaction	
Flammable liquid	3	100 L	200 L
Flammable solid	4	25 kg	25 kg
Oxidizing substance	5.1	50 kg	50 kg or 50 L
Organic peroxide	5.2	1 kg	1 kg or 1 L
Toxic substance	6.1	5 kg	5 kg or 5 L
Infectious substance	6.2	Any	Any quantity that could pose a danger to public safety
Radioactive substance	7	All discharges or a radiation level exceeding 10 mSv/h at the package surface and 200 µSv/h at 1 m from the package surface	Any quantity that could pose a danger to public safety or resulting in an emission level greater than the emission level established in section 20 of the <i>Packaging and Transport of Nuclear Substances Regulations</i>
Corrosive substance	8	5 kg	5 kg or 5 L
Miscellaneous dangerous goods	9	-	25 kg or 25 L
	9.1*	50 kg	-
	9.2*	1 kg	
	9.3*	5 kg	
Waste asbestos	9	50 kg	25 kg
Waste oil	-	100 L	-
Waste containing a pest control product	-	5 kg	-
Substance that can cause pollution, not listed above	-	200 kg	-

\* This class no longer exists in the *TDG Regulations*. Users of this guide should look out for an amendment to the *SR Regulation* that is in process to correct this situation.



## 1.0 Ministry of Environment

Contact the offices listed below for permit and licence application forms, manifest forms, and advice regarding this guide and BC's laws and regulations for hazardous wastes.

### *Environmental Management Branch*

PO Box 9342 Stn Prov Govt  
Victoria BC V8W 9M1

Telephone: (250) 387-9955  
Facsimile: (250) 953-3856

Location: 2975 Jutland Rd (V8T 5J9 in case needed for courier service)

See also the Environmental Management Branch's web site at <http://www.env.gov.bc.ca/epd/> including the hazardous wastes page at <http://www.env.gov.bc.ca/epd/epdpa/sw/sw.html>

### *Offices of the Regional Operations Branch*

#### **Vancouver Island Region**

2080 Labieux Rd  
Nanaimo BC V9T 6J9

Telephone: (250) 751-3100  
Facsimile: (250) 751-3103

#### **Lower Mainland Region**

200 – 10470 152 St  
Surrey BC V3R 0Y3

Telephone: 604-582-5200  
Facsimile: 604-584-9571

#### **Thompson Region**

1259 Dalhousie Dr  
Kamloops BC V2C 5Z5

Telephone: (250) 371-6200  
Facsimile: (250) 828-4000

#### **Kootenay Region**

401 – 333 Victoria St  
Nelson BC V1L 4K3

Telephone: (250) 354-6333  
Facsimile: (250) 354-6332

#### **Skeena Region**

PO Box 5000  
Smithers BC V0J 2N0

Telephone: (250) 847-7260  
Facsimile: (250) 847-7591

Location: 3726 Alfred Ave

#### **Cariboo Region**

400 – 640 Borland St  
Williams Lake BC V2G 4T1

Telephone: (250) 398-4530  
Facsimile: (250) 398-4214

#### **Omineca Region**

4051 18th Ave  
Prince George BC V2N 1B3

Telephone: (250) 565-6135  
Facsimile: (250) 565-6629

#### **Okanagan Region**

102 Industrial Pl  
Penticton BC V2A 7C8

Telephone: (250) 490-8200  
Facsimile: (250) 490-2231

#### **Peace Region**

400 – 10003 110 Ave  
Fort St. John BC V1J 6M7

Telephone: (250) 787-3411  
Facsimile: (250) 787-3490

## 2.0 Federal Agencies

### *Environment Canada*

#### *General Enquiries*

Contact for information on programs and services delivered by Environment Canada or see Environment Canada's web site at: <http://www.ec.gc.ca>

#### **Regional Office**

Environment Canada  
201 – 401 Burrard St  
Vancouver BC V6C 3S5

Telephone: 604-664-9100  
Facsimile: Varies by department—call the  
above number to inquire

#### *Transboundary Movement Branch*

Contact to get notice forms for transboundary movement of hazardous wastes. See also the transboundary movement page of Transport Canada's web site at: <http://www.ec.gc.ca/tmb/>

Transboundary Movement Branch  
Pollution Prevention Directorate  
Place Montcalm, 70 Crémazie St., 6th floor  
Gatineau, QC K1A 0H3

Telephone: (819) 997-3377  
Facsimile: (819) 997-3068

### *Natural Resources Canada*

#### *Geological Survey of Canada*

Contact for information on mapping of faults. See also the Geological Survey of Canada page of Natural Resources Canada's web site at: <http://gsc.nrcan.gc.ca/>

Geological Survey of Canada  
101 – 605 Robson St  
Vancouver BC V6B 5J3

Telephone: 604-666-0529  
Facsimile: 604-666-1124

#### *Pacific Geoscience Centre*

Contact for information on earthquake risks and calculations. See also the Pacific Geoscience Centre page of Natural Resources Canada's web site at: [http://www.pgc.nrcan.gc.ca/index\\_e.html](http://www.pgc.nrcan.gc.ca/index_e.html) including the earthquake hazard estimation page at <http://www.pgc.nrcan.gc.ca/seismo/eqhaz/seishaz.htm>

Pacific Geoscience Centre  
PO Box 6000, Sidney, BC V8L 4B2

Telephone: (250) 363-6500  
Facsimile: (250) 363-6565



**Transport Canada*****Dangerous Goods***

Contact for information related to transport of dangerous goods or see the dangerous goods page of Transport Canada's web site at: <http://www.tc.gc.ca/tdg/>. See also the CANUTEC page at <http://www.tc.gc.ca/canutec/>

**National Office**

Transport Canada  
Place de Ville, Tower C  
330 Sparks Street, 9th Floor  
Ottawa ON K1A 0N5

Telephone: (613) 992-4624 (inquiries)  
Facsimile: Varies by department—call the  
above number to inquire

**Regional Office**

Transport Canada  
225 – 625 Agnes St  
New Westminster BC V3M 5Y4

Telephone: 604-666-2955  
Facsimile: 604-666-7747

### 3.0 Provincial Agencies

#### ***Ministry of Public Safety and Solicitor General***

Contact for information on enforcement or compliance related to transport of dangerous goods by road.

Dangerous Goods Information  
PO Box 9250 Stn Prov Govt  
Victoria BC V8W 9J2

Telephone: (250) 953-4016  
Facsimile: (250) 952-0578

Location: 2nd Fl 1117 Wharf St

#### ***Provincial Emergency Program***

##### **Headquarters**

Provincial Emergency Program  
PO Box 9201 Stn Prov Govt  
Victoria BC V8W 9J1

Telephone: (250) 952-4913 (enquiries)  
Facsimile: (250) 952-4888

Location: 455 Boleskine Rd

#### ***Distribution Centre, Victoria***

Contact for manifest forms, other stationary and government publications related to hazardous wastes.  
See also the Centre's web site at: <http://www.bcsolutions.qp.gov.bc.ca/opc/>

Distribution Centre, Victoria  
PO Box 9455 Stn Prov Govt  
Victoria BC V8W 9V7

Telephone: (250) 952-4460  
Facsimile: (250) 952-4442

Location: 742 Vanalman Ave

#### ***Workers' Compensation Board of British Columbia***

Contact for information on occupational hazards.

Prevention Division  
Workers' Compensation Board  
PO Box 5350 Stn Terminal  
Vancouver BC V6B 5L5

Telephone: 604-276-3100 (office hours)  
Telephone: 604-273-7711 (after hours)  
Facsimile: 604-276-3247  
or contact local offices throughout the province

## 4.0 Other Organizations

### ***Crown Publications Inc.***

#### ***Head Office***

Contact for government publications, including copies of this guide. See also Crown Publications' web site at: <http://www.crownpub.bc.ca>.

106 Ontario St  
Victoria BC V8V 1M9

Telephone: (250) 386-4636  
Facsimile: (250) 386-0221

#### ***Retail Bookstore***

521 Fort St  
Victoria BC V8W 1E7

Telephone: (250) 386-4636  
Facsimile: (250) 386-9720

### ***Recycling Council of British Columbia***

Shelly Building  
10 – 119 Pender St W  
Vancouver BC V6B 1S5

Telephone: 604-732-9253  
Facsimile: 604-683-7255



Apart from agencies, a variety of general sources of information are available concerning the management of hazardous wastes. Included are legislation, publications such as fact sheets, brochures, reports and books, and audio/visual aids. The following lists provide a general introduction to the topic of hazardous waste management.

## 1.0 Legislation

### 1.1 Provincial

- *Environmental Management Act*, SBC 2003 Chapter 53 and regulations, including:
  - *Antisapstain Chemical Waste Control Regulation*, BC Reg 300/90
  - *Conservation Officer Service Authority Regulation*, BC Reg 318/2004
  - *Contaminated Sites Regulation*, BC Reg 375/96
  - *Environmental Appeal Board Procedure Regulation*, BC Reg 1/82
  - *Environmental Data Quality Assurance Regulation*, BC Reg 301/90
  - *Environmental Impact Assessment Regulation*, BC Reg 330/81
  - *Hazardous Waste Regulation*, BC Reg 63/88
  - *Oil and Gas Waste Regulation*, BC Reg 208/96
  - *Ozone Depleting Substances and Other Halocarbons Regulation*, BC Reg 387/99
  - *Permit Fees Regulation*, BC Reg 299/92
  - *Public Notification Regulation*, BC Reg 202/94
  - *Rebate of Waste Management Fees Regulation*, BC Reg 267/2000
  - *Spill Cost Recovery Regulation*, BC Reg 250/98
  - *Spill Reporting Regulation*, BC Reg 263/90 and
  - *Waste Discharge Regulation*, BC Reg 320/2004
- *Environmental Assessment Act*, SBC 2002 Chapter 43 and regulations:
  - *Concurrent Approval Regulation*, BC Reg 371/2002
  - *Prescribed Time Limits Regulation*, BC Reg 372/2002
  - *Public Consultation Policy Regulation*, BC Reg 373/2002
  - *Reviewable Projects Regulation*, BC Reg 370/2002 and
  - *Transition Regulation*, BC Reg 374/2002

### 1.2 Federal

- *Canadian Environmental Protection Act, 1999*, 1999, Chapter 33 and regulations, including:
  - *Chlorobiphenyls Regulations*, SOR/91-152
  - *Export and Import of Hazardous Wastes Regulations*, SOR/92-637
  - *Federal Mobile PCB Treatment and Destruction Regulations*, SOR/90-5
  - *Interprovincial Movement of Hazardous Waste Regulations*, SOR/2002-301
  - *PCB Waste Export Regulations*, 1996, SOR/97-109 and
  - *Storage of PCB Material Regulations*, SOR/92-507
- *Transportation of Dangerous Goods Act*, 1992, 1992 Chapter 34 and regulations, including:
  - *Transportation of Dangerous Goods Regulations*, SOR/2001-286

## 2.0 Selected Reference Books

- *Recommendations on the Transport of Dangerous Goods: Model Regulations*. 11th ed. New York, New York: United Nations, 1999.
- *Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria*. 3rd revised ed. New York, New York: United Nations, 1999.
- Transport Canada, *2004 Emergency Response Guidebook*. Ottawa: Canadian Government Publishing [distributor]. Available free from the CANUTEC page of Transport Canada's web site. See 2.0, *Federal Agencies*, Transport Canada for web site address information.
- Fingas, Mervin F., *The Basics of Oil Spill Cleanup*, Edited by Jennifer Charles. 2nd ed. Boca Raton, Florida: Lewis Publishers, 2001.
- Mackison, Frank W., et al: *NIOSH/OSHA Pocket Guide to Chemical Hazards*. Rockville, Maryland: U.S. Department of Health, Education and Welfare, 1978.
- Lewis, Richard J., Sr., *Sax's Dangerous Properties of Industrial Materials*. 11th ed. Hoboken, New Jersey: Wiley-Interscience, 2004.
- Weiss, G., ed. *Hazardous Chemicals Data Book*. 2nd ed. Park Ridge, New Jersey: Noyes Data Corporation, 1986.
- National Fire Protection Association, *Fire Protection Guide to Hazardous Materials*. 13th ed. Boston, Massachusetts: NFPA, 2001.
- O'Neil, Maryadele J., et al. *The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals*. 13th ed. Whitehouse Station, New Jersey: Merck, 2001.
- Clayton, George D. and Florence E. Clayton, ed. *Patty's Industrial Hygiene and Toxicology*. 4th ed. New York, New York: Wiley, 1991–1995.
- Gosselin, Robert E., et al. *Clinical Toxicology of Commercial Products*. 5th ed. Baltimore, Maryland: Williams & Wilkins, 1984.

**200-year floodplain:** land where the chance of a flood occurring in any given year is at least one in 200.

**Acid:** a proton donor. Usually a substance containing hydrogen that reacts with water to form hydrogen ions and solutions having a pH less than 7. A waste that has a pH less than 2 when measured directly or in a 50% mixture with distilled water is hazardous waste.

**Alkali:** see Base.

**Approval:** refers to an approval given under section 15 of the *Environmental Management Act*. This is an authorization similar to a permit for introducing waste into the environment, but is limited to a 15-month term, including any renewals.

**Aqueous:** relating to, similar to, containing, or dissolved in water.

**Aquifer:** a recharge area is an area of land that supplies water to an aquifer. Includes any soil or rock formation that is sufficiently porous and contains enough water to allow extraction or injection of water at reasonably useful rates.

**BCG number:** see Registration number.

**Base:** a proton acceptor. Generally a substance containing hydroxyl groups that reacts with water to form hydroxide ions and solutions having a pH greater than 7. A waste that has a pH more than 12.5 when measured directly or in a 50% mixture with distilled water is hazardous waste.

**Bioaccumulative:** a property that some substances have that cause them to accumulate in the tissues of an organism.

**Biochemical oxygen demand (BOD):** the amount of oxygen required by biological organisms to break down organic matter in the presence of air or oxygen.

**Biomagnification:** the process that occurs when substances become concentrated as they pass to higher levels of the food chain.

**Buffer zone:** land used to separate a facility from other land.

**Bulk load:** a shipment in which two or more individual hazardous waste shipments are carried together within a larger container.

**Carcinogenic:** causing cancer.

**Carrier:** a person who transports a hazardous waste.

**Chemical treatment:** a process to make hazardous waste less hazardous by chemically changing the waste.

**Chlorobiphenyls:** see PCB.

**Classification criteria:** the limit values of measured properties that determine if a substance is in one of the classes or packing/risk groups defined in Part 2 of the *Transportation of Dangerous Goods (TDG) Regulations*. Substances that are in one of the TDG classes are dangerous goods.

**Class:** a grouping of dangerous goods, as defined by the *Transportation of Dangerous Goods Regulations*.

**Closure:** actions taken by the owner or operator of a hazardous waste facility to prepare the site for long-term care after it has stopped accepting waste.

**Combustion zone temperature:** the temperature inside an incinerator where burning occurs.

**Confined aquifer:** an aquifer between layers having much lower permeability than the aquifer itself; an aquifer containing confined groundwater.

**Consignee:** the legal term for the person who receives hazardous wastes.

**Consignor:** the legal term for the person who ships or offers hazardous wastes for transport.

**Consignor identification number:** see Registration number.

**Contingency plan:** a document that describes an organized, planned, and coordinated course of action to follow in the event of fire, explosion, or discharge of hazardous waste. The aim of plans is to prevent or limit pollution that could threaten human health or the environment.

**Criteria:** in BC, province-wide non-site-specific target values for characteristics of concern (compare guidelines, objectives, and standards).

**Dangerous goods** (as defined by the *Hazardous Waste Regulation*): dangerous goods as defined and regulated by the *Transportation of Dangerous Goods (TDG) Regulations* but not including the exemption applicable to manufacturing or processing facilities found in section 1.25 of the *TDG Regulations*.

**Delisting:** process of showing that hazardous wastes or residues from treatment of hazardous wastes do not pose any significant risk to human health or the environment process and so do not need to be regulated as hazardous waste.

**Demonstration trial:** test or series of tests carried out during the approval process for a treatment process or facility. Among other things, a demonstration trial must show the effectiveness of a process or facility under any *worst-case* conditions that may be encountered, as well as identify appropriate operating conditions.

**Dioxin TEQ:** dioxin toxicity equivalent. A single number that allows the toxicity of mixtures containing dioxins and furans to be compared.

**Director:** a person employed by the government and designated in writing by the Minister of Water, Land and Air Protection as a director of waste management or as an acting, deputy, or assistant director of waste management.

**Disposal:** the introduction of waste into the environment through any discharge, deposit, emission, or release to any land, water, or air by means of facilities that are designed, constructed, and operated so as to minimize the effect on the environment.

**Environment:** the air, land, water, and other external conditions or influences in which humans, animals, and plants live or develop.



**Facility:** any works that are designed to or do handle, store, treat, destroy, or dispose of hazardous waste. Includes recycle facilities, short-term storage facilities, treatment facilities, incinerators, thermal treatment facilities, mobile facilities, secure landfills, piles, surface impoundments, land treatment facilities, long-term storage facilities, and in-situ management facilities, but does not include historical hazardous waste contaminated sites.

**Final cover:** the cover material that is applied upon closure of a landfill and the surface of which is permanently exposed.

**Free liquid:** any quantity of a liquid that is separated from a solid when subjected to the *Free Liquid Test Procedure* specified in Part 3 of Schedule 4 of the *Hazardous Waste Regulation*.

**Friable asbestos:** a material containing asbestos fibres or dust that can be crumbled easily. Friable asbestos releases fibres with minimal mechanical disturbance.

**Generator:** the person who, by nature of ownership, management, or control, is responsible for causing or allowing the creation of hazardous waste.

**Guidelines:** non-site-specific guide values for assessing characteristics of concern (compare criteria, objectives, and standards).

**Halogenated:** covalently bonded with one or more of the following elements: bromine, chlorine, fluorine, iodine.

**Hazardous waste:** any waste that meets the definition of hazardous waste in section 1 of the *Hazardous Waste Regulation*.

**Heavy metal:** no specific definition. Often refers to toxic elements such as antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, or zinc.

**Historical hazardous waste contaminated site:** land or groundwater that was contaminated with hazardous waste on or before 1 April 1988 and to which no further hazardous waste is added.

**Impervious:** having a permeability not greater than  $1 \times 10^{-7}$  cm/s when tested using a head of 0.305 m of water.

**Indoor:** enclosed and protected from precipitation and wind as in a building, but not including a shipping container used for passive storage.

**In-situ management facility:** a facility for preventing or controlling the movement or release of hazardous waste contaminants, or for treating or destroying such contaminants at an historical hazardous waste contaminated site, but done in such a way that the site or contaminants are not substantially physically altered.

**Labpack:** a drum with a maximum capacity of 454 L that is used for storing or transporting smaller containers of hazardous waste and that includes one or more inner linings that contain absorbent or cushioned packaging.

**LC<sub>50</sub>:** concentration of a substance in air or water that kills 50% of test organisms within a specified time under standardized conditions.

**LD<sub>50</sub>**: dosage of a substance that kills 50% of a sample population of test animals as determined from exposure to the substance, by any route other than inhalation, within a specified time under standardized conditions.

**Leachable toxic waste**: a liquid on its own or a solid that, when exposed to acidified water according to the procedure in US EPA *Method 1311*, produces a liquid that has levels of contaminants greater than specified in the *Hazardous Waste (HW) Regulation* or the *Transportation of Dangerous Goods (TDG) Regulations*. The *HW Regulation* specifies levels for more substances than the *TDG Regulations*.

**Leachate**: liquid containing contaminants, generated by percolation of water through materials.

**Manage**: to handle, transport, store, treat, destroy, or dispose of hazardous waste.

**Manager**: a person appointed under the *Public Service Act* as a manager in the Ministry of Environment and designated in writing by the minister as a regional manager or as an acting, assistant, or deputy regional manager.

**Manifest**: a form for documenting and tracking the movement of hazardous waste.

**Notification**: for shipments of hazardous waste, the process of advising government agencies in advance of the shipment of hazardous waste. The shipment may be leaving, going to, or passing through the notified jurisdiction. For applications for permits or for changes in requirements, the process of advising the public of these applications.

**Objectives**: site-specific target values for characteristics of concern (compare criteria, guidelines, and standards).

**Oil**: see Waste oil.

**Operator**: the person responsible for the overall operation of a facility.

**Passive storage**: storage where the only operations performed are placement, retrieval, and inspection of hazardous waste.

**PCB**: polychlorinated biphenyls. Substances having the molecular formula  $C_{12}H_{10-n}Cl_n$ , where n can be any number from 3 to 10 inclusive. Also known as chlorinated biphenyls or chlorobiphenyls.

**PCB equipment**: any manufactured item that contains or is contaminated with a PCB liquid or PCB solid. While items of PCB equipment are often electrical components such as transformers or capacitors, the definition includes other items such as contaminated drums and containers. An item of equipment need only be contaminated with liquid or solid containing more than 50 parts per million by weight of PCB for the whole item to be considered PCB equipment.

**PCB liquid**: any liquid containing more than 50 ppm by weight of PCB.

**PCB solid**: any material or substance other than a liquid containing more than 50 ppm by weight of PCB. Absorbents or soils contaminated with PCB are typical examples.

**PCB wastes:** PCB liquids, PCB solids, and PCB equipment are grouped together, and all except PCB equipment that is actually in service are defined as PCB wastes. Any PCB equipment becomes PCB waste as soon as it is removed from service, even if the intent is to treat, recycle, or reuse the equipment.

**Person:** an individual, partnership, or incorporated group having both legal rights and responsibilities.

**Permeability:** the property of soil or rock that allows water to pass through it.

**pH:** approximately the negative logarithm of the hydrogen ion concentration in a water solution. Water solutions with pH 7 at 25 °C are neutral; solutions with a pH less than 7 are acidic; and solutions with a pH more than 7 are basic.

**Pile:** see Waste pile.

**PIN, or product identification number:** an abbreviation or term now replaced by United Nations number or UN number.

**Polycyclic aromatic hydrocarbon TEQ, or PAH TEQ:** polycyclic aromatic hydrocarbon toxicity equivalent. A number that allows the toxicity of mixtures containing PAH to be compared. PAH is also known as polynuclear aromatic hydrocarbon.

**Principal organic hazardous constituents, or POHC:** one or more organic components of a hazardous waste that are designated by a director, usually for the purpose of testing the effectiveness of incinerators or thermal treatment systems.

**Product of incomplete combustion, or PIC:** a carbon-containing compound, other than carbon dioxide, present in the exhaust stream of a thermal treatment facility.

**Protocol:** a defined procedure for carrying out a test that must be followed strictly to produce valid test results.

**Pyrolysis:** a thermal treatment process for decomposing organic wastes in an oxygen-deficient atmosphere at high temperatures.

**Recharge area:** any land within which water enters an aquifer.

**Registration number:** a unique number issued by a director to a person who generates, stores, treats, recycles, or disposes of more than a specified amount of waste. Amounts of hazardous waste more than this specified amount may not be shipped without having a registration number. Also known as a BCG number or a consignor identification number.

**Retention time:** the time for which hazardous waste is subjected to the combustion zone temperature in an incinerator.

**Seasonally high water table:** the highest level of rise of the free surface of water below the ground surface at any time during the year.

**Solidification:** a treatment process for stabilizing waste within a solid with high structural integrity.

**Standards:** legally enforceable limit values for characteristics of concern (compare criteria, guidelines, and objectives).

**Statistically significant:** probably true; not likely the result of chance. As applied to groundwater monitoring around piles, surface impoundments, land treatment facilities, secure landfills, and long-term treatment facilities, establishing a link between the stored wastes and the contaminants in the groundwater.

**Surrogate:** a substitute. As applied to testing of treatment facilities, a less hazardous material for initial testing of these processes or facilities, or a material used to allow measurement of treatment efficiency that would not otherwise be possible.

**Swale:** a low, wet piece of land.

**TDG Act or Regulations:** *Transportation of Dangerous Goods Act or Regulations* (Canada).

**Temporary storage:** storage for not more than 96 hours that occurs incidental to transport of hazardous waste.

**Thermal treatment:** the treatment of hazardous waste in a device that uses elevated temperatures.

**Treatment:** the use of a process or operation to change physical, chemical, or biological properties of a waste. The usual reason for treatment is to make hazardous waste less hazardous or to reduce its volume. Dilution is not considered treatment under the *Hazardous Waste Regulation*.

**UN number or United Nations number:** an international identifying number assigned to dangerous goods by the United Nations.

**Unconfined aquifer:** an aquifer that extends downward from the surface with no low-permeability material above it.

**Underground injection:** the emplacement of fluids underground through a bored, drilled, driven, or dug well.

**Waste:** air contaminants, litter, effluent, refuse, biomedical waste, hazardous wastes, and any other substance designated by the Lieutenant Governor-in-Council as waste whether or not it has any commercial value or is capable of being used for a useful purpose.

**Waste oil:** automotive lubricating oil, cutting oil, fuel oil, gear oil, hydraulic oil, any other refined petroleum-based oil, synthetic oil, or materials containing 3% or more of such oils, where the oils through use, storage, or handling have become unsuitable for their original purpose due to the presence of impurities or loss or original properties.

**Waste pile:** any non-containerized accumulation of solid, non-flowing hazardous waste that is being stored or treated.

**Wetland:** any land such as a tidal flat, marsh, swamp, bog, or fen that is frequently inundated and for that reason has developed an organic soil and occurs in an area that is lower lying than its surroundings.

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