

Hazardous Waste Regulation Guidance

Section 4 Operational Plan

Revision 1.0
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The purpose of this document

This guidance is intended to assist an applicant in preparing an operational plan for a hazardous waste storage, treatment and/or recycling facility. By providing complete and accurate information in accordance with Ministry guidance documents an application is less likely to experience delays or rejection.

Section 4(1)(c) and (d) of the Hazardous Waste Regulation (HWR) requires that, before beginning the construction or installation of a hazardous waste facility, the owner must obtain approval of a new operational plan, or a modified operational plan. Approval is subject to the discretion of a director under the *Environmental Management Act*.

How to use this document

This document is intended to be used with the BC Ministry of Environment's *Operational Plan Template*. The Operational Plan Template contains the key aspects of an operational plan in a format recommended by the Ministry. If another format is used it must contain all of the required information in a logical arrangement.

If you believe certain information contained in the template is not required write "not applicable" under the heading and provide an explanatory statement for the omission. Operational plans that are missing information contained in the template, without justification, may be considered incomplete and rejected.

Disclaimer

This document does not supersede or replace the *Environmental Management Act* or its regulations; in the case of omissions or discrepancies, the Act and the Hazardous Waste Regulation apply. It is intended for guidance only.

Section by Section Guide to the Operational Plan Template

1.0 INTRODUCTION

This section should provide a brief, general description of the facility. It should be limited to one or two paragraphs only, and should be specific to the hazardous waste management activities that will be conducted at the facility. If other non-hazardous waste management operations occur at the site, describe them to provide context only.

General information about the company or its history is unnecessary, unless pertinent to the hazardous waste operation (for example, if the company previously operated under a different name or authorization number). Do not include any marketing or promotional material.

2.0 HAZARDOUS WASTE MANAGEMENT DETAILS

2.1 Waste Types and Maximum Quantities

This section lists the types and maximum quantities of hazardous waste proposed for storage, treatment and recycling. Note: where there are discharges, the maximum rates for waste discharges are to be listed in section 2.4.

The waste name must conform to the definition of hazardous waste within the HWR (refer to HWR Section 1, hazardous waste definition; paragraphs (a) through (i)). Acceptable waste names include TDG classes and shipping names according to the hazardous waste definition, paragraph (a)(ii) and waste names listed in the hazardous waste definition, paragraphs (b) through (i). For non-TDG regulated wastes, the common waste name should also be included in brackets.

Examples of acceptable waste names or types include:

- 1) Waste gasoline, UN 1203, class 3.

Explanation: "gasoline" is a dangerous goods and meet the criteria for TDG class 3, meeting hazardous waste definition (a).

- 2) Waste flammable liquids (gasoline, diesel, solvents), class 3.

Explanation: generic name would cover all these types of liquids that fall under class 3 and they would likely be managed in the same way.

- 3) Waste oil (oil filters)

“Waste oil” meets hazardous waste definition (d), and “oil filters” is the common name.

- 4) Leachable Toxic Waste (metals, soil)
“Leachable Toxic Waste” meets hazardous waste definition (g), “metal” is not an example of the contaminant but for the purpose of identifying the waste being managed, it would cover most metals. “Soil” is the media; another example of media could be wastewater. It is possible that there is a need to identify the specific contaminant of concern, especially when managing leachable toxic waste containing different metals.
- 5) Biomedical Waste (clinical and laboratory waste sharps)
“Biomedical Waste” meets hazardous waste definition (b.1), “clinical and laboratory waste sharps” is the description given in the definition of biomedical waste in the regulation.

Examples of unacceptable waste names:

- 1) Oily water
Explanation: Is unacceptable because it does not include one of the waste names listed in the hazardous waste definitions. The correct name is waste oil (wastewater with sludge) or waste oil (groundwater with sludge)
- 2) Drill cuttings (non-TDG regulated)
Explanation: As the waste is non-TDG regulated, you must include a waste name from hazardous waste definitions (b) through (i).
- 3) Waste Oil
Explanation: if the waste contains more than 50 ppm of PCB, the waste oil must be named PCB Waste. If the waste oil contains less than 50 ppm of PCB but more than 2 ppm of PCB, the concentration of PCB should be indicated. This is because managing waste oil or any other waste containing between 2 to 50 ppm needs to meet additional federal requirements. The correct name is waste oil (liquid, containing 45 ppm PCB)
- 4) Non-TDG regulated wastes
Explanation: this is not a waste name; it does not identify the waste at all
- 5) N.O.S.
Explanation: this is not a waste name; it does not identify the waste at all.

2.2 Residual Waste Generation

Residual wastes are those produced at the facility through storage, treatment or recycling processes. For example, these may include tank bottoms, catch basin sludge or ash from an incinerator. All residual wastes generated at the facility must be described in this section. Also describe how the wastes are managed.

Note: Any hazardous wastes that are generated at the facility must be included in the types and amounts listed in Table 1 of the Operational Plan Template.

2.3 Works at the Site

Clearly describe the works that will be used for hazardous waste storage, treatment and recycling activities. This section may be used during facility inspections to ensure that works at the site in use for hazardous waste are limited to those authorized through approved plans. The location of these works should be identifiable in the site plan in the Plans and Specifications.

Explanations of the columns in Table 2 of the Operational Plan Template are as follows:

- Storage / treatment / recycling equipment – indicate what the equipment is. For storage this may include tanks, barrels, bins, totes, sludge pits (in-ground tanks), etc. For storage equipment, also indicate the construction material (e.g., steel, polyethylene, concrete, etc.)
- Storage capacity – state the maximum storage capacity for the container. Ensure that the units uses the International System (SI) of Units (i.e., metric). For barrels, drums, totes, or similar individual storage containers less than 1,000 L each indicate the total capacity for all containers stored in one area (e.g., within a warehouse you may have capacity for 20,000 L, stored in 205 L drums). For any row in Table 2 that is being used to describe a treatment or recycling process only, indicate “N.A.” (for not applicable) in this cell.
- Treatment / recycling process – state the name of the treatment or recycling process (e.g., filter crushing, oily water treatment, sterilization, etc.). For any row in Table 1 that is being used to describe a storage equipment only, indicate “N.A.” in this cell. An approved demonstration trial does not mean that the treatment process is approved; treatment processes are approved in the operational plan.

- **Hazardous Waste type** – specify the types of hazardous wastes that may be stored, treated or recycled in a given equipment. Ensure waste names match those provided in Table 1.
- **Location** - Clearly indicate where the equipment is located. Differentiate between indoor storage areas (e.g., warehouse, shed, trailer) and outdoor storage areas (e.g., covered pad, etc.). Ensure that all equipment listed in this section are clearly shown on the required site plan in the Plans and Specifications.

An example of a completed Table 2 of the Operational Plan Template is provided below for a facility storing waste oil, crushing oil filters, and separating waste oil sludge. This is only an example of how to fill out the table and is not prescriptive of what a facility should use for storage, treatment, or recycling.

Example Table 2: Works at the Site

Storage / Treatment / Recycling Equipment	Storage Capacity (L or kg)	Treatment / Recycling Process	Waste Type Stored / Treated / Recycled	Location
<i>Barrels – steel</i>	<i>20,000 L</i>	<i>N.A.</i>	<i>All waste types listed in Table 1</i>	<i>Warehouse, main bay</i>
<i>Tank – steel</i>	<i>50,000 L</i>	<i>N.A.</i>	<i>Waste oil - liquid</i>	<i>Outdoors adjacent to west side of warehouse</i>
<i>Crusher – [specify type]</i>	<i>N.A.</i>	<i>Oil filter crushing</i>	<i>Waste oil - filters</i>	<i>Warehouse, east bay</i>
<i>Sludge pit – concrete</i>	<i>1000 kg or L</i>	<i>Gravity separation</i>	<i>Waste oil - liquid and solid</i>	<i>Warehouse, west bay</i>

2.4 Operating Conditions for Treatment Processes

Describe the operating conditions that will be maintained in the treatment processes, for example temperature, retention time, pressure, reactant concentration, and concentration of contaminants in the waste.

2.5 Waste Discharges

In this section, describe any waste discharged from the facility in tabular format. This includes delisted material, but does not include hazardous waste transported off-site to authorized facilities.

The columns within Table 3 of the Operational Plan Template are explained below:

- Discharge Source – describe the source of the discharge (for example, filter crushing, oily water treatment, sterilization, solvent tank vents, etc.)
- Physical State of Discharge – indicate the physical state of the discharge: solid, liquid, or gas.
- Maximum discharge rate – the maximum discharge rate that will be authorized under the approved operational plan.
- Discharge method – indicate whether discharge will be continuous or in batches.
- Discharge location – specify where discharges are directed and discharge points on the site plan. For example:
 - for liquid (effluent) discharges, specify municipal effluent treatment works, industrial effluent treatment works, storm sewer, the name of the receiving water body (for discharges to surface water), or another location.
 - For solid wastes, specify the intended receiving site(s) whether on-site or off-site.
 - For air discharges, specify the location of the air output per the site plan.

3.0 MONITORING

There are several types of monitoring:

- Incoming waste characterization
- Waste discharge (waste and storm water run-off)
- Process
- Environmental (baseline and continuing)

3.1 Incoming Waste Characterization

All facilities are expected to have specific procedures in place to verify that the hazardous waste matches the description on the manifest and that only hazardous

wastes authorized to be received at the facility are accepted. Residual wastes generated at the facility are also expected to undergo characterization monitoring.

It is the responsibility of the applicant to outline the waste characterization program including the method and frequency of monitoring. The Ministry expects the following:

- There will be a waste characterization program for each type of waste accepted and generated at the facility, and
- The program will be specific; vague language will not be accepted.

The columns in Table 4 of the Operational Plan Template are explained below:

- Waste Name - This should match the waste names listed in Table 1, section 2.1 of the Operational Plan Template.
- Method of Characterization - Different types of hazardous wastes require different characterization methods. For some, a visual inspection may suffice (e.g., lead acid batteries), whereas for others, chemical analysis may be required (e.g., waste oil). Where chemical analysis is the method of characterization, indicate the parameters analyzed and the analytical method used.
- Frequency – The frequency of waste characterization monitoring must be per unit time or per unit waste-quantity received.

3.2 Waste Discharge Monitoring

It is critical that a qualified professional develops a monitoring program for waste discharges (for all of those listed in section 2.4). The monitoring program should specify the sampling frequency and the parameters analyzed.

The discharge quality from liquid (effluent) discharges must comply with the discharge standards in HWR Schedule 1.2. Other contaminants that apply should be included.

The monitoring program for air discharges from thermal treatment facilities must demonstrate compliance with HWR Schedule 2 along with any additional contaminants of concern not identified in Schedule 2. Other air discharges may require a monitoring program.

Delisting protocols specify the monitoring requirements for treated solids (residues) and therefore do not need to be described here. However, any other discharge monitoring for all other types of waste discharges arising from hazardous waste storage, treatment or recycling should be described in this section.

3.3 Storm Water Runoff Monitoring

Storm water runoff from the facility that enters storm sewers or the environment must meet the effluent criteria prescribed in HWR Column 2 of Schedule 1.2.

It is expected that storm water monitoring will be conducted if there is a potential for rainwater to be in contact with waste or waste storage, treatment or recycling works or equipment. It is critical that a qualified professional design the storm water monitoring program and consider the specifics of the site. The monitoring program must contain a sampling schedule that reflects the discharge volumes and the amount of precipitation received in the area.

The parameters to include in the program will depend on the hazardous wastes managed and the type of facility. For example, at facilities that manage hydrocarbons, sampling should include oil, toxicity and 5-day biochemical oxygen demand. At facilities that manage metals, sampling should include total metals and toxicity. If certain parameters from Schedule 1.2 are not included, a justification must be provided to support the proposed monitoring program. It is also desirable to include baseline sampling of all relevant Schedule 1.2 parameters prior to commencing discharge.

If the facility is entirely indoors such that the handling and storage of waste (including loading and unloading) is completely protected from weather, storm water monitoring may not be required. In this case, justification must be provided as to why storm water monitoring will not be conducted.

If storm water runoff is routed through an oil / water separator, it is recommended that you refer to section 6 of the Petroleum Storage and Distribution Facilities Storm Water Regulation (see BC Laws website) for guidance on oil / water separator management. (**Note:** the management procedures can be referenced as best management practices regardless of whether or not the regulation applies. Discharge criteria from HWR Schedule 1.2 must still be met.)

3.4 Process Monitoring for Treatment Processes

Describe how the operating conditions in the treatment process will be monitored. For example, a smelter will monitor and record temperature and pressure during operations on a continuous basis, proving that the approved operation conditions are being met.

3.5 Environmental Monitoring

Describe the baseline and environmental monitoring program. The scope and details of this monitoring program is site specific.

It is critical that an appropriate qualified professional design the environmental monitoring program. The qualified professional must demonstrate that the number and location of sampling stations, depth of monitoring wells (if applicable), parameters analyzed and sampling frequency are adequate to identify potential contamination of the surrounding environment. A certification statement should be provided by the qualified professional.

A qualified professional needs to provide a rationalization when no monitoring is recommended for groundwater, surface water, sediment, biological community, ambient air, or baseline monitoring. If discharges from the facility and/or resultant environmental monitoring is regulated by another jurisdiction this should be stated, and the relevant authorization number and/or legislation should be referenced.

3.5.1 Baseline Environmental Monitoring

The Ministry expects that facilities will conduct a baseline assessment to establish the environmental conditions at and surrounding the site prior to initiation of waste storage, treatment and recycling and any associated discharges. The baseline assessment may include geographical, hydrogeological, chemical and biological data, as described below.

➤ ***Geographical data***

This should include a description of subsurface soils and/or bedrock beneath the facility as well as a description of on-site and surrounding surface water bodies including rivers, creeks, ditches, lakes, etc., substrate composition, potential flow barriers and other relevant physical aspects of the site and surrounding area.

➤ ***Hydrogeological data***

This should include groundwater flow direction, groundwater table depth, and details of any confined or unconfined aquifers in the vicinity of the facility.

➤ ***Chemical data***

Baseline chemistry may be required for groundwater, surface water, sediment and/or ambient air. It may also be necessary to sample and analyze storm water runoff for baseline characterization. It is expected that facilities will conduct a complete baseline analysis of all of the relevant parameters listed in Schedule 1.2 and/or Schedule 2 as applicable for the environmental media of interest.

➤ ***Biological data***

Facilities that have potential to impact surface water bodies may require a baseline assessment of the aquatic and benthic communities that may be affected by waste discharges.

3.5.2 Environmental Monitoring Program

Routine environmental monitoring may include groundwater, surface water, sediment, biological community and/or ambient air, depending on the nature of waste management activities and site-specific conditions.

The environmental monitoring program should specify a frequency for periodic analysis of all environmental media sampled in the baseline assessment and relevant parameters listed in HWR Schedule 1.2 and/or 2.0. In addition, more frequent analysis of a subset of parameters and/or environmental media may be advisable.

The environmental monitoring program must describe sampling locations, parameters to be analyzed and sampling frequencies in the operational plan. Monitoring locations should be uniquely identified and shown on the site plan in the Plans and Specifications.

5.0 Reporting

In this section, describe that an annual report will be submitted and what it will contain. The *Operational Plan Template* contains the minimum content expected in an annual report.

The results from the environmental monitoring program should be interpreted by a qualified professional and included in the facility's Annual Report.

6.0 Auditing

In this section describe that an audit will be completed and submitted. The *Operational Plan Template* includes the minimum content expected from an audit.

7.0 Certification

Having a qualified professional certify your operational plan is **optional** except for the discharge and environmental monitoring programs where certification by a qualified professional is expected. However, having a qualified professional certify your operational plan will likely reduce application processing time.

The qualified professional must be registered in British Columbia with a relevant professional organization, acting under that organization's code of ethics and subject to disciplinary action by that organization. It is required that the qualified professional can reasonably be relied on to provide advice within the area of expertise applicable to the duty or function he/she is providing, through suitable education, experience, accreditation and knowledge.

Appendix A

Appendix A is the repository for copies of all approved demonstration trials and delisting protocols for the facility and may be modified by adding approved demonstration trials and/or delisting protocols without requiring an amendment to the operational plan. However, an updated operational plan must be submitted for approval if other sections of the operational plan change. For example, if there are changes to the types or maximum quantities of hazardous waste stored, treated, recycled and/or discharged; the list of works at the site, and to the discharge or environmental monitoring programs described in the body of the plan.

The first page of Appendix A should contain two tables as shown in the *Operational Plan Template*.