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# Guide for Reporting to the National Pollutant Release Inventory (NPRI) **2014 and 2015**

*Canadian Environmental Protection Act, 1999 (CEPA 1999)*



Canada



# Guide for Reporting

to the National Pollutant Release Inventory (NPRI)

# 2014 and 2015

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## Contact Information

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For more information on the National Pollutant Release Inventory (NPRI), including guidance materials, annual summary reports and access to NPRI data, consult the NPRI website at [www.ec.gc.ca/inrp-npri](http://www.ec.gc.ca/inrp-npri). Questions and requests for assistance can be directed to Environment Canada using the “Contact the NPRI” form on the NPRI website ([www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=D212BD29-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=D212BD29-1)) or through the following:

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### Disclaimer

Should any inconsistencies be found between this guide and the official *Canada Gazette*, Part I Notice with respect to substances in the National Pollutant Release Inventory for 2014 and 2015, published on July 12, 2014, the Notice will prevail.

Cat. No.: En81-1/2015E-PDF  
ISSN 1480-6622

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## Acknowledgements

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Special thanks to: Jennifer Underhill, Lisa Swain, Jody Rosenberger, Shaleen Humphreys, and Clarisse Kayisire.

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## 1. Introduction

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The National Pollutant Release Inventory (NPRI) is Canada's legislated, publicly accessible inventory of pollutant releases, disposals and recycling. Sections 46–53 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) contain information-gathering provisions that allow the Minister of the Environment to require reporting of information on substances. The provisions also require the Minister to establish and publish a national inventory of releases and transfers of pollutants. These provisions under CEPA 1999 form the primary legislative basis for the NPRI. The NPRI reporting requirements for the 2014 and 2015 reporting years were published in the Notice with respect to substances in the National Pollutant Release Inventory for 2014 and 2015 in the *Canada Gazette*, Part I, on July 12, 2014.

NPRI information is a major starting point for identifying and monitoring sources of pollution in Canada, and in developing indicators for the quality of our air, land and water. The NPRI helps determine if regulatory or other action is necessary to ensure reductions, and if so, the form that action should take. The NPRI provides Canadians with annual information on industrial, institutional, commercial and other releases and transfers in their communities.

This guide is designed to assist facility owners and operators in understanding the NPRI reporting requirements, and in determining if they are required to report to the NPRI. It provides a general overview of the reporting requirements for all NPRI substances, and provides information on additional guidance materials that address specific sectors, activities and substances.

The requirements described in this guide apply to the 2014 and 2015 calendar years. Note that each year must be considered individually when determining if thresholds are met and if reporting is required. Quantities of substances that are released, disposed of and recycled should be reported for each separate year, by each reporting deadline.



## 2. Reporting Deadline and Changes to Reporting Requirements

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### 2.1 Reporting Deadline

Reporting is mandatory for facilities that meet the requirements of the NPRI Notice published in the *Canada Gazette*, Part I.

The deadline for reporting to the NPRI for the 2014 calendar year is June 1, 2015.

The deadline for reporting to the NPRI for the 2015 calendar year is June 1, 2016.

### 2.2 Changes to the Reporting Requirements for 2014 and 2015

Several changes to reporting requirements have been made, which are in effect as of the 2014 calendar year. Information on the rationale for these changes is available on the NPRI Consultations web page ([www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=D994FD23-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=D994FD23-1)).

#### Substances Added to the NPRI Substance List

2-(2-Methoxyethoxy)ethanol (CAS RN 111-77-3) has been added to the list of Schedule 1, Part 1, Group A substances (10-tonne mass threshold, 1% concentration threshold).

Thallium (and its compounds) has been added to the list of Part 1, Group B substances (100 kilogram mass threshold, 1% concentration threshold).

#### Reduced Thresholds

Eight substances or substance groups have been moved from Part 1, Group A to Part 1, Group B. The mass threshold for these substances has been reduced from 10 tonnes, and in some cases the concentration threshold has been reduced from 1%.

#### Substances that Have Been Moved from Part 1 Group A to Part 1 Group B

Substance Name	CAS RN	Mass Threshold (kilograms)	Concentration Threshold (%)
Acrylonitrile	107-13-1	1000	1
Bisphenol A	80-05-7	100	1
Hydrazine (and its salts)	302-01-2	1000	1
Isoprene	78-79-5	100	1
Nonylphenol and its ethoxylates	n/a	1000	1
Toluene-2,4-diisocyanate	584-84-9	100	0.1
Toluene-2,6-diisocyanate	91-08-7	100	0.1
Toluenediisocyanate (mixed isomers)	26471-62-5	100	0.1

## Quinoline

Quinoline (CAS RN 91-22-5) has been moved from Part 1, Group A to Part 2 (polycyclic aromatic hydrocarbons). The 10-tonne mass threshold has been reduced to 50 kilograms for total polycyclic aromatic hydrocarbons, including quinoline, and 5 kilograms for reporting quinoline itself.

## Deleted Substances

Five substances have been removed from the Part 1, Group A list. NPRI reporting requirements no longer apply to these substances:

- Allyl chloride (CAS RN 107-05-1)
- C.I. Solvent Orange 7 (CAS RN 3118-97-6)
- 3-Chloro-2-methyl-1-propene (CAS RN 563-47-3)
- Ethyl chloroformate (CAS RN 541-41-3)
- 1-Bromo-2-chloroethane (CAS RN 107-04-0)

## Total Reduced Sulphur

The requirement to report releases to land and water, disposals and transfers for recycling for total reduced sulphur has been removed. Only releases of total reduced sulphur to air are required to be reported.

## Underground Releases

Effective for 2014 reporting, it has been made explicit that releases to land are to include both underground and surface releases. The quantity released to land is to be stated separately by spills, leaks or other releases to land that are not disposals. In addition, if a quantity is reported under the category “other releases to land that are not disposals,” the nature of the releases must be specified.

The quantity to be reported as a land release for a given reporting year is the quantity of the substance that was released during that year and not recovered. In the event that a portion of the release is recovered prior to the end of the calendar year, the net quantity released is to be reported (the quantity released minus the quantity recovered). If the quantity recovered is greater than the quantity released during a calendar year, then net releases should be reported as zero (i.e., negative net releases cannot be reported). In some cases, releases to land are recovered over a number of years. In these cases, the net quantity released in each calendar year should be reported (even if that quantity is zero).

Comments on the quantity recovered during the year should also be reported. Providing comments on recovery quantities is important for an accurate understanding of the quantity of the substance remaining in the environment after its release.

Quantities that are released to land, recovered and then disposed of or transferred off-site for recycling must also be reported accordingly.

### 3. General Information and Reporting Requirements

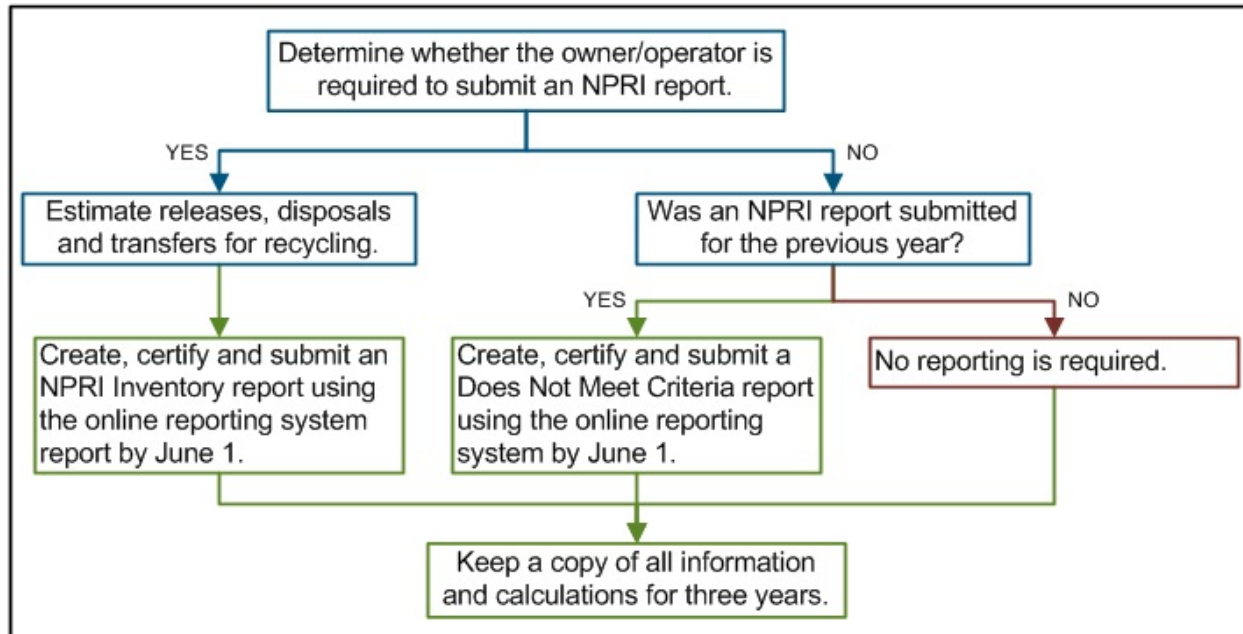
#### 3.1 Introduction

This section summarizes the process for reporting to the NPRI, describes the legal basis for the NPRI, provides an overview of the NPRI reporting requirements, provides definitions of terms that are used throughout the guide, and describes the information to be reported that applies to more than one group of substances. This section also provides information on additional resources that are available to assist in determining if a report is required for a facility, and on the methods for estimating quantities of releases, disposals and transfers for recycling. Details on reporting requirements and information to be reported that are specific to Parts 1 through 5 substances are presented in sections 4 through 9.

#### 3.2 Process for Reporting to the National Pollutant Release Inventory

The NPRI reporting process is outlined in Figure 1. An NPRI report can be created and submitted to Environment Canada using the online reporting system, available through the NPRI website at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=F6300E68-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=F6300E68-1). Step-by-step instructions on the process of creating and submitting a report are available in the online reporting system.

**Figure 1. Process for Reporting to the National Pollutant Release Inventory**



### 3.3 The *Canada Gazette* Notice – The Legal Basis for the National Pollutant Release Inventory

The legal basis for the NPRI is the Notice with respect to substances in the National Pollutant Release Inventory for 2014 and 2015 published in the *Canada Gazette*, Part I (hereafter referred to as “the Notice”). The Notice is published under the authority of subsection 46(1) of CEPA 1999, and specifies that any person who owned or operated a facility during the 2014 or 2015 calendar years, under the conditions prescribed in the Notice, must provide certain information to the Minister of the Environment by the reporting deadline for that calendar year.

The owner or operator of that facility as of December 31<sup>st</sup> of a given year is required to report to the NPRI, whether or not the ownership of a facility changes during the calendar year. If operations at a facility are terminated during the calendar year, it is the last owner or operator of the facility that is required to report.

Companies that meet reporting requirements but fail to report, fail to report on time, or knowingly submit false or misleading information, face penalties as listed under sections 272 and 273 of CEPA 1999. Facilities that did not meet the reporting criteria or were exempt from reporting in previous years should review their status to determine whether they are required to report for the current reporting year.

The Notice encompasses a wide range of substances and groups of substances, reporting criteria and requirements. It is divided into four schedules with several parts in each, as described in Table 1. For the complete list of NPRI substances, consult the NPRI website at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1).

**Table 1. Overview of the National Pollutant Release Inventory *Canada Gazette* Notice**

Schedule	Part	Contents
1 – List of Substances	1	Lists 233 substances and groups of substances and is divided into groups A and B, based on thresholds and information to be reported (referred to as Part 1A and Part 1B substances)
	2	Lists 30 individual polycyclic aromatic hydrocarbons (PAHs)
	3	Lists 7 dioxins, 10 furans and hexachlorobenzene (HCB)
	4	Lists 7 criteria air contaminants (CACs)
	5	Lists 75 selected volatile organic compounds (VOCs) and groups of VOCs with additional reporting requirements (speciated VOCs)
2 – Definitions	n/a	Provides definitions of the terms used in the Notice
3 – Reporting Criteria	General	General reporting criteria, including the reporting deadline, the employee threshold, and exclusions and exemptions
	1	Criteria for substances listed in Schedule 1, Part 1
	2	Criteria for the PAHs listed in Schedule 1, Part 2
	3	Criteria for dioxins, furans and HCB listed in Schedule 1, Part 3
	4	Criteria for CACs listed in Schedule 1, Part 4
	5	Criteria for speciated VOCs listed in Schedule 1, Part 5

**Table 1 continued**

Schedule	Part	Contents
4 – Information to be Reported	General	General information required to be reported and manner of reporting
	Facility Information	Information to be reported on the facility, including name, identification codes, contacts and activities
	1	Information to be reported for substances listed in Schedule 1, Part 1
	2	Information to be reported for PAHs listed in Schedule 1, Part 2
	3	Information to be reported for dioxins, furans and HCB listed in Schedule 1, Part 3
	4	Information to be reported for CACs listed in Schedule 1, Part 4
	5	Information to be reported for speciated VOCs listed in Schedule 1, Part 5

### 3.4 Overview of the National Pollutant Release Inventory Reporting Requirements

This section provides a brief overview of what facilities are required to report and the reporting thresholds, which are described in detail in Sections 4 through 9 of this Guide. In general, an NPRI report is required for any facility:

- where employees work a total of  $\geq 20\,000$  hours (the employee threshold) (see section 3.6.1);
- where specified activities to which the employee threshold does not apply take place (see section 3.6.2);
- where the employee threshold is not met, but the reporting criteria for CACs are met; or
- that is a pipeline installation (defined in section 3.5.1)

and that meets any of the other reporting criteria (e.g., mass, concentration or activity thresholds).

The groups of substances have various thresholds (mass, concentration, activity, etc.) that are specified in Schedule 3 of the Notice. The thresholds are summarized in Table 2.

**Table 2. Overview of National Pollutant Release Inventory Reporting Thresholds**

Part	Substances	Mass Threshold	Thresholds
1A	<ul style="list-style-type: none"> <li>• 217 substances and groups of substances</li> </ul>	10 tonnes	<b>TOTAL</b> quantity of a substance: <ul style="list-style-type: none"> <li>• manufactured, processed or otherwise used at a concentration by weight of <math>\geq 1\%</math>, <b>plus</b></li> <li>• incidentally manufactured, processed or otherwise used as a by-product at any concentration, <b>plus</b></li> <li>• contained in tailings disposed of during the calendar year at any concentration, <b>plus</b></li> <li>• contained in waste rock that is not clean or inert and that is disposed of during the calendar year, at a concentration by weight of <math>\geq 1\%</math></li> </ul>

Table 2 continued

Part	Substances	Mass Threshold	Thresholds
1B	<ul style="list-style-type: none"> <li>16 substances and groups of substances</li> </ul>	5 to 1000 kilograms, depending on the substance	<b>TOTAL</b> quantity of a substance: <ul style="list-style-type: none"> <li>manufactured, processed or otherwise used at a concentration by weight greater than or equal to the concentration threshold (0.000005% to 1%, depending on the substance, or regardless of concentration for mercury), <b>plus</b></li> <li>incidentally manufactured, processed or otherwise used as a by-product at any concentration, <b>plus</b></li> <li>contained in tailings disposed of during the calendar year at any concentration, <b>plus</b></li> <li>contained in waste rock that is not clean or inert and that is disposed of during the calendar year, at any concentration</li> </ul>
2	<ul style="list-style-type: none"> <li>30 polycyclic aromatic hydrocarbons (PAHs)</li> </ul>	50 kilograms	<b>TOTAL</b> of the quantities of PAHs at any concentration: <ul style="list-style-type: none"> <li>incidentally manufactured and released, disposed of or transferred for recycling, <b>plus</b></li> <li>contained in tailings disposed of during the calendar year</li> </ul>
		Any quantity	Where wood preservation using creosote takes place, reporting is mandatory regardless of quantities or concentrations.
3	<ul style="list-style-type: none"> <li>7 dioxins</li> <li>10 furans</li> <li>Hexachlorobenzene (HCB)</li> </ul>	Any quantity	Where specified activities take place, reporting is mandatory regardless of quantities or concentrations.
4	<ul style="list-style-type: none"> <li>Carbon monoxide</li> <li>Nitrogen oxides</li> <li>Sulphur dioxide</li> <li>Total particulate matter</li> </ul>	20 tonnes	Quantity released to air (no concentration threshold applies)
	<ul style="list-style-type: none"> <li>Volatile organic compounds (VOCs)</li> </ul>	10 tonnes	
	<ul style="list-style-type: none"> <li>Particulate matter <math>\leq 10</math> micrometres (PM<sub>10</sub>)</li> </ul>	0.5 tonnes	
	<ul style="list-style-type: none"> <li>Particulate matter <math>\leq 2.5</math> micrometres (PM<sub>2.5</sub>)</li> </ul>	0.3 tonnes	
5	<ul style="list-style-type: none"> <li>75 speciated VOCs (individual VOCs, isomer groups and other groups and mixtures)</li> </ul>	1 tonne	Quantity released to air, provided that $\geq 10$ tonnes of total VOCs are released to air (no concentration threshold applies)

### 3.5 Definitions

A comprehensive glossary of terms and expressions used by the NPRI is available on the NPRI website at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=9264E929-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=9264E929-1). The following sections provide definitions for some of the most common terms and expressions.

#### 3.5.1 Facilities

The term “facility” refers to a contiguous facility, a portable facility, a pipeline installation or an offshore installation, as defined below. The reporting requirements for Part 1 substances apply to contiguous facilities and offshore installations. The requirements for Parts 2 and 3 substances apply

to contiguous, portable and offshore facilities. Parts 4 and 5 substance requirements apply to all four types of facilities: contiguous, portable, pipeline and offshore.

### **Contiguous facility**

A contiguous facility is defined as all buildings, equipment, structures and stationary items that are located on a single site, or on contiguous sites or adjacent sites, that are owned or operated by the same person and that function as a single integrated site, including wastewater collection systems that release treated or untreated wastewater into surface waters.

### **Portable facility**

A portable facility is defined as portable polychlorinated biphenyl (PCB) destruction equipment, portable asphalt plants and portable concrete batching plants. The definition applies where the facility can be entirely relocated for operation.

### **Pipeline installation**

A pipeline installation is defined as a collection of equipment, situated at a single site, used in the operation of a natural gas transmission or distribution pipeline. This definition includes pipeline compressor and storage stations along pipelines used to transport both raw and processed natural gas. Pipeline installations are subject only to the reporting criteria for CACs (Part 4 substances) and speciated VOCs (Part 5 substances).

### **Offshore installation**

An offshore installation is defined as an offshore drilling unit, production platform or ship, or subsea installation that is related to the exploitation of oil or natural gas and that is attached or anchored to the continental shelf of Canada or within Canada's exclusive economic zone.

## **3.5.2 Reporting Thresholds**

### **Manufacture**

The term “manufacture” means to produce, prepare or compound an NPRI substance. It also includes the incidental production of an NPRI substance as a by-product.

#### *Examples of manufacture*

The production of chlorine dioxide by a chemical plant is an example of manufacturing. The production of hydrochloric acid during the manufacture of chlorofluorocarbons is an example of the incidental manufacture of hydrochloric acid.

### **Process**

The term “process” means the preparation of an NPRI substance, after its manufacture, for distribution in commerce. Processing includes the preparation of a substance with or without changes in physical state or chemical form. The term also applies to the processing of a mixture or



formulation that contains an NPRI substance as one component, the processing of articles (see below for the definition of article), and the processing of a substance as a by-product.

#### *Examples of process*

The use of chlorine to manufacture hypochloric acid (not an NPRI substance) is an example of processing of chlorine. The use of toluene and xylene to blend paint solvent mixtures is an example of processing without changes in chemical form.

#### **Other use or otherwise used**

The terms “other use” and “otherwise used” mean any use, disposal or release of an NPRI substance that does not fall under the definitions of manufacture or process. This includes the use of the substance as a chemical processing aid, manufacturing aid or some other ancillary use, and the other use of by-products. Certain uses of substances are excluded. These are listed in Table 4 below.

#### *Example of other use*

The use of trichloroethylene in the maintenance of manufacturing and process equipment is considered an other use of that substance.

#### **By-product**

Before the by-product requirements were created, large-volume, low-concentration releases and disposals were not being reported to the NPRI because of the concentration thresholds for Part 1 substances. The by-product requirements were created to ensure that these releases and disposals are reported since the overall quantities of by-products can be significant, even though their concentration may be low.

The term “by-product” refers to the quantity of an NPRI Part 1 substance that is ***incidentally manufactured, processed or otherwise used*** at the facility **at any concentration**, and **released to the environment or disposed of**. The quantity of a substance that is recycled or that remains in the final product is not considered to be a by-product for the purpose of the NPRI threshold calculation.

In general, if a quantity of a substance is ***intentionally manufactured, processed or otherwise used*** at a facility, then that quantity of the substance is **not a by-product**, even if it is unintentionally manufactured, processed or otherwise used at another step in the process.

The quantity of a substance that is a by-product must be included in the calculation of the reporting threshold, regardless of concentration. The by-product requirements only apply to Part 1 substances and are only used for the purpose of determining whether or not the mass threshold for a substance has been met.

#### *Examples of by-products*

Hydrogen fluoride is incidentally manufactured and released during aluminum smelting. Therefore, the hydrogen fluoride is a by-product and must be included in the calculation of the reporting threshold, regardless of concentration.



Manganese and nickel are incidentally present in coal and are therefore by-products of the coal combustion process. During combustion, a portion of these metals is concentrated in the ash, which is disposed of, and a portion of the metals is released in stack emissions. The weight of the metal released from the stack and in the ash sent for disposal must be included in the calculation of the reporting threshold, regardless of concentration.

Metal cuttings, sent for disposal, contain alloyed chromium and nickel at a concentration of less than 1%. The chromium and nickel are essential components of the alloy; therefore, they are not incidentally processed and are not considered to be by-products. Consequently, the chromium and nickel in the metal cuttings do not need to be included in the calculation of the reporting threshold, because the substances are present at a concentration less than the concentration threshold of 1%.

## **Article**

An “article” is defined as a manufactured item that does not release an NPRI substance when it undergoes processing or other use. When articles are processed or otherwise used, and there are no releases, or the releases are recycled with due care, the NPRI substances in that article do not need to be included in the threshold calculation.

Exercising due care means that the facility generated less than one kilogram of a Part 1A substance as waste during the year. There is no quantitative measure of due care in recycling Part 1B substances, because even minimal releases of these substances can cause significant adverse effects and can reasonably be expected to contribute to exceeding their low thresholds. Therefore, if an article containing a Part 1B substance is processed or otherwise used and there are releases, the Part 1B substance in the article must be included in the threshold calculation.

### *Examples of articles*

In an instance where a metal reclamation facility accepts spent lead-acid batteries for recycling, and the batteries are broken into pieces in a hammer mill and their parts (sulphuric acid, lead and plastic) are subsequently reclaimed, the batteries lose their article status, because they are broken apart during the recycling process. The metal reclamation facility is now required to report any NPRI substances from these batteries if the thresholds are met.

A sealed glass bulb containing mercury used in a levelling switch meets the definition of an article. However, the quantity of mercury in the switch must be included in a facility’s calculation of the reporting threshold if the item loses its article status (e.g., the bulb is broken during waste management operations, thus allowing a release of mercury). As long as the bulbs remain intact, they are considered articles and are therefore not included in calculating the reporting threshold.

## **Tailings**

The term “tailings” is defined as the waste material, which may or may not be mixed with water, that remains after processing of ore or mined materials, in order to extract marketable components such as metals, minerals or bitumen. This can include ground rock material, sand, clay, process chemicals or residual metals, minerals or bitumen, petroleum coke (petcoke) and sulphur.

## Waste rock

“Waste rock” is rock that is removed in the mining process to provide access to the ore and is not further processed during the reporting year. Waste rock does not include unconsolidated overburden, which is defined as unconsolidated materials overlying the ore (or bitumen) deposit, including, but not limited to, soil, glacial deposits, sand and sediment.

### 3.5.3 Releases, Disposals and Transfers

For Part 1 substances, the quantity that is manufactured, processed or otherwise used (MPO) is used to determine whether or not reporting is required. However, **MPO quantities are not required to be reported to the NPRI**. Instead, the quantities of Parts 1-3 substances that are released, disposed of and transferred off-site for recycling are required to be reported. Only releases to air of Parts 4-5 substances are required to be reported. The categories for reporting of releases, disposals and recycling are defined below.

#### On-site releases

An on-site release is a discharge of a substance to the environment within the physical boundaries of the facility. This includes releases to air, surface waters and land. Routine releases (e.g., fugitive releases) and accidental or non-routine releases (e.g., spills) are included. Releases do not include on-site or off-site disposals or off-site transfers for recycling.

#### *Releases to air*

- Stack or point releases: releases from stack or point sources including stacks, vents, ducts, pipes or other confined process streams. Releases to air from pollution control equipment generally fall into this category.
- Storage or handling releases: releases to air from storage or handling of materials.
- Fugitive releases: releases that cannot be captured and releases that are unintentional, including
  - fugitive equipment leaks from valves, pump seals, flanges, compressors, sampling connections, open-ended lines, etc.
  - evaporative losses from surface impoundments and spills
  - releases from building ventilation systems
  - any other fugitive or non-point air emissions from land treatment, tailings, waste rock, storage piles, etc.
- Spills: accidental releases to air.
- Road dust: total particulate matter, PM<sub>10</sub> and PM<sub>2.5</sub> releases from road dust must be reported if vehicles travelled more than 10 000 vehicle-kilometres on unpaved roads at the facility.
- Other non-point releases: any other non-point releases to air that are not captured in the categories above.

#### *Releases to surface waters*

Releases to oceans, lakes, wetlands, rivers, streams, etc. are included.

- Direct discharges: direct discharges to surface waters. Discharges to sewers that do not feed into a wastewater treatment facility are considered to be releases to surface waters. Discharges to municipal or other off-site wastewater treatment facilities are not considered to be releases to surface waters. These discharges are reported as off-site transfers for treatment prior to final disposal.
- Spills: spills include any accidental releases to surface waters, normally occurring over a short period of time (hours or days).
- Leaks: leaks differ from spills in that they are chronic events, occurring over a comparatively long time (days, months, etc.).

### ***Releases to land***

Releases to land include surface and underground releases.

- Spills: spills include any accidental releases to land, normally occurring over a short period of time (hours or days).
- Leaks: leaks differ from spills in that they are chronic events, occurring over a comparatively long time (days, months, etc.).
- Other releases to land that are not disposals: net quantities of other releases to land that are not spills or leaks and are not for the purposes of disposal.

### **On-site disposals**

On-site disposals include the following:

- Landfill: total quantities of substances sent for final disposal to a designated landfill area located within the site boundaries.
- Land application: total quantities of substances sent for final disposal by application or incorporation into soil within the site boundaries.
- Underground injection: total quantities of substances disposed of by injection underground from within the site boundaries.
- Tailings and waste rock: net quantities of substances that are moved into an on-site area where tailings or waste rock are discarded or stored and further managed to reduce or prevent releases.

### **Off-site disposals**

Off-site disposals include total quantities that are transferred off the facility site for final disposal.

- Landfill: total quantities of substances sent for final disposal to a designated landfill area located outside the site boundaries.
- Land application: total quantities of substances sent for final disposal by application or incorporation into soil outside the site boundaries.
- Underground injection: total quantities of substances sent for final disposal by injection underground from outside the site boundaries.
- Storage off-site prior to final disposal
- Tailings and waste rock: quantities of substances that are transferred to an off-site area where tailings or waste rock are discarded or stored and further managed to reduce or prevent releases.

### **Off-site transfers for treatment prior to final disposal**

- Physical treatment: e.g., drying, evaporation, encapsulation or vitrification
- Chemical treatment: e.g., precipitation, stabilization or neutralization
- Biological treatment: e.g., bio-oxidation
- Incineration or thermal treatment, where energy is not recovered
- Treatment in a municipal sewage treatment plant

### **Off-site transfers for recycling and energy recovery**

Recycling refers to activities that keep a material or a component of the material from becoming a waste destined for final disposal. Recyclable materials may be cleaned, regenerated or reprocessed to their original specifications and reused for their original purpose. They may also be used for an entirely different purpose without any pre-treatment or modification. Components may be recovered or reclaimed from the recyclable material, or the material may be used as a fuel for energy recovery. The recyclable material may be used in the manufacture of another product. For the purposes of the NPRI, recycling also includes substances sent back to a manufacturer, supplier or recycler for reprocessing, repackaging, resale, or for credit or payment. For example, metal shavings or turnings that are sold to a recycler are considered to be transfers off-site for recycling.

- Energy recovery
- Recovery of solvents
- Recovery of organic substances (not solvents)
- Recovery of metals and metal compounds
- Recovery of inorganic materials (not metals)
- Recovery of acids or bases
- Recovery of catalysts
- Recovery of pollution abatement residues
- Refining or reuse of used oil
- Other recovery, reuse or recycling activities

## **3.6 Facilities to Which the National Pollutant Release Inventory Reporting Requirements Apply**

The NPRI reporting requirements apply to a facility:

- where the employee threshold is met (see section 3.6.1);
- where activities to which the employee threshold does not apply take place (see section 3.6.2);
- where the employee threshold is not met, but the reporting criteria for Part 4 substances are met; or
- that is a pipeline installation (defined in section 3.5.1)

and that meets any of the other reporting criteria (e.g., mass and concentration thresholds).

### 3.6.1 Employee Threshold

Facilities where the employees work a total of 20 000 hours or more during the calendar year (the employee threshold) are required to report to the NPRI, if the thresholds for at least one substance are met, or if an activity-based threshold is met. The employee threshold depends on the number of hours worked by all employees at the facility during the calendar year. This includes:

- all hours worked by individuals employed at the facility, including students, part-time and term employees;
- all hours worked by the owner(s) who performed work on-site at the facility;
- all hours worked by a person, such as a contractor, who performed work at the facility that is related to the operations of the facility; and
- all paid vacation and sick leave.

The employee threshold must be met by most facilities before they need to consider reporting for Parts 1 through 3 substances, unless activities to which the employee threshold does not apply (see section 3.6.2) take place at the facility.

### 3.6.2 Activities to Which the Employee Threshold Does Not Apply

If one or more of the activities listed in Table 3 take place at the facility, the owner/operator of the facility must report to the NPRI, regardless of the number of hours worked by employees (provided that other reporting criteria, such as mass and concentration thresholds [see Table 2], are also met). The employee threshold does not apply to these activities because they release significant quantities of NPRI substances to the environment, while not necessarily meeting the employee threshold. Descriptions of these activities are provided below.

In addition to the activities listed in Table 3, the employee threshold does not apply to facilities where stationary combustion equipment is operated, for the purposes of reporting Part 4 and 5 substances. Facilities that operate stationary combustion equipment must report for Parts 4 and 5 substances regardless of employee hours, provided the release thresholds are met.

**Table 3. Activities to Which the Employee Threshold Does Not Apply**

Activity
Non-hazardous solid waste incineration of $\geq 26$ tonnes of waste, including, but not limited to, conical burners and beehive burners
Biomedical or hospital waste incineration of $\geq 26$ tonnes of waste
Hazardous waste incineration
Sewage sludge incineration
Wood preservation (using heat or pressure treatment, or both)
Terminal operations
Discharge of treated or untreated wastewater from a wastewater collection system discharging an average of $\geq 10\,000\text{ m}^3/\text{day}$ into surface waters
Operations at pits or quarries where production is $\geq 500\,000$ tonnes

## **Incineration**

A waste incinerator is a device, mechanism or structure constructed primarily to thermally treat (e.g., combust or pyrolyze) waste for the purpose of reducing its volume, or destroying hazardous chemicals or pathogens present in the waste. This includes facilities where waste heat is recovered as a by-product from the exhaust gases of an incinerator (e.g., energy-from-waste incinerators), conical burners and beehive burners. This does not include industrial processes where fuel derived from waste is fired as an energy source, such as industrial boilers. For example, if bark, wood chips or other wood waste is used as fuel to fire a boiler, these activities are not considered energy-from-waste incinerators.

### ***Non-hazardous solid waste incineration***

Non-hazardous solid waste is any solid waste, regardless of origin, that, if not incinerated, might normally be disposed of in a non-secure manner (e.g., at a sanitary landfill site). It includes clean wood waste (i.e., waste from woodworking or forest product operations, including bark, where the wood waste has not been treated with preservative chemicals or decorative coatings), and residential and other municipal wastes.

### ***Biomedical or hospital waste incineration***

Biomedical or hospital waste is waste that is generated by:

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

Biomedical or hospital waste includes human anatomical waste, animal waste, microbiology laboratory waste, human blood and body fluid waste, and waste sharps. It does not include waste that is from animal husbandry, is household in origin, or is controlled in accordance with the *Health of Animals Act*. Household wastes or wastes that are generated in food production, general building maintenance and office administration activities of those facilities to which this definition applies are considered to be non-hazardous waste, not biomedical or hospital waste. For more information, consult [www.ccme.ca/files/Resources/waste/pn\\_1060\\_e.pdf](http://www.ccme.ca/files/Resources/waste/pn_1060_e.pdf).

### ***Hazardous waste incineration***

Hazardous waste includes wastes that are potentially hazardous to human health and/or the environment because of their nature and quantity, and that require special handling techniques. They are defined by taking into account the hazard criteria established under the *Transportation of Dangerous Goods Regulations* ([www.tc.gc.ca/eng/tdg/clear-tofc-211.htm](http://www.tc.gc.ca/eng/tdg/clear-tofc-211.htm)) as well as wastes and materials specifically listed in the Schedules of the *Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations* ([www.ec.gc.ca/lcpe-cepa/eng/regulations/detailReg.cfm?intReg=84](http://www.ec.gc.ca/lcpe-cepa/eng/regulations/detailReg.cfm?intReg=84)). This includes hazardous waste incinerated in a mobile incinerator temporarily located at a facility.

## ***Sewage sludge incineration***

Sludge is a semi-liquid mass removed from a liquid flow of wastes. Sewage sludge is sludge from a facility treating wastewater from a sewer system. The drying of sludge to reduce water content is part of the incineration stage.

## **Wood preservation**

Wood preservation is the use of a preservative for the preservation of wood by means of heat or pressure treatment, or both, and includes the manufacture, blending or reformulation of wood preservatives for that purpose. For more information, consult the *Guidance for Wood Preservation Facilities Reporting to the NPRI*, available at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=29B3E589-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=29B3E589-1).

## **Terminal operations**

Terminal operations are either (i) the use of storage tanks and associated equipment at a site used to store or transfer crude oil, artificial crude or intermediates of fuel products into or out of a pipeline; or (ii) the operating activities of a primary distribution installation, normally equipped with floating roof tanks, that receives gasoline by pipeline, railcar, marine vessel or directly from a refinery. Terminal operations do not include bulk plants or service stations.

## **Wastewater collection systems**

A wastewater collection system includes both the collection components (a system of sewers and/or ditches that convey sanitary or combined sewage for a community) and treatment components (a plant or process location that accepts collection-system flows for the purposes of removing substances from the wastewater). A wastewater collection system that discharges treated or untreated wastewater to surface waters is required to report if the annual average discharge rate is 10 000 cubic metres or more per day. Note that this discharge rate threshold does not apply to industrial wastewater treatment facilities. For more information, consult the *NPRI Guidance Manual for the Wastewater Sector*, available at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=86E3D932-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=86E3D932-1), and *Identification of Wastewater Treatment System Configuration and Process Characteristics*, available at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=57FBBE31-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=57FBBE31-1).

## **Pits and quarries**

A pit is an excavation that is open to the air, and any associated infrastructure, that is operated for the purpose of extracting sand, clay, marl, earth, shale, gravel, unconsolidated rock or other unconsolidated materials, but not bitumen.

A quarry is an excavation that is open to the air, and any associated infrastructure, that is operated for the purpose of working, recovering or extracting limestone, sandstone, dolostone, marble, granite or other consolidated rock.

Pits and quarries are only required to report if annual production is 500 000 tonnes or more. For more information on reporting for pits and quarries, consult *Pits and Quarries Guidance*, available at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=A9C1EE34-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=A9C1EE34-1).



## 3.7 Exemptions and Exclusions

### 3.7.1 Facilities Exempt from All National Pollutant Release Inventory Reporting Requirements

Two types of facilities are exempt from reporting to the NPRI:

- Facilities used exclusively for oil and gas exploration or the drilling of oil and gas wells. All activities from initial exploration until the well is put into production fall under the exemption; and
- Pits and quarries where annual production is < 500 000 tonnes.

### 3.7.2 Exclusions for All Substances

The quantity of a substance contained in any item listed in Table 4 should not be included when calculating the reporting threshold and when calculating and reporting releases, disposals or transfers for recycling.

The quantity of a substance that is manufactured, processed or otherwise used for the exploration for oil or gas and for the drilling of oil or gas wells should not be included when calculating the reporting threshold and when calculating and reporting releases, disposals or transfers for recycling. This exclusion applies to all activities from initial exploration until the well is put into production.

In addition, vehicle emissions (not including unpaved road dust) should not be considered when calculating the thresholds and when reporting releases, disposals or transfers for recycling. A vehicle is any mobile equipment that is capable of self-propulsion, including fleet vehicles and earth-moving equipment (e.g., loaders, dump trucks, forklifts, excavators and bulldozers).

**Table 4. Items Not Considered when Reporting to the National Pollutant Release Inventory**

Articles that are processed or otherwise used <sup>(1)</sup>
Materials used as structural components of the facility (buildings and other fixed structures), but not process equipment
Materials used in janitorial or facility grounds maintenance <sup>(2)</sup>
Materials used for personal use by employees or other persons
Intake water or intake air, such as water used for process cooling or air used either as compressed air or for combustion

(1) See section 3.5.2 for the definition of an article.

(2) This includes NPRI substances contained in fertilizers and pesticides used for grounds maintenance, and cleaning agents used for maintaining facility cleanliness. The maintenance of process equipment (e.g., cleaning manufacturing equipment with a solvent) is not excluded.

### 3.7.3 Activities Exempt from Reporting for Parts 1–3 Substances

The threshold calculation for a substance must exclude the quantity of a substance that is manufactured, processed or otherwise used in the activities listed in Table 5. In cases where a facility met the reporting criteria for a substance based on sources other than those listed in Table 5, the quantity of that specific substance from any exempt activities should also not be included when reporting releases, disposals or transfers for recycling to the NPRI.



A facility is exempt from reporting Parts 1 through 3 substances if the only source or use of that substance is from one or more of the activities listed in Table 5. Note, however, that these facilities are not exempt from reporting releases of Parts 4 and 5 substances from stationary combustion equipment.

**Table 5. Activities Not Considered when Reporting Parts 1–3 Substances**

Education or training of students (for example, universities, colleges and schools)
Research or testing
Maintenance and repair of vehicles (automobiles, trucks, locomotives, rail cars, ships or aircraft), except painting and stripping of vehicles or their components, or the rebuilding or remanufacturing of vehicle components <sup>(1)</sup>
Distribution, storage or retail sale of fuels, except as part of terminal operations <sup>(2)</sup>
Wholesale or retail sale of articles or products that contain the substance <sup>(3)</sup>
Retail sale of the substance <sup>(3)</sup>
Growing, harvesting or management of renewable natural resources
The practice of dentistry

- (1) Substances used for activities involving routine, scheduled and preventative maintenance of vehicles are exempt (e.g., repair, cleaning, replacement of lubricants/fluids). However, substances used in the painting or stripping of vehicles or vehicle components are subject to reporting. There is no exemption for activities that involve the removal, breakdown and total reconstruction of vehicle components (e.g., engines, landing gear, traction motors) using recovered or new parts, such that the rebuilt component is reinstalled or sold as an as-new replacement.
- (2) See section 3.5.2 for the definition of “terminal operations.” The exemption for distribution, storage or sale of fuels does not include terminal operations.
- (3) Materials or substances sent back to a manufacturer, supplier or recycler for reprocessing, repackaging, resale or for credit or payment are considered to be recycled, and the exemption for wholesale or retail sale does not apply.

### 3.7.4 Exclusions for Tailings and Waste Rock

Tailings and waste rock are defined in section 3.5.2. The following sections describe the exclusions for stable/inert constituents of tailings, unconsolidated overburden and inert waste rock. These exclusions apply only to substances **contained in** tailings and waste rock. If a substance is **released from** tailings or waste rock to air or water (e.g., in airborne dust or as effluent), the quantity of the substance released must then be included in threshold calculations.

#### Stable/inert constituents of tailings

Substances contained in certain materials in tailings should be excluded from threshold calculations and reporting (e.g., sand grains from bitumen mines or in-situ production of bitumen). In order to be excluded, these materials must:

- be inert;
- be inorganic; and
- not have been crushed or otherwise physically or chemically altered.

The exclusion applies only to the components of tailings that meet the above three criteria (i.e., if part of the tailings stream met the criteria, only that portion of the tailings would be excluded, and the remainder of the tailings would be included).

## Unconsolidated overburden

Substances contained in unconsolidated overburden should be excluded from threshold calculations and reporting. Unconsolidated overburden is unconsolidated materials overlying the ore or bitumen deposit, including, but not limited to, soil, glacial deposits, sand and sediment.

## Inert waste rock

Substances contained in inert or clean waste rock should be excluded from threshold calculations and reporting. Inert waste rock is defined as waste rock that:

- is inert or clean according to a federal or provincial operating permit; or
- has a sulphur concentration of  $\leq 0.2\%$ ; or
- has a sulphur concentration of  $> 0.2\%$ , and the ratio of neutralizing potential to acid-generating potential is  $\geq 3:1$ .

There is one exception to the exclusion for inert or clean waste rock: even if waste rock is inert or clean as defined above, the quantity of arsenic in waste rock cannot be excluded if the concentration of arsenic is  $> 12$  milligrams per kilogram of waste rock.

## 3.8 Methods of Estimation

Estimates of the quantity of a substance that is manufactured, processed or otherwise used, and of the quantity that is released, disposed of or transferred for recycling, may be based on one of the following methods:

- continuous emission monitoring systems
- predictive emission monitoring
- source testing
- mass balance
- site-specific emission factor
- published emission factor
- engineering estimates

A description of these methods is provided in the following sections. Examples using these estimation methods can be found in the NPRI Toolbox ([www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1)).

Information on releases, disposals and transfers for recycling needs to be reported if the owner/operator possesses the information or may reasonably be expected to have access to the information. The Notice specifies that if emissions are already monitored or measured under provincial or federal legislation or a municipal bylaw, those measurements must be used to report to the NPRI. If emissions are not monitored or measured under provincial or federal legislation or a municipal bylaw, reasonable efforts must still be undertaken to gather information on releases, disposals and transfers of a substance. What is “reasonable” depends on individual circumstances, but may include additional monitoring for NPRI substances.

In deciding whether additional efforts should be undertaken to generate new information for the purposes of NPRI reporting, the following factors, among others, should be considered:

- the health and environmental risks posed by a substance, including whether the substance has been declared toxic under CEPA 1999;
- the relative contribution of the industrial sector to releases, disposals and transfers for recycling of a substance in Canada;
- the relative contribution of the facility to releases, disposals and transfers for recycling of a substance in Canada; and
- the cost of additional monitoring.

### 3.8.1 Continuous Emission Monitoring Systems

Continuous emission monitoring systems (CEMS) record emissions over an extended and uninterrupted period. Once the concentration of a substance and the flow rate have been determined, emission rates can be calculated by multiplying the concentration by the discharge flow rate or volumetric stack gas flow rate. Annual emissions of the substance can then be estimated by multiplying the concentration by the annual flow rate of the discharged effluent or the gases in the stack or duct.

### 3.8.2 Predictive Emission Monitoring

Predictive emission monitoring (PEM) is based on developing a correlation between substance emission rates and process parameters (e.g., fuel usage, steam production, furnace temperature). PEM may be considered a hybrid of continuous monitoring, emission factors and stack tests. A correlation test must first be performed to determine the relationship between emission rates and process parameters. Emissions can then be calculated or predicted using process parameters to predict emission rates based on the results of the initial source test.

### 3.8.3 Source Testing

Source testing involves collecting a sample of the emission or effluent, then determining the concentration of one or more substances in the sample. The concentration of the substance(s) of interest is then multiplied by the volumetric flow rate to determine the quantity of the substance(s) emitted over time. Source testing of air emissions generally involves inserting a sampling probe into the stack or duct to collect a volume of exhaust effluent isokinetically. The substances collected in or on various media are subsequently analyzed. For liquid effluents, grab samples or 24-hour composite samples are extracted from the effluent stream.

### 3.8.4 Mass Balance

Mass balance involves applying the law of conservation of mass to a facility, process or piece of equipment. If there is no accumulation, all the materials that go into the system must come out. Releases are determined from the differences in input, output, accumulation and depletion of a substance. The general equation for a mass balance is:

$$M_{\text{in}} = M_{\text{out}} + M_{\text{accumulated/depleted}}$$

Where:

$M_{\text{in}}$  = Mass of compound in the raw material feed

$M_{\text{out}}$  = Mass of compound in the finished product and released to air, land and water  
 $(M_{\text{out}} = M_{\text{product}} + M_{\text{emitted}})$

$M_{\text{accumulated/depleted}}$  = Mass of compound accumulated or depleted in the system

The reliability of release estimates based on mass balances is dependent on the source type considered. Mass balance methods may be preferred for some releases, such as solvent use and loss. However, this method may not be suitable for many other sources, such as cases where chemical transformation of input streams occurs.

### 3.8.5 Site-Specific and Published Emission Factors

Generally, emission factors relate the quantity of substances emitted from a source to a common activity associated with those emissions. Emission factors may be published or developed by facilities using emission testing data and source-activity information. For a particular piece of equipment, specific emission factors may be available from the manufacturer or sales centre. The basic equations for determining emissions from emission factors are as follows:

$$E_x = BQ \times CEF_x \text{ or}$$
$$E_x = BQ \times EF_x \times \frac{100 - CE_x}{100}$$

Where:

$E_x$  = Emission of substance x (kg or other unit of mass)

BQ = Activity rate or base quantity (base quantity unit)

$CEF_x$  = Controlled emission factors of substance x (kg/BQ [dependent on any control devices installed])

$EF_x$  = Uncontrolled emission factors of substance x (kg/BQ)

$CE_x$  = Overall emission control efficiency of substance x (%)

### 3.8.6 Engineering Estimates

In many cases, sound engineering assessment is the most appropriate approach to determining process factors and base quantity values. Releases can be estimated from engineering principles and judgement by using knowledge of the chemical and physical processes involved, the design features of the source, and an understanding of the applicable physical and chemical laws. The reliability of these estimates depends on the complexity of the process and the level of understanding of its physical and chemical properties. To apply an engineering assessment method, follow these four basic principles:

1. Review all data pertaining to the specific source and to the industrial sector in general.
2. Use this data to provide gross approximations—and refine the approximations using sound engineering principles as data become available, in order to provide more accurate estimations.
3. Whenever possible, use alternate methods of calculation to cross-check each level of approximation.
4. Employ good record keeping.

### 3.8.7 Method Detection Limit

In NPRI reporting, there are several situations in which the issue of measurements below the method detection limit (MDL) arises. The MDL is the smallest concentration of the substance under analysis (i.e., the analyte) that produces an instrumental response and that meets all analyte detection and identification criteria of a specified test method. An indication that a reportable substance is below the MDL is not equivalent to stating that the substance is not present. If it is known that the substance is present, a concentration equivalent to half of the MDL should be used.

In a year where multiple measurements of the concentration of a substance in a given process stream are all below the MDL, and there is no other reason to believe that the substance is present, it can be assumed that the concentration of the substance in that process stream is zero.

In a year where multiple measurements are taken, and some measurements indicate that the concentration is above the MDL and some indicate that it is below the MDL, there is reason to assume that the substance is present. Therefore, a value of half the MDL should be used for those measurements where the concentration is below the MDL.

### 3.9 Guidance Documents and Tools

Information required to perform threshold calculations and to estimate releases, disposals and transfers for recycling of NPRI substances is available from a variety of sources, including Environment Canada, the U.S. Environmental Protection Agency (EPA) and industry associations. These resources can be accessed through the NPRI Toolbox at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1). Useful information can also be found in Material Safety Data Sheets, and in permits and certificates of approval.

The NPRI Toolbox provides a number of tools:

- General Guidance
- General Information on Emission Factors and Emission Estimation Techniques
- Useful Equations and Conversion Factors
- Example Calculations
- Software
- Information on Fuel Combustion and Fugitive Emission Sources
- Sector-Specific Information
- Miscellaneous Resources and Other Relevant Links

The sections on fuel combustion and fugitive emission sources and the sector-specific pages of the NPRI Toolbox include links to calculation spreadsheets developed for specific activities and sectors. When information (such as production quantities or fuel used) is entered, these spreadsheets will automatically calculate releases of NPRI substances.

In addition to this guide, Environment Canada, the U.S. EPA and various industry associations have developed substance-, activity- and sector-specific guidance documents to assist in reporting to the NPRI. These resources can be accessed through the NPRI Toolbox at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1).

### 3.10 General Information to Be Reported

#### 3.10.1 Contact Information

For each of the following, the name, position, mailing address, telephone number and email address must be provided:

- *Technical contact*: the person who prepared the report and who will be able to answer any questions pertaining to its contents. All correspondence from Environment Canada

regarding the NPRI will be sent to the technical contact if no coordinator (see below) is identified.

- *Public contact* (if any): the person responsible for answering any questions from the public concerning the report. This name will appear on the NPRI website as the contact for the facility. If a public contact is not identified, the name of the coordinator, or technical contact if no coordinator is identified, will appear instead.
- *Coordinator* (if any): the person who is responsible for preparing and submitting NPRI reports for more than one facility for the same company. The coordinator is responsible for answering any questions concerning all of the NPRI reports he/she filed. All NPRI correspondence from Environment Canada will be sent to the coordinator, if one is identified.
- *Certifying official*: the person who is legally responsible for the contents of the NPRI report. The certifying official is usually the owner or operator, or a company official authorized to act on his/her behalf.
- *Independent contractor* (if any): if an independent contractor prepared the report, contact information must be provided, including the name of the contracting company.

It is important that contact and ownership information be kept up-to-date using the online reporting system or by contacting Environment Canada, if:

- there is a change in the name, address, telephone number or email address of the contacts identified for the facility; or
- there is a change in the owner or operator of a facility.

### 3.10.2 Facility Information

Table 6 summarizes the general information that must be provided for all facilities that report to the NPRI. Other facility information may also be required, depending on the type of facility and the substances reported.

## 3.11 Other Requirements

### 3.11.1 Statement of Certification

A Statement of Certification (SOC) must be electronically signed and submitted with the NPRI report using the online reporting system. The certifying official should verify that the information submitted is true, complete and accurate, and acknowledge that the data will be made public. The certifying official is legally responsible for the contents of the NPRI report.

### 3.11.2 Record Keeping

Pursuant to subsection 46(8) of CEPA 1999, the owner/operator of a facility is required to retain copies of all information on which their report is based, including any calculations, measurements and other related data, for a period of three years. This information must be kept at the facility or at the principal place of business in Canada of the owner/operator of the facility to which the information relates, for a period of three years.

**Table 6. Facility Information Required to Be Reported to the National Pollutant Release Inventory**

Type of Information	Information to Be Reported
Facility name and location	<ul style="list-style-type: none"> <li>Name of the facility</li> <li>Address of the physical location of the facility (e.g., a civic address, a legal land description, or just a description if no other type of physical address is applicable [e.g., for an offshore installation])</li> <li>Latitude and longitude coordinates of the facility if the facility is reporting for the first time or if the facility is portable</li> </ul>
Employees	<ul style="list-style-type: none"> <li>Number of full-time employees</li> </ul>
Organization (company)	<ul style="list-style-type: none"> <li>Legal and trade name of the facility's company</li> <li>Mailing address</li> <li>Dun &amp; Bradstreet (D-U-N-S) Number<sup>(1)</sup></li> <li>Federal business number<sup>(2)</sup></li> </ul>
Parent companies (if any)	<ul style="list-style-type: none"> <li>Legal names of any Canadian parent companies and their percentage of ownership</li> <li>Civic addresses of the parent companies</li> <li>D-U-N-S Numbers<sup>(1)</sup> of the parent companies</li> <li>Federal business numbers<sup>(2)</sup> of the parent companies</li> </ul>
NPRI identification number	<ul style="list-style-type: none"> <li>Unique identifier provided by Environment Canada and used for reporting to the NPRI</li> </ul>
North American Industry Classification System (NAICS) Code <sup>(3)</sup>	<ul style="list-style-type: none"> <li>6-digit NAICS Canada code of the facility</li> </ul>
Pollution prevention plan	<ul style="list-style-type: none"> <li>Whether and why a pollution prevention plan was prepared</li> <li>Whether an existing pollution prevention plan was updated</li> <li>Whether the plan addressed substances, energy conservation or water conservation</li> </ul>

(1) A Dun & Bradstreet (D-U-N-S) number is a unique nine-digit identification number for a single business entity.

(2) A federal business number is a nine-digit registration number issued by the Canada Revenue Agency (CRA) to Canadian businesses that register for one or more of the following: corporate income tax; importer/exporter account number; payroll deductions; or goods and services tax. This number can be found on all forms issued to a business by the CRA. The first nine digits that appear on these forms is the federal business number.

(3) NAICS is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. For more information, see the Statistics Canada website: [www.statcan.gc.ca/concepts/industry-industrie-eng.htm](http://www.statcan.gc.ca/concepts/industry-industrie-eng.htm).



## 4. Reporting for Part 1A Substances – Core Substances

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Part 1A lists 217 substances and groups of substances of concern, most of which have been listed on the NPRI since its inception. These substances are commonly referred to as the “core substances,” and comprise the majority of the NPRI substance list. For the complete list of NPRI substances, consult the NPRI website at [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1).

### 4.1 Reporting Criteria for Part 1A Substances

In general, any person who owns or operates a contiguous facility or offshore installation must submit an NPRI report for a Part 1A substance if both of the following criteria are met:

1. employees work a total of  $\geq 20\,000$  hours, or activities to which the employee threshold does not apply (see Table 3) take place at the facility; and
2. the **total quantity** of the Part 1A substance
  - manufactured, processed or otherwise used at a concentration (by weight) of 1% or more, **plus**
  - incidentally manufactured, processed or otherwise used as a by-product at any concentration, **plus**
  - contained in tailings disposed of during the calendar year at any concentration, **plus**
  - contained in waste rock disposed of during the calendar year that is not clean or inert (see section 3.7.4) at a concentration (by weight) of 1% or more**is  $\geq 10$  tonnes.**

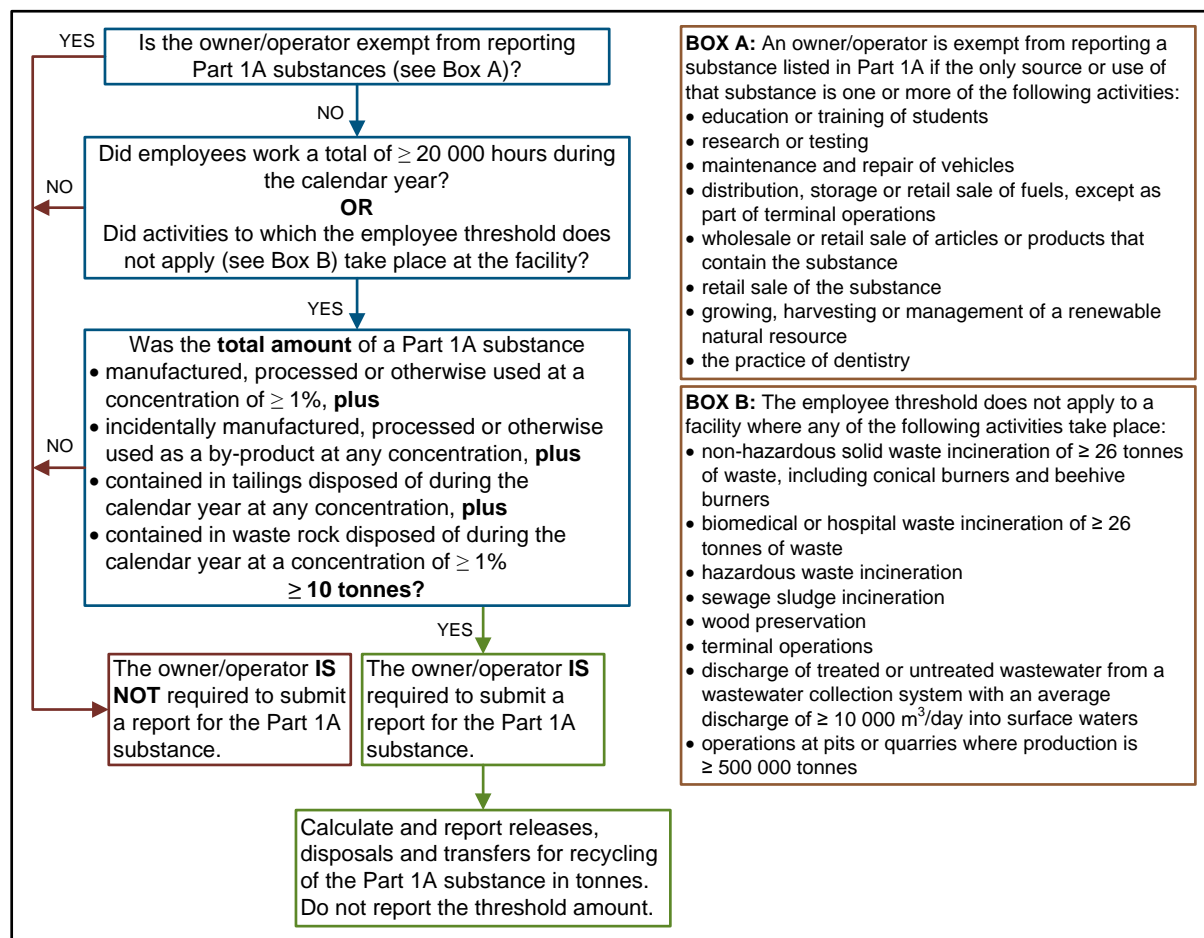
Figure 2 illustrates the steps for determining if a report is required for Part 1A substances.

#### 4.1.1 Part 1A Substance Qualifiers

Some Part 1A substances and groups of substances are qualified in terms of their specific physical or chemical form, state or particle size. The qualifiers, described in Table 7, determine whether a report will be required for a given substance.



Figure 2. Reporting for Part 1A Substances



**Table 7. Qualifiers for Part 1A Substances**

Substance Qualifier	Substance(s) to Which the Qualifier Applies	Description
all isomers	cresol (CAS RN 1319-77-3), HCFC-122 (41834-16-6), HCFC-123 (34077-87-7), HCFC-124 (63938-10-3), and xylene (1330-20-7)	Total of all isomers reported as an aggregate of the individual isomers
and its compounds	antimony, cobalt, copper, manganese, nickel and zinc	The pure metal and the equivalent weight of the metal in any compound, alloy or mixture must be reported as the equivalent weight of the metal itself.
	chromium	Pure chromium and chromium contained in any compound, alloy or mixture must be reported as the equivalent weight of chromium, excluding hexavalent chromium and its compounds.
	vanadium (7440-62-2)	Pure vanadium and vanadium in any compound or mixture must be reported as the equivalent weight of vanadium. Do not include vanadium contained in an alloy.
and its salts	acrylic acid (79-10-7), aniline (62-53-3), chloroacetic acid (79-11-8), cresol (1319-77-3), 2,4-diaminotoluene (95-80-7), 2,4-dichlorophenol (120-83-2), diethanolamine (111-42-2), N,N-dimethylaniline (121-69-7), 4,6-dinitro- <i>o</i> -cresol (534-52-1), hydroquinone (123-31-9), Michler's ketone (90-94-8), nitrilotriacetic acid (139-13-9), <i>p</i> -nitrophenol (100-02-7), peracetic acid (79-21-0), phenol (108-95-2), <i>p</i> -phenylenediamine (106-50-3), <i>o</i> -phenylphenol (90-43-7), and pyridine (110-86-1)	Weak acids and bases are listed with this qualifier. Although the CAS RN that appears on the NPRI list is specific to the acid or base, all salts of these substances must be reported as an equivalent weight of the acid or base.
expressed as hydrogen sulphide	total reduced sulphur (TRS)	Total of hydrogen sulphide (7783-06-4), carbon disulphide (75-15-0), carbonyl sulphide (463-58-1), dimethyl sulphide (75-18-3), methyl mercaptan (74-93-1), and dimethyl disulphide (624-92-0), expressed as hydrogen sulphide. Only releases to air of total reduced sulphur are required to be reported. Quantities of total reduced sulphur released to water, released to land, disposed of and transferred off-site for recycling do not have to be reported..
fibrous forms only	aluminum oxide (1344-28-1)	Fibrous refers to a synthetic form of aluminum oxide that is processed to produce strands or filaments. This includes the form of aluminum oxide found in brake linings, but excludes the more common granular, powdered or fumed forms of alumina.
friable form only	asbestos (1332-21-4)	Only asbestos that is brittle and readily crumbled (i.e., friable) should be reported.
fume or dust only	aluminum (7429-90-5)	Include dry forms of aluminum only, with particle diameters of 0.001-1 micrometre for fumes and 1-100 micrometres for dust.
in solution at a pH of 6.0 or more	nitrate ion	This distinguishes nitrate ion in neutral or basic solution from nitric acid (pH of less than 6.0). If nitric acid is neutralized to a pH of 6.0 or greater, report for both nitric acid (7697-37-2) and nitrate ion in solution.
ionic	cyanides	Includes the salts of hydrogen cyanide, but excludes organocyanides, nitriles and organometallic cyanide compounds.
mixed isomers	dinitrotoluene (25321-14-6)	Total of all isomers occurring in mixtures
total	ammonia	Total of ammonia (NH <sub>3</sub> ) (7664-41-7) and the ammonium ion (NH <sub>4</sub> <sup>+</sup> ) (14798-03-9) in solution, expressed as ammonia
	phosphorus	Total of all phosphorus, not including yellow or white phosphorus (7723-14-0)
yellow or white only	phosphorus	Total of the yellow and white allotropes of elemental phosphorus only

## 4.2 Calculating the Reporting Threshold for Part 1A Substances

When calculating the 10-tonne reporting threshold, include the quantity of a Part 1A substance that is:

- manufactured, processed or otherwise used at a concentration equal to or greater than 1% by weight;
- a by-product, at any concentration, released on-site to the environment or disposed of on- or off-site;
- contained in tailings disposed of during the calendar year, at any concentration; and
- contained in waste rock that is not inert and that is disposed of during the calendar year at a concentration equal to or greater than 1% by weight.

Do not include quantities of a Part 1A substance contained in any of the sources that should not be considered, as listed in Table 4.

Since a substance may undergo many processes in a facility, care should be taken not to double-count process streams when calculating the reporting threshold.

A quantity of a substance that is transferred off-site for recycling and returned to the facility should be treated as the equivalent of newly purchased material. A quantity of a substance that is recycled on-site and re-introduced to a process stream (e.g., substances in ore processing water that are recycled back into the process from tailings) should be included in the threshold calculation only once.

The total quantity of a Part 1A substance manufactured, processed or otherwise used at concentrations greater than or equal to 1%, at any time or in any part of the facility, must be included when calculating the 10-tonne reporting threshold. For example, the quantity of a substance received by a facility at 30% concentration and then diluted to less than 1% for use is included in the threshold calculation. A substance received at the facility at less than 1% and subsequently concentrated to 5% would also be included in the threshold calculation.

Facilities that repackage or transfer Part 1A substances between containers need only consider the quantity of the substance repackaged or transferred.

If only a range of concentrations is available for a substance present in a mixture, contact the supplier of the substance for more detailed information. If no additional information is available, use the average of the range for threshold determinations.

### 4.2.1 Example of Calculating the Reporting Threshold for Part 1A Substances

Table 8 illustrates the calculation of the reporting threshold. In the example, a facility has several processes in which a Part 1A substance is manufactured, processed or otherwise used. The substance is also released as a by-product and is contained in tailings and waste rock.

This example assumes that the employee threshold is met, or an activity to which the employee threshold does not apply takes place at the facility. In this case, a report is required for this

substance, because the total quantity of the Part 1A substance manufactured, processed, otherwise used, and contained in tailings and waste rock at the facility exceeded 10 tonnes, as explained below.

**Table 8. Example of a Threshold Calculation for Part 1A Substances**

Material/Process Containing the Substance	Total Weight of Material Containing the Substance (tonnes)	Concentration/Equivalent Weight of the Substance in Material/Process (percent)	Net Weight of the Substance to Include in Threshold Calculation (tonnes)
1. Compound material in process stream A	150	5	7.5
2. Raw material in process B	2	100	2.0
3. Raw material in process C	45	0.20	n/a
4. By-product released from process D	10 000	0.01	1.0
5. Tailings	24 000 000	0.00001	2.4
6. Waste rock	20 000 000	0.00002	n/a
7. <b>TOTAL</b>			<b>12.9</b>

1. In process A, the Part 1A substance is present at 5% concentration (or equivalent weight for metallic compounds) and is included in the threshold calculation.
2. In process B, the raw material added to the process is a pure substance. It is included in the threshold calculation, regardless of any subsequent dilution in the process.
3. The weight of the substance in the raw material used in process C is not included in the threshold calculation because the concentration is less than 1%. Note that, as a report is required in this example, the releases, disposals and transfers for recycling from all processes, including process C, are required to be reported, regardless of concentration and regardless of whether or not the quantity is used the threshold calculation.
4. The weight of the substance produced and released from process D is included in the calculation because it is a by-product, and the concentration threshold does not apply.
5. The weight of the substance contained in tailings is included in the threshold calculation because there is no concentration threshold for tailings.
6. The weight of the substance contained in waste rock is not included in the threshold calculation, because the concentration of the substance in the waste rock is less than 1%. The weight of the substance in the waste rock would also not be included when calculating disposals of the substance, because the concentration is less than 1%.
7. The total is the value that must be compared to the 10-tonne reporting threshold. This value is only used to determine that a report is required for the Part 1A substance. A subsequent calculation must be done to obtain the actual value of releases, disposals, and transfers for recycling that must be reported.

### 4.3 Calculating Releases, Disposals and Transfers for Recycling of Part 1A Substances

If the reporting threshold for a Part 1A substance is met (as discussed in section 4.2), a subsequent calculation is required to determine the quantities of that substance that are released, disposed of and transferred for recycling. If the reporting threshold is met, **all releases, disposals and**

**transfers for recycling of that substance must be reported, regardless of their concentration or quantity and regardless of whether or not the quantity is used in the threshold calculation.** The only exception to this is for disposals of Part 1A substances in waste rock where the substance is at a concentration of less than 1%. In the case of waste rock, the 1% concentration threshold for Part 1A substances applies to both the threshold calculation and disposal calculation.

#### **4.4 Reporting Releases, Disposals and Transfers for Recycling of Part 1A Substances**

All releases, disposals and transfers for recycling of Part 1A substances must be reported in tonnes.

Note that even if on-site releases, disposals or off-site transfers for recycling are zero, a report must be submitted for a Part 1A substance, once the 10-tonne reporting threshold has been met.

## 5. Reporting for Part 1B Substances – Alternate Threshold Substances

Part 1B substances may have significant environmental and human health impacts at relatively low levels. Because minimal releases of Part 1B substances may result in significant adverse effects, the reporting thresholds for Part 1B substances are lower than those for Part 1A substances. As such, these substances are commonly referred to as the “alternate threshold substances.”

### 5.1 Reporting Criteria for Part 1B Substances

In general, any person who owns or operates a contiguous facility or an offshore installation must submit a report for a Part 1B substance if both of the following criteria are met:

1. employees work a total of  $\geq 20\,000$  hours, or activities to which the employee threshold does not apply (see Table 3) take place at the facility, and
2. the **total quantity** of the Part 1B substance
  - manufactured, processed or otherwise used at or above the concentration specified in Table 9, **plus**
  - incidentally manufactured, processed or otherwise used as a by-product at any concentration, **plus**
  - contained in tailings at any concentration, **plus**
  - contained in waste rock that is not inert and that is disposed of, at any concentration (see section 3.7.4)

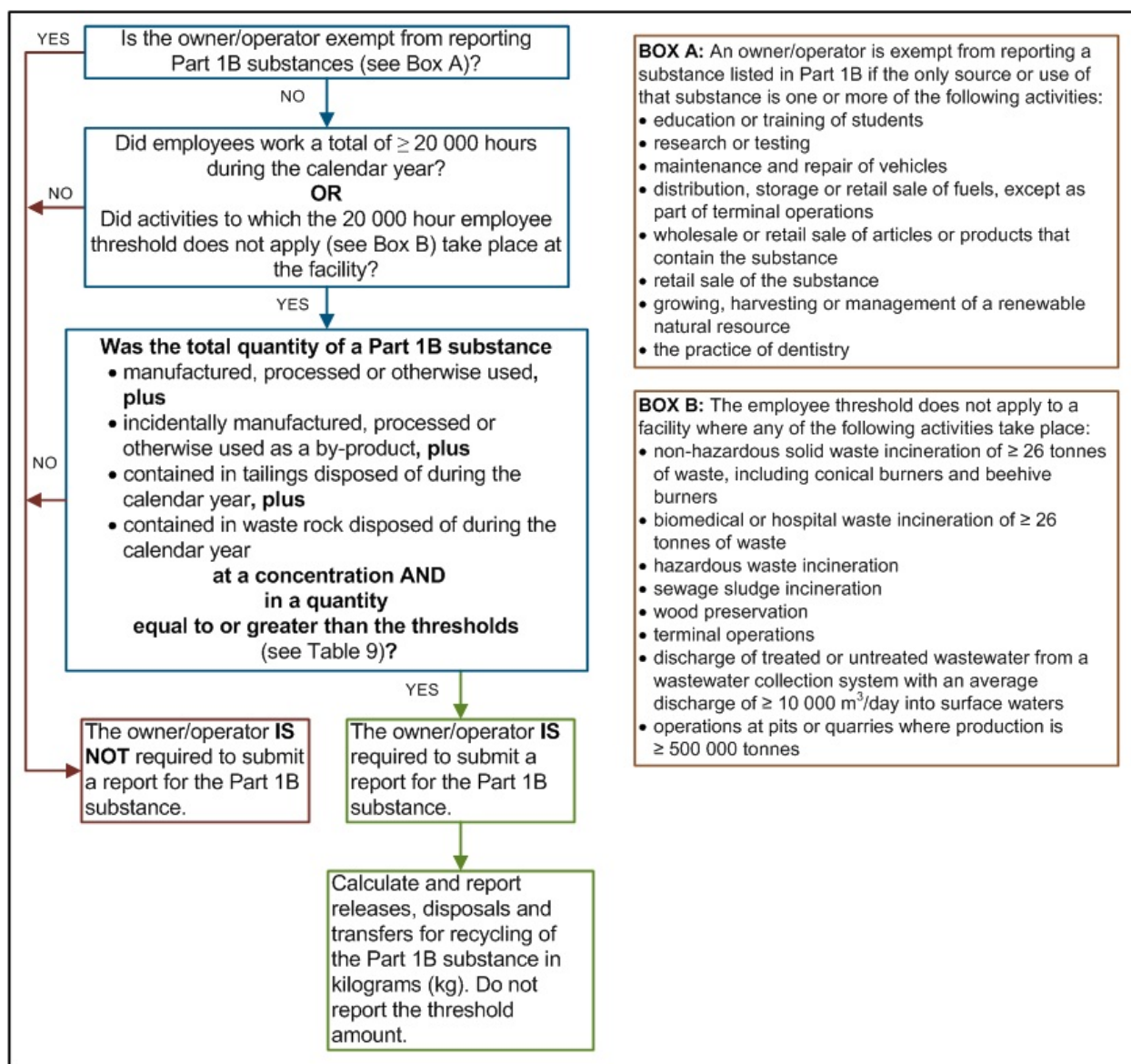
**is greater than or equal to the mass threshold** specified in Table 9.

**Table 9. Concentration and Mass Thresholds for Part 1B Substances**

Substance	Mass Threshold (kg)	Concentration Threshold (by weight)
Acrylonitrile	1000	0.1%
Arsenic (and its compounds)	50	0.1%
Bisphenol A	100	1%
Cadmium (and its compounds)	5	0.1%
Hexavalent chromium (and its compounds)	50	0.1%
Hydrazine (and its salts)	1000	1%
Isoprene	100	1%
Lead (and its compounds)	50	0.1%
Mercury (and its compounds)	5	n/a
Nonylphenol and its ethoxylates	1000	1%
Selenium (and its compounds)	100	0.000005%
Tetraethyl lead	50	0.1%
Thallium (and its compounds)	100	1%
Toluene-2,4-diisocyanate	100	0.1%
Toluene-2,6-diisocyanate	100	0.1%
Toluenediisocyanate (mixed isomers)	100	0.1%

Figure 3 illustrates the steps for determining if a report for Part 1B substances is required.

**Figure 3. Reporting for Part 1B Substances**



### 5.1.1 Part 1B Substance Qualifiers

Mercury, cadmium, arsenic, hexavalent chromium, lead, selenium and thallium are listed with the qualifier “and its compounds.” The pure element and any compound, alloy or mixture of any Part 1B substance must be reported as the equivalent weight of the metal itself. For example, if potassium dichromate ( $K_2Cr_2O_7$ , molecular weight = 294 grams per mole [g/mol]) is used, only the mass contribution of hexavalent chromium ( $2 \times 52$  g/mol) in  $K_2Cr_2O_7$  should be included in the threshold calculation for hexavalent chromium.

Hydrazine is listed with the qualifier “and its salts.” Weak acids and bases are listed with this qualifier. Although the CAS RN that appears on the NPRI list is specific to the acid or base, all salts of these substances must be reported as an equivalent weight of the acid or base.



Toluenediisocyanate is listed with the qualifier “mixed isomers.” The total of all isomers occurring in mixtures must be reported.

Note that lead has an additional qualifier: the lead contribution from tetraethyl lead, stainless steel, brass and bronze alloys should be excluded from threshold calculations for lead. Tetraethyl lead should be treated as a separate substance. If the criteria are met, separate reports should be submitted for lead (and its compounds) and tetraethyl lead, with the reporting criteria applied to each substance separately.

## 5.2 Calculating the Reporting Threshold for Part 1B Substances

When calculating the reporting threshold, include the quantity of a Part 1B substance that is:

- manufactured, processed or otherwise used at a concentration equal to or greater than the concentration threshold (if any) specified in Table 9;
- a by-product, at any concentration, released on-site to the environment or disposed of on- or off-site;
- contained in tailings disposed of during the calendar year, at any concentration; and
- contained in waste rock that is not inert and that is disposed of during the calendar year, at any concentration.

Do not include quantities of a Part 1B substance contained in any of the sources that should not be considered, as listed in Table 4.

As noted previously, quantities of substances disposed of in inert or clean waste rock do not need to be included in threshold calculations. However, the quantity of arsenic contained in inert or clean waste rock can be excluded only if the concentration of arsenic is < 12 mg/kg of waste rock.

## 5.3 Calculating Releases, Disposals and Transfers for Recycling of Part 1B Substances

If the reporting threshold for a Part 1B substance is met (as discussed in section 5.2), a subsequent calculation is required to determine the quantities of that substance that are released, disposed of and transferred for recycling. If the reporting threshold is met, **all releases, disposals and transfers for recycling of that substance must be reported, regardless of their concentration or quantity and regardless of whether or not the quantity is used in the threshold calculation.**

## 5.4 Reporting Releases, Disposals and Transfers for Recycling of Part 1B Substances

All releases, disposals and transfers for recycling of Part 1B substances must be reported in kilograms (kg).

Note that even if on-site releases, disposals or off-site transfers for recycling are zero, a report must be submitted for a Part 1B substance once the mass reporting threshold has been met.



## 6. Reporting for Part 2 Substances – Polycyclic Aromatic Hydrocarbons

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Polycyclic aromatic hydrocarbons (PAHs) may be used as commercial chemicals, incidentally manufactured in certain industrial processes, or contained in tailings. There are 30 PAHs listed in Part 2 of the NPRI substance list. For a list of these PAHs, consult the NPRI website:

[www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1).

### 6.1 Reporting Criteria for Part 2 Substances

With the exception of facilities where wood preservation using creosote takes place (see below), reporting for PAHs is based on the quantities of PAHs that are released, disposed of or transferred for recycling as a result of incidental manufacture or from the generation of tailings. A person who owns or operates a contiguous facility, a portable facility, or an offshore installation must submit reports for PAHs if both of the following criteria are met:

1. employees work a total of  $\geq 20\,000$  hours, or activities to which the employee threshold does not apply (listed in Table 3) take place at the facility; and
2. the sum of all PAHs released, disposed of or transferred off-site for recycling as a result of incidental manufacture and/or as a result of the generation of tailings is  $\geq 50$  kg.

Wood preservation facilities using creosote must report for Part 2 substances, regardless of quantities and regardless of the number of hours worked by employees. See section 3.6.2 and the *Guidance for Wood Preservation Facilities Reporting to the NPRI* ([www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=29B3E589-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=29B3E589-1)) for more information.

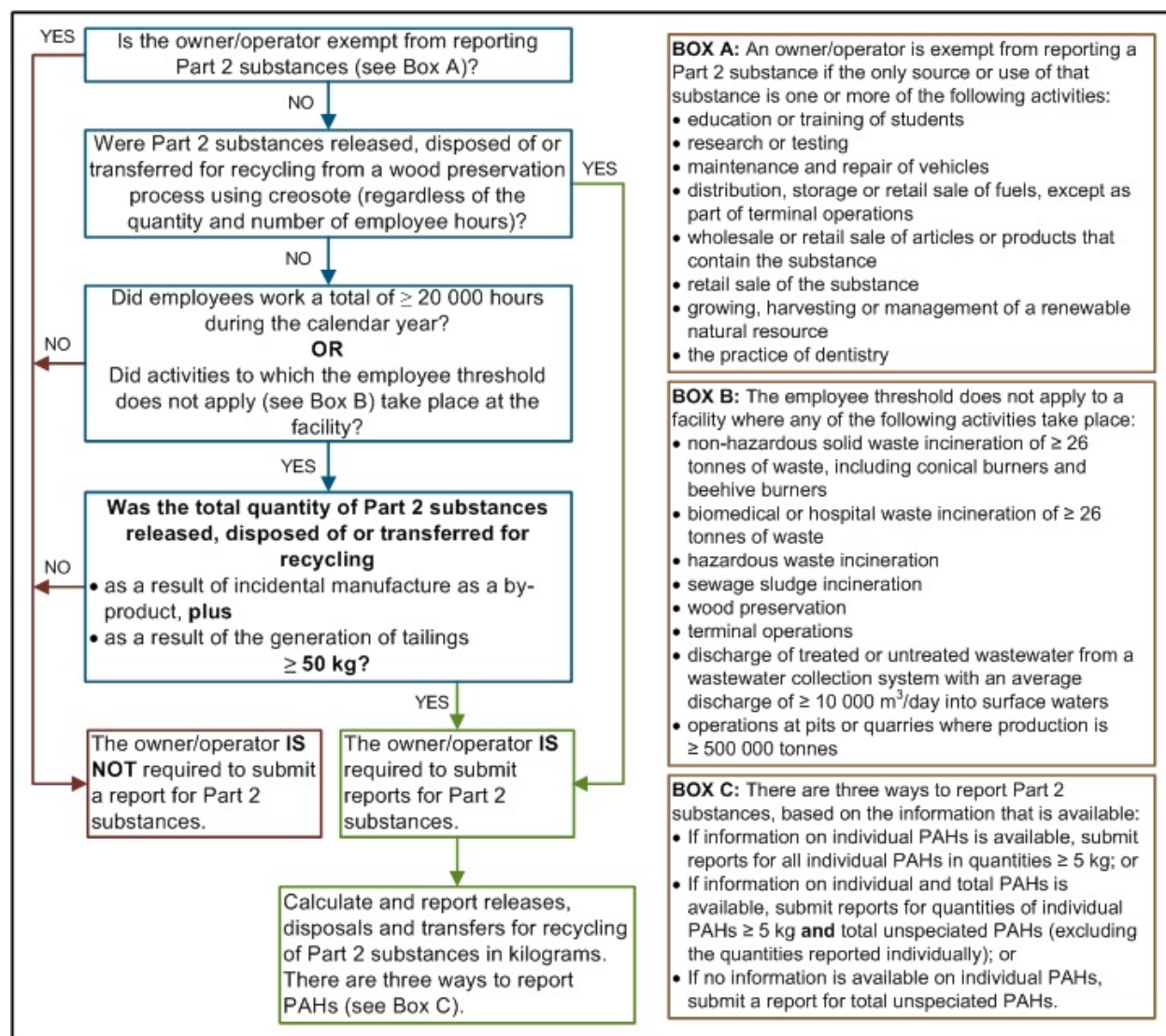
Figure 4 illustrates the steps for determining if reports for Part 2 substances are required, and, if so, what information must be reported.

### 6.2 Calculating the Reporting Threshold for Part 2 Substances

The sum of the quantities of individual PAHs incidentally manufactured and/or contained in tailings disposed of during the calendar year should be compared to the 50 kg threshold. In some cases, only information on unspciated PAHs may be available, or a combination of information on individual and unspciated PAHs may be available. Add the quantities of each individual PAH and the quantity of unspciated PAHs to determine if the 50 kg reporting threshold is met.

Do not include anthracene (CAS RN 120-12-7) and naphthalene (CAS RN 91-20-3) when determining the reporting threshold for PAHs. Although anthracene and naphthalene are PAHs, they are NPRI Part 1A substances. Therefore, they are subject to Part 1A reporting requirements.

Figure 4. Reporting for Part 2 Substances



### 6.3 Reporting Releases, Disposals and Transfers for Recycling of Part 2 Substances

All releases, disposals and transfers for recycling of Part 2 substances must be reported in kilograms.

Releases, disposals and transfers for recycling must be reported for the individual PAHs, even though the 50 kg threshold applies to the aggregate total of all 30 PAHs. Depending on the information that is available, there are three ways to report PAHs (illustrated in Figure 4 and summarized in Table 10). If the 50 kg threshold is met, or if wood preservation using creosote takes place at the facility, and information on releases, disposals and transfers for recycling for individual PAHs is available, those PAHs that are incidentally manufactured and released, disposed of or transferred for recycling in quantities  $\geq 5$  kg must be reported individually.

If only a combination of information on individual and total PAHs is available, quantities of individual PAHs in quantities  $\geq 5$  kg and quantities of “total unspciated PAHs” should both be reported. If the only available information is for total PAHs, total unspciated PAHs should be reported.

Note that total unspciated PAHs does not mean the sum of the individual PAHs. In order to avoid double-counting when reporting both individual and total unspciated PAHs, the quantities of individual PAHs that are reported separately should not be included in the quantity reported for total unspciated PAHs. In addition, do not include release, disposal and transfer for recycling quantities of the two PAHs listed in Part 1A (anthracene and naphthalene) when reporting for total PAHs.

Facilities using creosote for wood preservation must report for PAHs regardless of the quantity of PAHs released, disposed of or transferred for recycling or the number of hours worked by employees. Depending on the information available to the facility, reports can be submitted for: individual PAHs released, disposed of or transferred for recycling in quantities  $\geq 5$  kg; a combination of individual PAHs in quantities  $\geq 5$  kg and total PAHs; or total PAHs.

**Table 10. How to Report Polycyclic Aromatic Hydrocarbons**

Type of Information Available	Comparison to Thresholds	What to Report
Quantities of individual PAHs	<ul style="list-style-type: none"> <li>Add quantities of individual PAHs</li> <li>If the total is <math>\geq 50</math> kg, reporting is required</li> </ul>	<ul style="list-style-type: none"> <li>Report quantities of individual PAHs that are incidentally manufactured and released, disposed of or transferred for recycling in quantities <math>\geq 5</math> kg</li> <li>Quantities of individual PAHs that are <math>&lt; 5</math> kg are not required to be reported</li> </ul>
Combination of quantities of individual PAHs and quantity of total PAHs	<ul style="list-style-type: none"> <li>Add quantities of total unspciated PAHs and any individual PAHs that are not already included in the total unspciated PAHs</li> <li>If the total is <math>\geq 50</math> kg, reporting is required</li> </ul>	<ul style="list-style-type: none"> <li>Report quantities of individual PAHs that are <math>\geq 5</math> kg, <b>and</b></li> <li>Report total unspciated PAHs (not including quantities of individually reported PAHs)</li> <li>Quantities of individual PAHs that are <math>&lt; 5</math> kg are not required to be reported</li> </ul>
Quantity of total PAHs	<ul style="list-style-type: none"> <li>If total PAHs are <math>\geq 50</math> kg, reporting is required</li> </ul>	<ul style="list-style-type: none"> <li>Report total unspciated PAHs</li> </ul>

## 7. Reporting for Part 3 Substances – Dioxins, Furans and Hexachlorobenzene

Polychlorinated dibenzo-p-dioxins (PCDDs or dioxins), polychlorinated dibenzofurans (PCDFs or furans) and hexachlorobenzene (HCB) are released primarily as by-products of industrial and combustion processes; they are also found as contaminants in certain pesticides or chlorinated solvents. HCB may also be found as a contaminant in the wood preservative pentachlorophenol (PCP). These substances are toxic under CEPA 1999, and are slated for virtual elimination.

HCB and 17 dioxin and furan congeners are listed in Part 3. For a list of these congeners, consult the NPRI website: [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1).

### 7.1 Reporting Criteria for Part 3 Substances

Reporting for dioxins, furans and HCB is mandatory for a contiguous facility, a portable facility or an offshore installation where the activities specified in Table 11 take place, regardless of quantity or concentration. These activities are described in sections 3.6.2, 7.1.1 and 7.1.2. The employee threshold applies to some of these activities, but does not apply to others, as indicated in Table 11. For those activities to which the employee threshold applies, both criteria must be met (i.e., the activity must take place, and the employee threshold must be met). For activities to which the employee threshold does not apply, reporting for dioxins, furans and HCB is mandatory, regardless of the number of hours worked by employees.

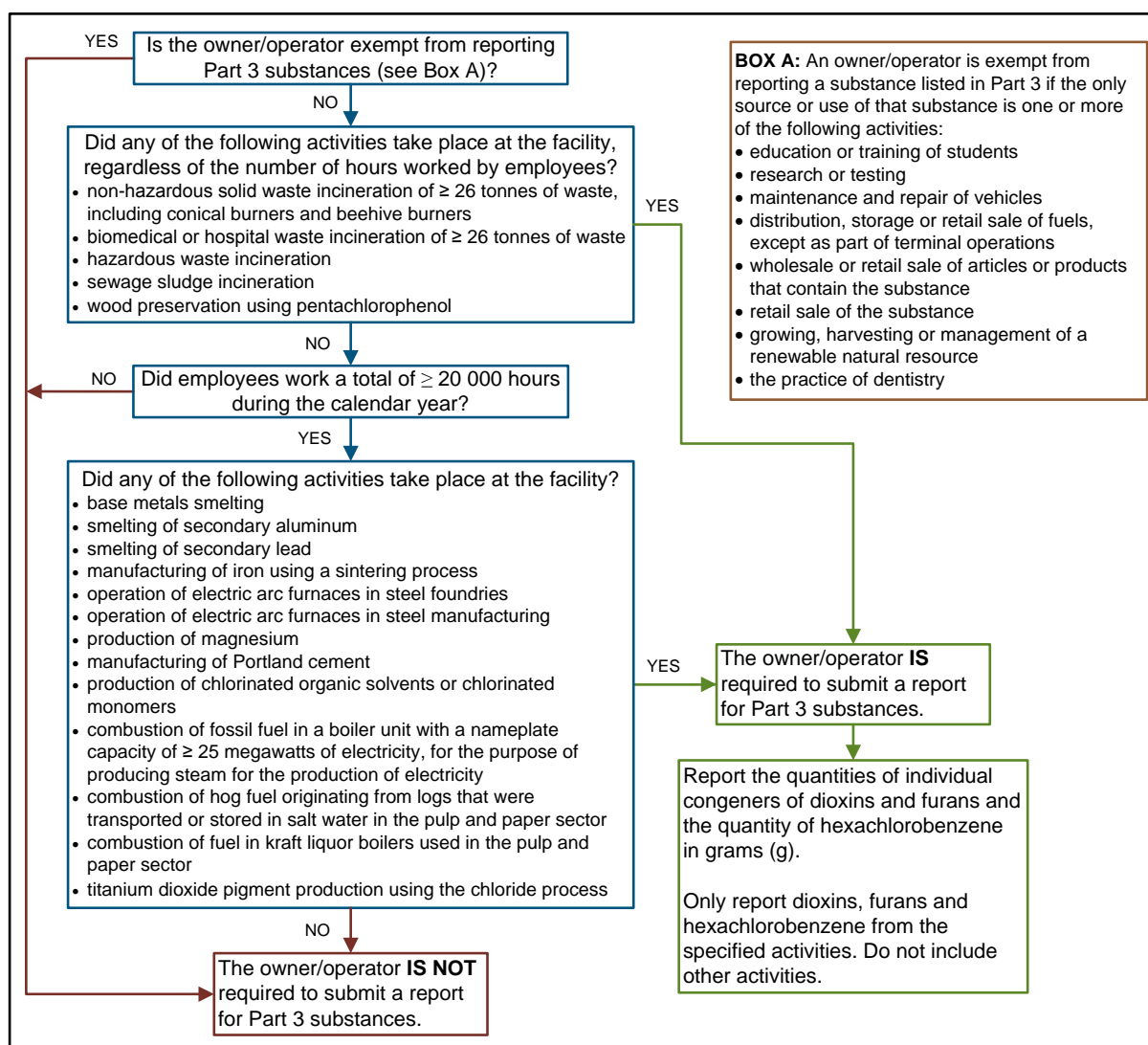
**Table 11. Activities for Which Reports on Dioxins, Furans and Hexachlorobenzene Are Required**

Employee Threshold	Activity
Employee threshold does not apply	Non-hazardous solid waste incineration of $\geq 26$ tonnes of waste, including conical burners and beehive burners
	Biomedical or hospital waste incineration of $\geq 26$ tonnes of waste
	Hazardous waste incineration
	Sewage sludge incineration
	Wood preservation using pentachlorophenol
Employee threshold applies	Base metals smelting (copper, lead, nickel or zinc only)
	Smelting of secondary aluminum
	Smelting of secondary lead
	Manufacturing of iron using a sintering process
	Operation of electric arc furnaces in steel foundries
	Operation of electric arc furnaces in steel manufacturing
	Production of magnesium
	Manufacturing of Portland cement
	Production of chlorinated organic solvents or chlorinated monomers
	Combustion of fossil fuel in a boiler unit, with a nameplate capacity of $\geq 25$ megawatts of electricity, for the purpose of producing steam for the production of electricity
	Combustion of hog fuel originating from logs that were transported or stored in salt water in the pulp and paper sector
	Combustion of fuel in kraft liquor boilers used in the pulp and paper sector
	Titanium dioxide pigment production using the chloride process

Only those quantities of dioxins, furans and HCB that result from the activities listed in Table 11 need to be reported. Quantities of Part 3 substances that result from other activities do not need to be reported.

Figure 5 illustrates the steps for determining if a report for Part 3 substances is required, and, if so, what information must be reported.

**Figure 5. Reporting for Part 3 Substances**



### 7.1.1 Activities for Which Part 3 Substances Must Be Reported, Regardless of Employee Hours

The activities to which the employee threshold does not apply (see Table 11) are described in section 3.6.2. Wood preservation activities are also described in section 3.6.2. However, only wood preservation using PCP triggers mandatory reporting of Part 3 substances. PCP, by its chemical structure, is a close surrogate to HCB. PCP is derived from HCB by substituting one of HCB's six chloro-substituents with a hydroxyl group. Given its chemical similarity to HCB and that its

manufacturing ingredients contain the precursors for dioxin and furan production (i.e., chlorinated aromatics), the manufacture of PCP often results in the incidental manufacture of HCB, dioxins and furans.

### 7.1.2 Activities for Which Part 3 Substances Must Be Reported if the Employee Threshold Is Met

The following sections describe the activities listed in Table 11 to which the employee threshold applies.

#### **Smelting**

Smelting is the melting of raw or scrap materials to produce metal for further processing into metal products. The smelting process is typically accompanied by a chemical change in which impurities are removed.

##### ***Base metals smelting***

“Base metals” refer to copper, lead, nickel or zinc. Base metals smelting does not include smelting of aluminum, secondary lead or any other metals.

##### ***Smelting of secondary aluminum***

“Secondary aluminum” refers to aluminum-bearing scrap or materials. Secondary aluminum smelting involves pre-cleaning and smelting, both of which may produce emissions of dioxins and furans.

##### ***Smelting of secondary lead***

“Secondary lead” refers to lead-bearing scrap or materials, other than lead-bearing concentrates derived from a mining operation. Facilities engaged in smelting of lead-bearing concentrates derived from a mining operation are considered to be base metal smelters.

#### **Manufacturing of iron using a sintering process**

“Sintering” means to cause something to become a coherent mass by heating without melting, or the growth of contact area between two or more initially distinct particles at temperatures below the melting point but above one half of the melting point (in Kelvin). In sintering operations, dioxins and furans may be formed as by-products during high-temperature decomposition or combustion of raw materials containing chlorine and organic compounds.

#### **Operation of electric arc furnaces in steel foundries and in steel manufacturing**

In an electric arc furnace, material is heated by an electric arc. Dioxins, furans and HCB may be formed as by-products during high-temperature decomposition or combustion of raw materials containing chlorine and organic compounds.



## **Production of magnesium**

Production of magnesium from magnesium chloride by electrolysis may result in the generation of dioxins, furans and HCB.

## **Manufacturing of Portland cement**

Portland cement is a fine greyish powder consisting of four basic materials: lime, silica, alumina and iron compounds. Cement production involves heating the raw materials to a very high temperature in a rotating kiln to induce chemical reactions that produce a fused material called clinker. The cement clinker is further ground into a fine powder, and then mixed with gypsum to form Portland cement.

## **Production of chlorinated organic solvents or chlorinated monomers**

This activity is limited to the intentional manufacturing of chlorinated organic solvents or chlorinated monomers, and does not include coincidental production.

## **Combustion of fossil fuel in a boiler unit, with a nameplate capacity of $\geq 25$ megawatts of electricity, for the purpose of producing steam for the production of electricity**

This activity includes fossil fuel combustion at electric power generation utilities and large industrial facilities co-generating electric power using waste heat from industrial processes. Fossil fuel is fuel that is in a solid or liquid state at standard temperature and pressure, such as coal, petroleum or any liquid or solid fuel derivatives. It does not include natural gas or other fuels that are gases at ambient pressure and temperature. Fuel combustion in diesel generators is not included in this activity.

## **Combustion of hog fuel originating from logs that were transported or stored in salt water in the pulp and paper sector**

Pulp and paper boilers burning salt-laden wood are unique to British Columbia. Dioxins and furans are emitted from the burning of salt-contaminated hog fuel. Chlorine is absorbed by the bark of logs transported and stored in salt water. The bark stripped from logs is ground up with other waste wood to produce hog fuel, which is used as boiler fuel to produce heat and electrical energy.

## **Combustion of fuel in kraft liquor boilers used in the pulp and paper sector**

A kraft liquor boiler burns black liquor, composed mostly of lignin, which is the residue from the digester in a kraft (sulphate) pulping process. The boiler recovers chemical products from the combusted black liquor, which are later recycled. It also produces steam, which is used in mill process operations.

## **Titanium dioxide pigment production using the chloride process**

This activity is limited to titanium dioxide pigment manufactured by the chloride process, not the sulphate process.



## 7.2 Reporting Releases, Disposals and Transfers for Recycling of Part 3 Substances

The information that needs to be reported for Part 3 substances depends on the method used to determine the quantities released, disposed of and transferred for recycling. There are three possible scenarios:

- quantities are determined using CEMS, PEM or source testing;
- quantities are estimated using other methods; or
- no information is available.

To determine if a report is required, the quantities determined using CEMS, PEM or source testing must be compared to the level of quantification (LoQ). LoQ is defined in CEPA 1999 as “the lowest concentration that can be accurately measured using sensitive but routine sampling and analytical methods.” Table 12 lists estimated LoQs for dioxins, furans and HCB, determined by Environment Canada for gases, liquids and solids.

**Table 12. Estimated Level of Quantification for Dioxins, Furans and Hexachlorobenzene**

Material State	Estimated Level of Quantification	
	Dioxins and furans <sup>(1)</sup>	Hexachlorobenzene
Gaseous <sup>(2)</sup>	32 picograms (pg) toxic equivalents (TEQ)/m <sup>3</sup>	6 nanograms (ng)/m <sup>3</sup>
Liquid <sup>(3)</sup>	20 pg TEQ/L	70 ng/L
Solid <sup>(4)</sup>	9 pg TEQ/g	2 ng/g

- (1) See section 7.2.1 for an explanation of toxic equivalents (TEQ).
- (2) Environment Canada, 1999. Use these values to determine whether concentrations in releases to air from stacks and other sources are above, equal to or below the LoQ.
- (3) The LoQ for concentrations of dioxins and furans in liquids was extrapolated from the effective LoQ for 2,3,7,8-TCDD in the *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations*. Use 70 ng/L as the estimated LoQ for concentrations of HCB in liquids (Environment Canada, 1997).
- (4) Environment Canada, 2000. Use these values to determine whether concentrations of dioxins and furans or HCB in solid materials are above, equal to or below the LoQ. Incinerator bottom ash, pollution-abatement residues and sludge are examples of solid materials containing dioxins and furans or HCB.

Measured concentrations must be compared to the appropriate LoQ indicated in Table 12 for each type of release, disposal and site transfer for recycling. If measured quantities are greater than or equal to the LoQ, the quantities must be reported. If measured quantities are less than the LoQ, reporting the quantities is optional.

If quantities of dioxins, furans and HCB are estimated using mass balance, emission factors or engineering estimates, the quantities that are released, disposed of or transferred for recycling do not need to be compared to an LoQ, and must be reported.

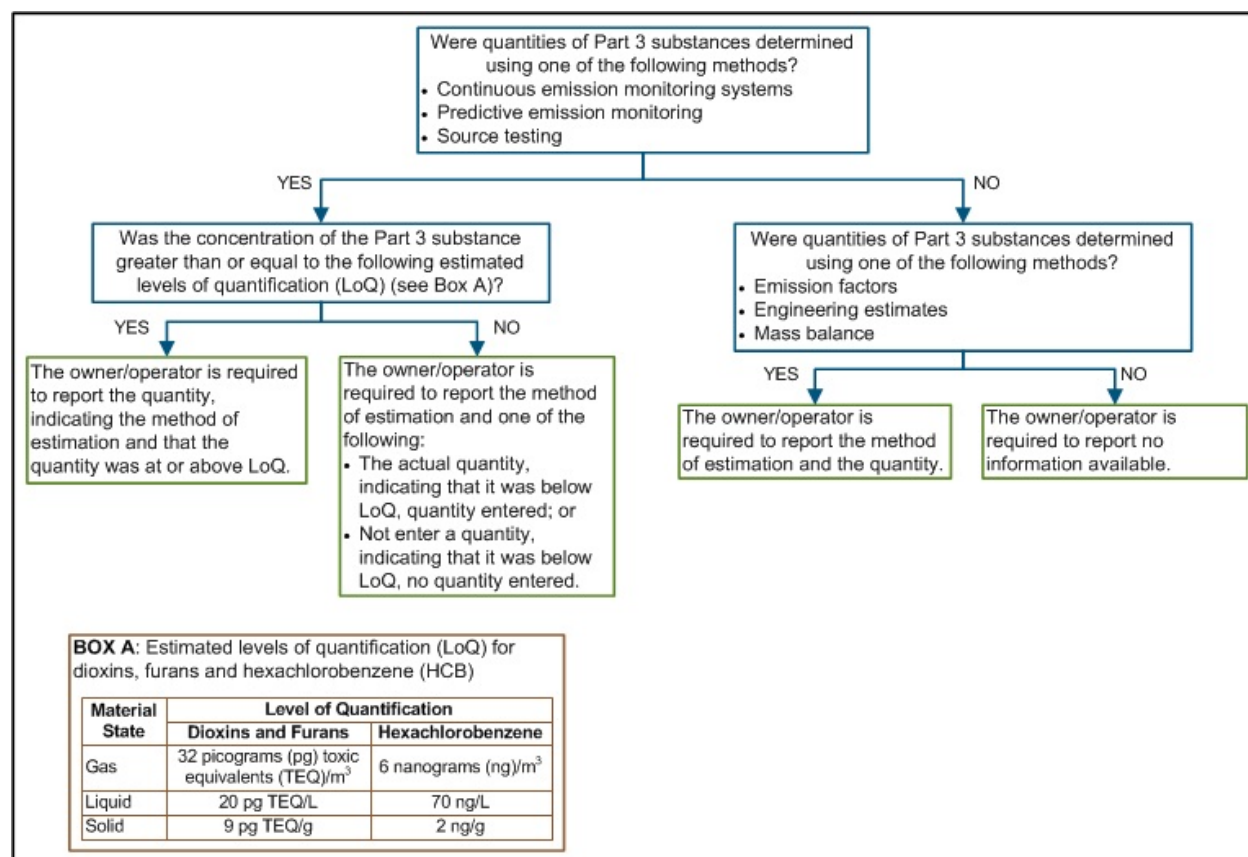
Table 13 summarizes the information that should be reported for Part 3 substances, depending on the method of estimation and the comparison to the LoQ. Figure 6 illustrates the steps for determining the information that should be reported for Part 3 substances.

**Table 13. How to Report Dioxins, Furans and Hexachlorobenzene**

Method of Estimation	Comparison to Level of Quantification (LoQ)	What Must Be Reported
CEMS, PEM or source testing	at or above LoQ	Report the quantity, and report that the quantity is at or above the LoQ. <sup>(1)</sup>
CEMS, PEM or source testing	below LoQ	Report that the quantity is below the LoQ. The quantity can also be reported, but this is optional when it is below the LoQ. <sup>(1)</sup>
Mass balance	n/a	Report the quantity.
Site-specific emission factor or published emission factor	n/a	Report the quantity.
Engineering estimate	n/a	Report the quantity.
No information available	n/a	Report that no information is available. <sup>(2)</sup>

- (1) Use the “Help” link in the online reporting system to determine what detail codes are used to indicate whether the quantity is at, above or below the LoQ.
- (2) “No information available” is an option under “Basis of Estimate” in the online reporting system, which can be selected for Part 3 substances only.

**Figure 6. How to Report Dioxins, Furans and Hexachlorobenzene**



## 7.2.1 Reporting for Individual or Total Dioxins and Furans

Information on individual congeners of dioxins and furans must be reported if it is available. If the only information available is for total dioxins and furans, the total must be reported as toxic equivalents (TEQ).

Dioxins and furans are often found in complex mixtures, typically at extremely low concentrations, making it difficult to determine the cumulative toxicity of the mixture. Accordingly, toxic equivalency factors (TEFs) have been assigned to each dioxin and furan congener as weighting factors. These TEFs are assigned relative to the toxicity of 2,3,7,8-TCDD, the most toxic congener.

The TEFs listed in Table 14 should be used. To calculate TEQ, multiply the concentration (or quantity) of an individual congener by its respective TEF. For example, 1,2,3,4,7,8-HxCDF has a TEF of 0.1, and a sample concentration of 30 ng/kg 1,2,3,4,7,8-HxCDF is therefore equal to 3 ng TEQ/kg.

**Table 14. Toxic Equivalency Factors for Dioxins and Furans**

Congener	Abbreviation	CAS RN	Toxic Equivalency Factor
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD	1746-01-6	1
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1,2,3,7,8-PeCDD	40321-76-4	0.5
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	1,2,3,4,7,8-HxCDD	39227-28-6	0.1
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1,2,3,6,7,8-HxCDD	57653-85-7	0.1
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1,2,3,7,8,9-HxCDD	19408-74-3	0.1
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1,2,3,4,6,7,8-HpCDD	35822-46-9	0.01
Octachlorodibenzo-p-dioxin	OCDD	3268-87-9	0.001
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF	51207-31-9	0.1
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PeCDF	57117-31-4	0.5
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PeCDF	57117-41-6	0.05
1,2,3,4,7,8-Hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF	70648-26-9	0.1
1,2,3,7,8,9-Hexachlorodibenzofuran	1,2,3,7,8,9-HxCDF	72918-21-9	0.1
1,2,3,6,7,8-Hexachlorodibenzofuran	1,2,3,6,7,8-HxCDF	57117-44-9	0.1
2,3,4,6,7,8-Hexachlorodibenzofuran	2,3,4,6,7,8-HxCDF	60851-34-5	0.1
1,2,3,4,6,7,8-Heptachlorodibenzofuran	1,2,3,4,6,7,8-HpCDF	67562-39-4	0.01
1,2,3,4,7,8,9-Heptachlorodibenzofuran	1,2,3,4,7,8,9-HpCDF	55673-89-7	0.01
Octachlorodibenzofuran	OCDF	39001-02-0	0.001

Source: North Atlantic Treaty Organization, 1988a and 1988b.

## 8. Reporting for Part 4 Substances – Criteria Air Contaminants

Air issues such as smog and acid rain result from the presence of, and interactions between, a group of pollutants known as criteria air contaminants (CACs) and related pollutants. There are seven CACs listed in Part 4 (see Table 15).

### 8.1 Reporting Criteria for Part 4 Substances

In contrast to the majority of NPRI substances, the thresholds for CAC emissions are based on the quantity released to air, rather than the quantity manufactured, processed and otherwise used. In general, any person who owns or operates a facility must submit a report to the NPRI for a Part 4 substance if the following criteria are met:

- employees work a total of  $\geq 20\,000$  hours; or
- activities to which the employee threshold does not apply (see Table 3) take place at the facility; or
- employees work a total of  $< 20\,000$  hours, and stationary combustion equipment is operated at the facility; or
- the facility is a pipeline installation where stationary combustion equipment is operated (see section 3.5 for the definition of a pipeline installation)

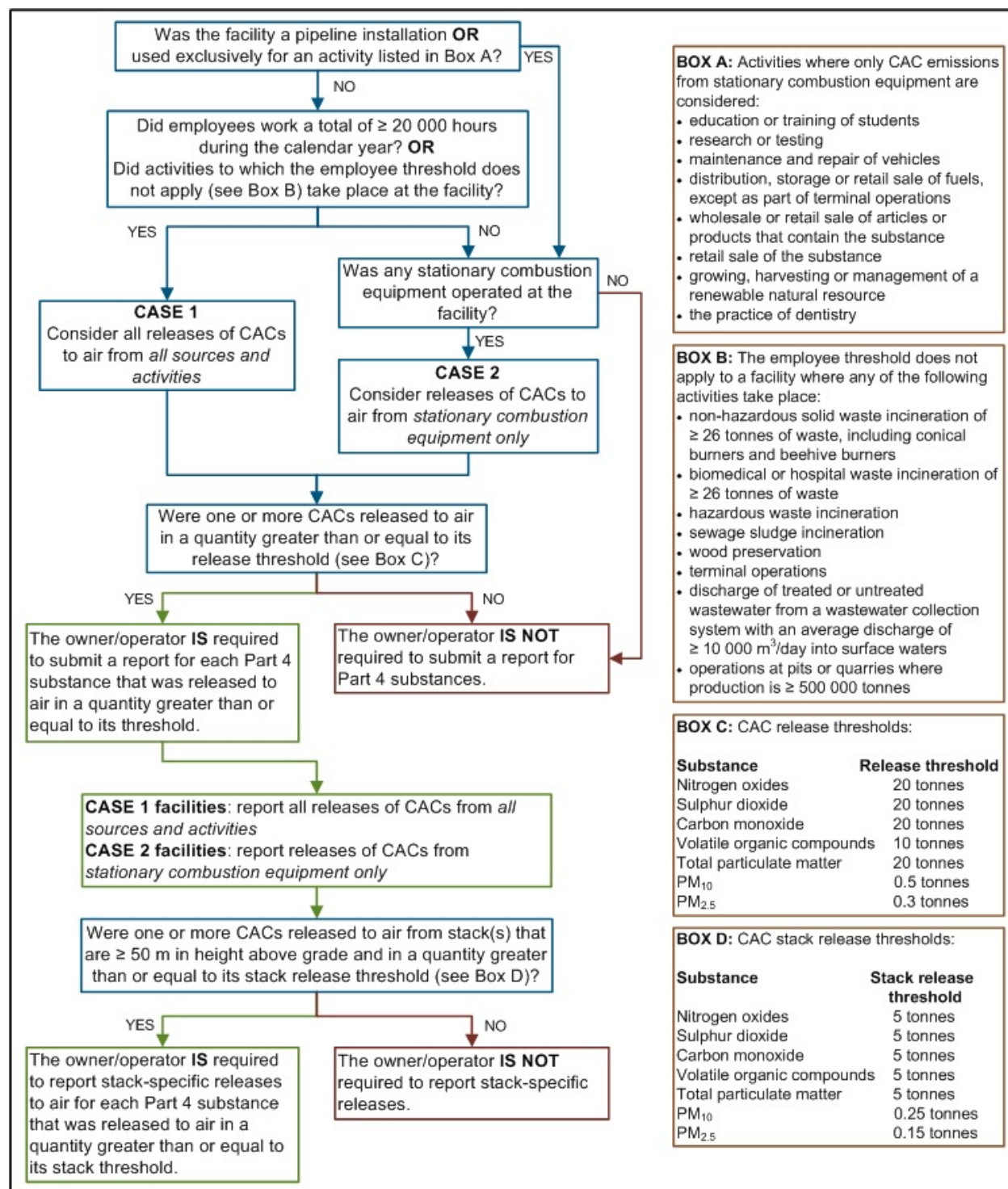
**and** the total quantity of the Part 4 substance released to air is greater than or equal to the release threshold specified in Table 15.

**Table 15. Release Thresholds for Criteria Air Contaminants**

Criteria Air Contaminant	Release Threshold (tonnes)
Nitrogen oxides (expressed as nitrogen dioxide)	20
Sulphur dioxide	
Carbon monoxide	
Total particulate matter	
Volatile organic compounds	10
Particulate matter with a diameter less than or equal to 10 micrometres (PM <sub>10</sub> )	0.5
Particulate matter with a diameter less than or equal to 2.5 micrometres (PM <sub>2.5</sub> )	0.3

Figure 7 illustrates the steps for determining if a report for Part 4 substances is required, and, if so, what information must be reported. For further information on CACs and their reporting criteria, refer to the *Criteria Air Contaminants (CACs) Technical Source Guide for Reporting to the National Pollutant Release Inventory* and the *Supplementary Guide for Reporting Criteria Air Contaminants (CACs) to the National Pollutant Release Inventory*.

Figure 7. Reporting for Part 4 Substances



### 8.1.1 Part 4 Substance Qualifiers

The following sections provide information on what should be included and excluded when reporting releases of CACs.

#### Nitrogen oxides

Nitrogen oxides ( $\text{NO}_x$ ) include nitric oxide ( $\text{NO}$ ) and nitrogen dioxide ( $\text{NO}_2$ ). Since  $\text{NO}_x$  is a mixture, both  $\text{NO}$  and  $\text{NO}_2$  must be expressed on an  $\text{NO}_2$ -equivalent basis before the individual quantities are combined for the total  $\text{NO}_x$  release. Do not include nitrous oxide ( $\text{N}_2\text{O}$ ) when calculating  $\text{NO}_x$  releases.

#### Sulphur dioxide

Sulphur dioxide ( $\text{SO}_2$ ) is part of the sulphur oxide ( $\text{SO}_x$ ) family of gases. However, reporting to the NPRI is only required for  $\text{SO}_2$ , not  $\text{SO}_x$ . Therefore, the quantity of the other gases in the  $\text{SO}_x$  family (i.e., sulphite, sulphur trioxide [ $\text{SO}_3$ ] and sulphate [ $\text{SO}_4$ ]) released should not be considered when calculating  $\text{SO}_2$  releases.

#### Particulate matter

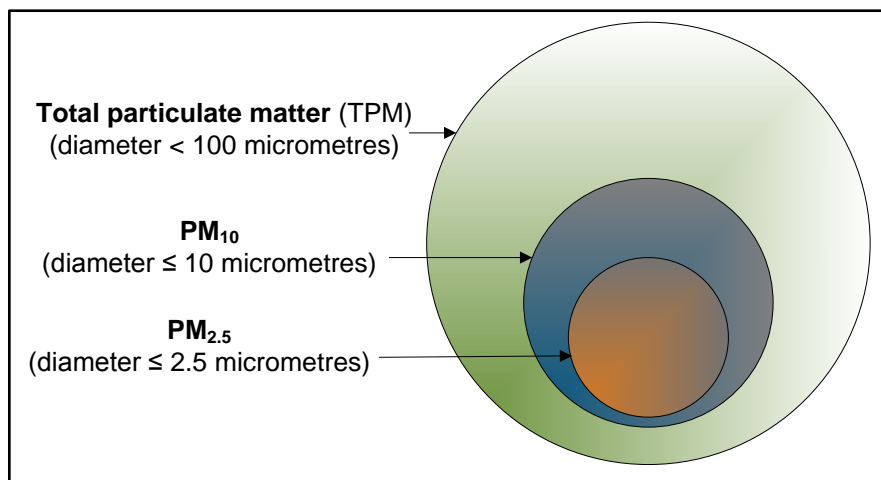
Three size fractions of particulate matter (PM) are required to be reported to the NPRI:

- total PM with a diameter less than 100 micrometres (TPM)
- PM with a diameter less than or equal to 10 micrometres ( $\text{PM}_{10}$ )
- PM with a diameter less than or equal to 2.5 micrometres ( $\text{PM}_{2.5}$ )

As shown in Figure 8, the TPM fraction includes  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ , while  $\text{PM}_{10}$  includes  $\text{PM}_{2.5}$ . It is therefore impossible for  $\text{PM}_{2.5}$  or  $\text{PM}_{10}$  releases to exceed TPM releases. It is also impossible for  $\text{PM}_{2.5}$  releases to exceed  $\text{PM}_{10}$  releases.

TPM,  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  emissions must be reported on a dry basis. Only filterable PM is reportable to the NPRI; condensable PM should not be included in release calculations.

**Figure 8. Particulate Matter Size Fractions**





## Volatile organic compounds

Volatile organic compounds (VOCs) are an aggregate grouping of more than 1000 organic substances that readily volatilize and undergo photochemical reactions in the atmosphere.

VOCs should be reported as the total quantity of VOCs that participate in atmospheric photochemical reactions. Do not include any of the substances that are specified as exclusions in section 65 of Schedule 1 of the List of Toxic Substances established under CEPA 1999 (for the list of excluded substances, see [www.laws.justice.gc.ca/eng/acts/C-15.31/page-124.html#h-115](http://www.laws.justice.gc.ca/eng/acts/C-15.31/page-124.html#h-115)).

In addition, it is important to note the following:

- Approximately 100 VOCs are listed individually in Part 1A. Individual reports must be submitted for each of these VOCs that meet the Part 1A criteria (based on quantities manufactured, processed or otherwise used). Regardless of whether the Part 1A criteria are met, any releases to air of these substances must also be included in threshold calculations for Part 4 VOCs, along with all other VOCs emitted.
- When calculating Part 4 total VOCs, include any substance that meets the CEPA 1999 definition of VOC, even if it is not listed separately in Part 1 or Part 5.
- Base the VOC emissions on the total mass of all VOC substances emitted annually.
- In addition to total VOCs, facilities may be required to report additional information on speciated VOCs listed in Part 5 (see section 9 for more information).
- Total organic compounds (TOCs) and VOCs do not have the same definition. All VOCs can be considered TOCs; however, not all TOCs are considered VOCs.

## 8.2 Calculating Releases of Part 4 Substances

Table 16 lists some of the most common sources of CAC emissions, with a brief description of each. For more information on these sources of CACs, consult the CAC guidance documents in the NPRI Toolbox ([www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=65A75CDF-1)).

There are two possible scenarios that must be considered to determine which sources of CAC emissions must be included in threshold calculations. In Case 1, all CAC emission sources at the facility must be included in calculations. In Case 2, only the releases from the stationary combustion equipment at the facility should be included. Each case is described below.

### Case 1: Facilities that must consider CAC emissions from all sources

All sources of CAC emissions must be considered when calculating releases (excluding the sources listed in Table 4), if:

- the facility is a contiguous facility, portable facility or offshore installation at which employees work  $\geq 20\,000$  hours; or
- any of the activities to which the employee threshold does not apply (see Table 3) take place at the facility, regardless of the hours worked by employees.



## Case 2: Facilities that must consider CAC emissions from stationary combustion equipment only

When calculating releases of Part 4 substances, facilities must consider only emissions from stationary combustion equipment if:

- employees work < 20 000 hours; or
- the only activities that take place at the facility are those listed in Table 5; or
- the facility is a pipeline installation.

A facility that is exempt from reporting Parts 1–3 substances (see section 3.7.3) may still be required to report releases of CACs from stationary combustion equipment.

**Table 16. Common Sources of Criteria Air Contaminant Emissions**

Source	Description
Abrasive blasting	Abrasive blasting is the process of cleaning or texturing materials with an abrasive material, such as sand, coal and smelter slag, as well as mineral, metallic or synthetic abrasives. The blasting process itself is a source of PM emissions, especially PM <sub>10</sub> and PM <sub>2.5</sub> .
Equipment leaks	Equipment connections, joints and interfaces can be the source of gaseous and liquid releases. If the equipment is handling a gaseous stream containing a CAC, the gaseous leak would result in a fugitive CAC release. Depending on the properties of a liquid (such as vapour pressure, temperature and pressure), a liquid release may also result in a fugitive CAC release.
External combustion equipment	This comprises any equipment with a combustion process that occurs at atmospheric pressure and with excess air, including heaters, furnaces, incinerators, boilers, flares, combustion chambers, external combustion engines such as steam engines and Stirling engines, steam/electric generating plants, and other commercial units.
Fermenting	The process of fermentation involves the use of yeast, bacteria, enzymes, etc., to break down complex organic compounds. Many industries use fermentation, including the production of bread, spirits, pharmaceuticals, fuel, beer and wine, as well as environmental bioremediation processes.
Internal combustion equipment	This comprises any equipment with a combustion process that occurs in a confined space and above atmospheric pressure, including gas turbines, natural-gas-fired reciprocating engines, gasoline and diesel industrial engines, and large, stationary diesel and dual-fuel engines.
Loading and unloading	Fugitive CAC emissions can result from the loading and unloading of vehicles or containers. If the material being transferred is a liquid, the resulting emissions would likely be in the form of VOCs. If the material is a solid, the resulting emissions would likely be in the form of PM.
Painting	VOCs are released from paint during its application and drying. This category includes, but is not limited to, the painting of vehicles, furniture, storage tanks and any other painted product. PM <sub>2.5</sub> may also be emitted if paint is applied by pulverization.
Printing	VOCs are released from fixers, developers and solvents used during printing processes.
Road dust	TPM, PM <sub>10</sub> and PM <sub>2.5</sub> releases from road dust caused by vehicular traffic on unpaved roads within facility boundaries are required to be included in release calculations, when travel on these roads is ≥ 10 000 vehicle kilometres travelled per year.
Solvent use	Solvent use includes, but is not limited to, solvent degreasing, waste solvent reclamation, product formulation and commercial solvent use. Many solvents contain VOCs that are released during storage, through evaporation.
Stationary combustion equipment	This comprises any combustion equipment that needs to be stationary to function or operate properly, or is not capable of self-propulsion, including both internal and external combustion equipment.
Storage piles	Handling storage piles generates PM emissions. Pile moisture content, wind speed and proportion of aggregate fines all influence total emissions from a storage pile.
Storage tanks	These comprise any storage tanks containing fuels, solvents, hydrocarbons, paints and other solutions that contain VOCs. This includes fixed roof, external floating roof, domed external floating roof, internal floating roof, variable vapour space and pressure storage tanks.

## Possible exclusion for Case 2 facilities

A facility that meets the Case 2 criteria is **not** required to submit reports for CACs, if all the following criteria are met:

- CACs are released to air only from stationary external combustion equipment; and
- the cumulative nameplate capacity of all stationary external combustion equipment is less than 10 million BTUs/hour (10.55 million kJ/hour); and
- the only type of fuel combusted in that equipment is commercial-grade natural gas, liquefied petroleum gas, Number 1 or 2 fuel oil, or any combination thereof.

This exclusion does not apply if any other fuels are burned in the stationary external combustion equipment.

## 8.3 Reporting Releases of Part 4 Substances

If the reporting criteria are met for a Part 4 substance, the releases to air of that substance must be reported in tonnes. Case 1 facilities must report all releases from all sources. Case 2 facilities should only report releases from stationary combustion equipment.

Stack-specific releases to air may also need to be reported for each stack  $\geq 50$  metres (m) above grade, if the stack-specific release threshold specified in Table 17 is met. The following information about each stack must also be reported: height above grade, equivalent diameter, average exit velocity and average exit temperature.

**Table 17. Stack-Specific Release Thresholds for Criteria Air Contaminants**

Criteria Air Contaminant	Stack Release Threshold (tonnes)
Nitrogen oxides (expressed as nitrogen dioxide)	5
Sulphur dioxide	
Carbon monoxide	
Volatile organic compounds	
Total particulate matter	
Particulate matter with a diameter less than or equal to 10 micrometres (PM <sub>10</sub> )	0.25
Particulate matter with a diameter less than or equal to 2.5 micrometres (PM <sub>2.5</sub> )	0.15

### *Example of stack-specific CAC reporting*

A facility releases 25 tonnes of NO<sub>x</sub> to air from the whole facility. The facility has a stack that is 55 m above grade and that emitted 7 tonnes of NO<sub>x</sub>. The following must be reported:

- 25 tonnes of NO<sub>x</sub> must be first reported for total NO<sub>x</sub> releases (NO<sub>x</sub> has a total release threshold of 20 tonnes); and
- 7 tonnes of NO<sub>x</sub> must be reported under the stacks requirement (NO<sub>x</sub> has a stack release threshold of 5 tonnes).

## 9. Reporting for Part 5 Substances – Speciated Volatile Organic Compounds

Part 5 lists 75 VOCs in three groups (individual substances, isomer groups, and other groups and mixtures), which are subject to additional reporting requirements. These VOCs are collectively referred to as “speciated VOCs.” For a list of the speciated VOCs listed in Part 5, consult the NPRI website: [www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1](http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=E2BFC2DB-1).

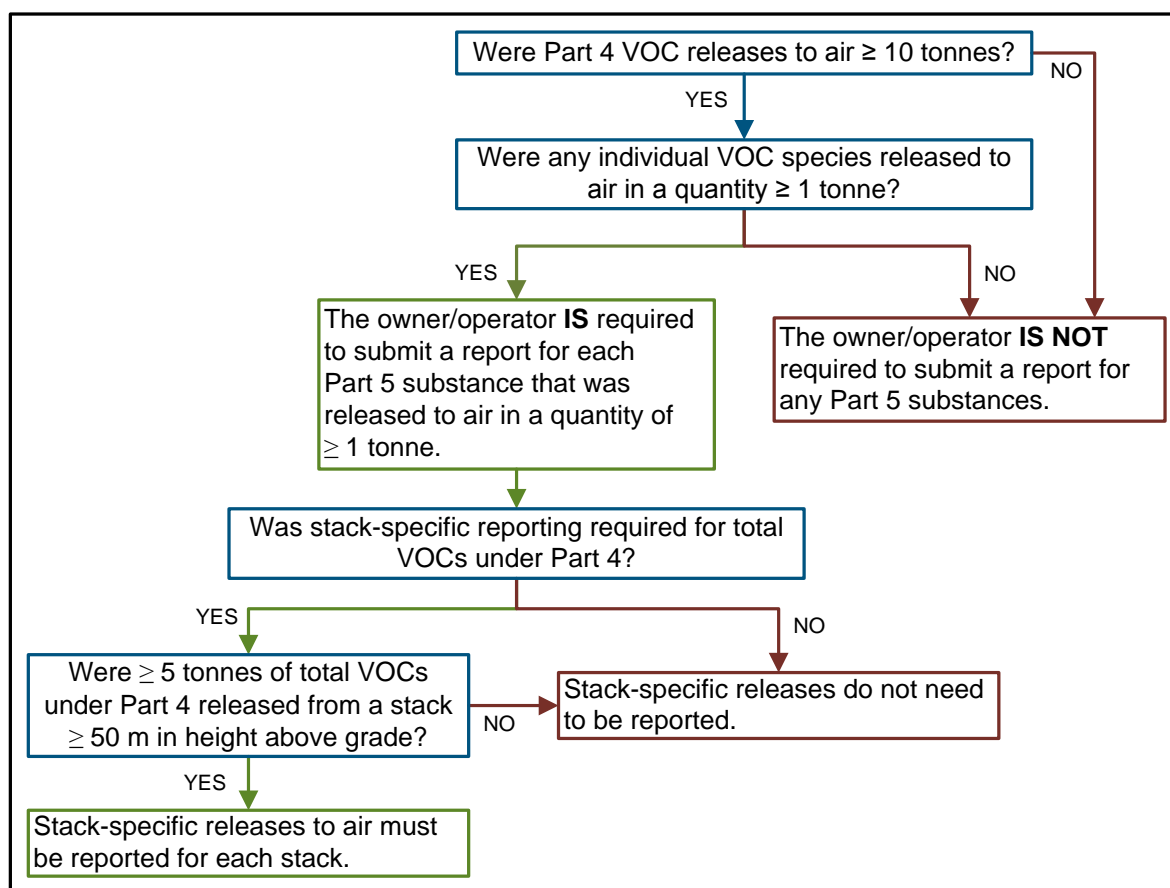
### 9.1 Reporting Criteria for Part 5 Substances

Like Part 4 substances, speciated VOCs must be reported based on quantities released to air. In general, any person who owns or operates a facility must submit a report to the NPRI for a Part 5 substance if both of the following criteria are met:

- Part 4 total VOCs released to air are  $\geq 10$  tonnes; and
- the total quantity of the Part 5 substance released to air is  $\geq 1$  tonne.

Figure 9 illustrates the steps for determining if a report for Part 5 substances is required, and, if so, what information must be reported.

**Figure 9. Reporting for Part 5 Substances**



### 9.1.1 Part 5 Substance Qualifiers

Some Part 5 substances and groups of substances are qualified in terms of what needs to be included when calculating releases. The qualifiers, described in Table 18, determine whether a report will be required for a given substance.

**Table 18. Part 5 Substance Qualifiers**

Substance Qualifier	Substance(s) to Which the Qualifier Applies	Description
and its salts	aniline (CAS RN 62-53-3)	Aniline and all salts of aniline must be reported as an equivalent weight of the acid or base.
all isomers	anthraquinone, butane, butene (25167-67-3), cycloheptane, cyclohexene, cyclooctane, decane, dihydronaphthalene, dodecane, heptane, hexene (25264-93-1), methylindan (27133-93-3), nonane, octane, pentane, pentene, terpenes (68956-56-9) and xylene (1330-20-7)	Total of all isomers reported as an aggregate of the individual isomers
	hexane	Total of all isomers reported as an aggregate of the individual isomers, excluding n-hexane (110-54-3)
	trimethylbenzene (25551-13-7)	Total of 1,2,3-trimethylbenzene (526-73-8) and 1,3,5-trimethylbenzene (108-67-8) Excludes 1,2,4-trimethylbenzene (95-63-6)

## 9.2 Calculating Releases of Part 5 Substances

There are two scenarios that must be considered to determine what sources of VOC emissions must be included in threshold calculations for Part 5 substances.

### Case 1: Facilities that must consider all sources of VOC emissions

All sources of VOC emissions must be considered when calculating releases (excluding the sources listed in Table 4), if:

- the facility is a contiguous facility, portable facility or offshore installation at which employees work  $\geq 20\,000$  hours; or
- any of the activities to which the employee threshold does not apply (see Table 3) take place at the facility, regardless of the hours worked by employees.

### Case 2: Facilities that must consider VOC emissions from stationary combustion equipment only

Only VOC emissions from stationary combustion equipment must be considered when calculating releases if:

- employees work  $<20\,000$  hours; or
- the only activities that take place at the facility are those listed in Table 5; or
- the facility is a pipeline installation.

## 9.3 Reporting Releases of Part 5 Substances

If the reporting criteria are met for a Part 5 substance, the releases to air of that substance must be reported. Part 5 substances must be reported in tonnes. Stack-specific releases to air may also need to be reported for each stack  $\geq 50$  m above grade if both of the following criteria are met:

- stack-specific reporting is required for total VOCs under Part 4; and
- 5 tonnes or more of total VOCs under Part 4 are released to air from the stack.

### *Example of stack-specific speciated VOC reporting*

A facility emits 28 tonnes of VOCs to air, 7 tonnes of which are emitted from a stack 65 m above grade. The remaining 21 tonnes are from storage/handling, fugitive releases, spills and other non-point sources. Three tonnes of styrene are released to air, 0.4 tonnes of which are from the 65 m stack. The following must be reported:

#### Part 4 (total VOCs):

- 28 tonnes of total VOCs must be reported under Part 4 (total VOCs have a release threshold of 20 tonnes);
- 7 tonnes of total VOCs must be reported for the facility's stack under Part 4 (total VOCs have a stack-specific release threshold of 5 tonnes).

#### Part 5 (speciated VOCs):

- 3 tonnes of styrene must be reported under Part 5 (speciated VOCs have a release threshold of 1 tonne);
- 0.4 tonnes of styrene must be reported for the facility's stack (speciated VOCs must be attributed to stack if the speciated VOC meets the facility-wide 1-tonne threshold, and the Part 4 VOC stack release threshold of 5 tonnes is met);
- the remaining 2.6 tonnes of styrene must be reported as being released from "other sources."

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