



Overview of Reviewed Facility-Reported Data

National Pollutant Release Inventory (NPRI)

2014



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For more information on the National Pollutant Release Inventory (NPRI), including guides, other annual summary reports and access to NPRI data, consult the NPRI website at 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 (<http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=D212BD29-1>) or by contacting us at:

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Table of Contents

Highlights	3
1 Introduction	5
2 General Considerations When Using NPRI Data	5
3 What's New for 2014.....	7
4 Overall Picture for 2014.....	9
5 Location of Facilities Reporting to the NPRI	10
6 Data on Direct Releases to Air, Water and Land.....	11
6.1 Direct Releases to Air of Criteria Air Contaminants (CACs)	12
6.2 Direct Releases to Air of Other Substances	14
6.3 Direct Releases to Surface Waters.....	17
6.4 Direct Releases to Land	18
7 Data on Disposals and Transfers	20
8 Pollution Prevention Information Reported to the NPRI	23
8.1 Pollution Prevention Planning.....	23
8.2 Pollution Prevention Activities.....	24
9 Technical Notes	27
10 Annex – Breakdown of 2014 NPRI Facility Reported Data by Substance, and by Substance Category.....	29
10.1 Part 1A – Substances listed at the original NPRI threshold (10 tonnes, 1%).....	29
10.2 Part 1B – Substances listed at an alternate threshold.....	33
10.3 Part 2 – Polycyclic aromatic hydrocarbons.....	34
10.4 Part 3 – Dioxins, furans and hexachlorobenzene.....	35
10.5 Part 4 – Criteria air contaminants.....	36
10.6 Part 5 – Speciated volatile organic compounds	37

Highlights

The purpose of this report is to provide a national level summary analysis of data on pollutant releases reported in 2014 by facilities that meet the NPRI's reporting requirements.

The current report was prepared using data submitted by facilities as of September 8, 2015, for the 2014 reporting year. This data also contains the updates and new reports submitted by facilities for 2013 or previous reporting years.

For the 2014 reporting year, 7,720 industrial, commercial and institutional facilities submitted NPRI reports, compared with 7,811 facilities in 2013.¹ 343 substances were reportable to the NPRI according to various thresholds, compared with 346 in 2013.

In 2014, the total quantities reported to the NPRI (5,014,714 tonnes) broke down as follows:

- Direct releases to air accounted for 63% (3,165,490 tonnes), largely consisting of criteria air contaminants (CAC) (61%);²
- Direct releases to surface waters accounted for 4% (204,561 tonnes);
- Direct releases to land accounted for 0.3% (16,009 tonnes);
- Direct releases to non-specified media (i.e. less than one tonne releases) accounted for 0.01% (408 tonnes);
- Quantities disposed of or transferred accounted for 32% (1,628,245 tonnes);

Between 2013 and 2014, total direct releases to air, water and land reported to the NPRI decreased by 2% (65,829 tonnes):

- Direct releases of criteria air contaminants to air declined by 145,466 tonnes, and direct releases of other substances to air decreased by 1,722 tonnes. Facilities with above-average releases reported that they: (1) changed their emission estimation factors (wood products sector); (2) decreased their production levels (electricity and aluminum sectors); (3) changed their technological processes (aluminum sector); and (4) used inputs that produced fewer emissions (electricity sector).
- Direct releases to surface waters increased by 77,374 tonnes, following an accidental spill from a mining facility's retention ponds in British Columbia in August 2014. The reported quantities of phosphorous, copper, zinc and vanadium in surface waters accounted for 96% of releases to surface waters (74,127 tonnes of NPRI reportable substances).
- Direct releases to land increased by 3,641 tonnes. This rise stems primarily from releases of ethylene glycol used as a de-icing agent by the air transportation sector; these releases are directly affected by weather conditions.

¹ At the time of drafting of the summary report for 2013, 7,582 facilities had submitted reports. More than 400 facilities subsequently submitted an update or a report for 2013. It should be noted that the NPRI reporting system is available year-round and that facilities can submit reports or corrected data at any time, regardless of the reporting year. Hence, at the time of drafting of this summary report for 2014, a total of 7,811 facilities had submitted reports to the NPRI for 2013.

² Percentages have been rounded.

Between 2013 and 2014, total reported quantities of substances disposed of or transferred (i.e. on-site disposals, off-site transfers for disposal, recycling or treatment prior to disposal, tailings and waste rock) decreased by 5% (90,457 tonnes):

- Tailings and waste rock quantities decreased by 157,750 tonnes. This drop is attributable to the closure of a mining facility in British Columbia and changes in the production levels of another mining facility in Newfoundland and Labrador. The variations in reported quantities are also attributable to varying concentrations of substances in mined ore.
- Disposals (excluding tailings and waste rock) increased by 35,576 tonnes. This increase is notably due to increased volumes and concentrations of hydrogen sulphide injected underground by the natural gas extraction sector compared with the previous year.
- Off-site transfers for recycling increased by 29,717 tonnes. This growth was chiefly caused by a Quebec oil refinery having transferred higher quantities of sulphuric acid off-site for recycling.

Finally, in 2014, of the 7,720 facilities that reported to the NPRI, 1,060 facilities reported they had implemented a pollution prevention plan and 1,157 facilities reported that they had implemented at least one pollution prevention activity, for a total of 3,374 reported activities. Pollution prevention activities can include materials or feedstock substitution; product design or reformulation; equipment or process modification; spill and leak prevention; on-site reuse, recycling or recovery; inventory management or purchasing techniques; good operating practices or training; or any other activities that minimize the creation of pollutant and waste.

1 Introduction

Under the *Canadian Environmental Protection Act, 1999* (CEPA 1999), owners or operators of facilities that meet reporting requirements published in the *Canada Gazette*, Part I, are required to report to the National Pollutant Release Inventory (NPRI).

The NPRI is Canada's legally mandated, publicly accessible inventory of annual facility-level pollutant releases to air, water and land, as well as disposals, and transfers for recycling.

The NPRI is a key resource for identifying and monitoring sources of pollution in Canada. It exists to support priority setting and monitoring of environmental performance measures, to contribute to the compilation of pollution patterns and trends, to provide environmental information in the public interest and to fulfill international reporting obligations.

NPRI data are used by governments, academia, industry, non-governmental organizations, international organizations, financial institutions, the media and the public.

This report presents a summary analysis of the information submitted by facilities to the NPRI for the 2014 reporting year.

2 General Considerations When Using NPRI Data

The current report was prepared using data submitted by facilities as of September 8, 2015, for the 2014 reporting year. This data also contains the updates and new reports submitted by facilities for 2013 or previous reporting years.³

NPRI facility data are available in multiple formats, including an online data search application, map layers for use with Google Earth™ and downloadable datasets. For a list of Frequently Asked Questions, access to the data and other information about the NPRI, please visit the NPRI website.

The NPRI makes a significant amount of data available to data users, and this data can be analyzed in a number of ways (e.g. by substance, by facility, by media [air, water, land], by geographic region, by industrial classification code and/or by type of release to the environment [direct releases, disposals, transfers]). NPRI data can also be combined with other data sources, such as monitoring data collected under other programs, to provide a more comprehensive picture of pollution in various areas of the Canadian environment.

There are considerations to be taken into account by data users to ensure NPRI data are analyzed and interpreted properly.

The NPRI is designed to track the largest sources of pollution from facilities, but not all sources of pollution in Canada. The NPRI requires that facilities that meet certain reporting criteria report their releases, as applicable, of more than 300 substances (which are indicated on a regularly updated list). This means that certain small facilities and facilities undertaking certain activities or in certain sectors are exempt from reporting.

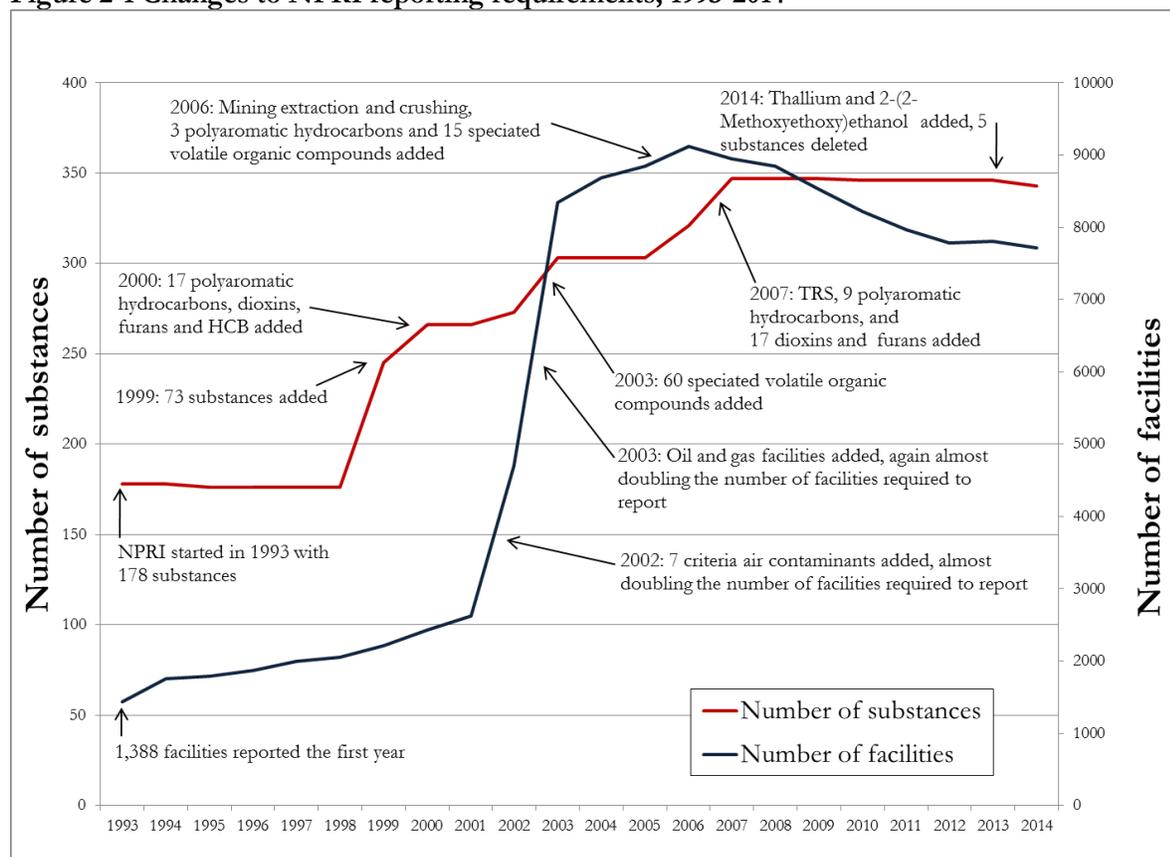
³ It should be noted that the NPRI reporting system is available year-round and that facilities can submit reports or corrected data at any time, regardless of the reporting year. More than 400 facilities submitted an update or a report for 2013 in the months following the publication of the NPRI summary report for 2013.

Data users should also note that NPRI substances do not all pose the same potential risk to the environment and to human health. This variation in the properties of different substances should be taken into account when processing (e.g. adding) NPRI data concerning different substances. The purpose of providing totals in this report is to offer a general perspective on pollutant releases, and not to characterize the impacts of this pollution.

Data users should also be aware of the possibility of double counting when adding NPRI substances from different facilities or from different parts of the NPRI reporting requirements. For example, certain substances (certain sulphur compounds, certain particulate matter fractions, certain aromatic hydrocarbons, etc.) must be reported under more than one NPRI reporting requirement. Consequently, these quantities are reported several times, and should not be added.

It is also necessary to take into account changes made to NPRI reporting requirements over time. Figure 2-1 illustrates how some of the changes made to the reporting requirements have had an impact on the number of facilities reporting to the NPRI over the years as well as on the list of reported substances. Other factors that impact on the number of facilities reporting to the NPRI include the closure of facilities, or changes in production levels or processes resulting in emissions that fall below the reporting threshold.

Figure 2-1 Changes to NPRI reporting requirements, 1993-2014



When conducting analyses over time or comparing facilities, possible changes involving the facility must be taken into consideration. Important factors can include changes in production levels, changes in the calculation methods used to quantify releases, the implementation of pollution prevention activities, or subsequent updates of the data submitted to the NPRI during previous years.

Finally, despite all the efforts made by NPRI reporting facilities, errors sometimes occur when submitting information to the NPRI. Environment Canada implements a number of measures to ensure the relevance, accuracy, reliability, completeness, understandability, accessibility, and timeliness of NPRI data in order to continue to meet the needs of data users. For more information, please consult the [data quality page](#) of the NPRI website.

For more information about the factors to consider when using and interpreting NPRI data, please refer to the [Guide for Using and Interpreting National Pollutant Release Inventory \(NPRI\) Data](#).

For more information on the assumptions and specific considerations used in preparing the NPRI Summary Report for 2014, please refer to the [Technical Notes](#).

3 What's New for 2014

Several changes were made to the NPRI reporting requirements for the 2014 reporting year.

Additions: Two substances, thallium (and its compounds) and 2-(2-Methoxyethoxy)ethanol, were added to Part 1 of the NPRI substance list.

2-(2-Methoxyethoxy)ethanol is a substance of concern, having been added in 2011 to the List of Toxic Substances (Schedule 1) of the CEPA 1999. For the 2014 reporting year, nine facilities reported 0.0458 tonnes of releases of 2-(2-Methoxyethoxy)ethanol.

Thallium is also of concern, since this substance group is considered one of the most toxic metals. This substance group will be evaluated in the next phase of the Chemicals Management Plan. Twelve facilities reported releases of 1,122.963 kg of thallium (and its compounds).

Deletions: Five substances were removed from the Part 1A list since, according to current information, they are not manufactured, processed or otherwise used by facilities in Canada, and they have been reported to the NPRI in the past in minimal or zero quantities. The NPRI reporting requirements therefore 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)

Alternate reporting threshold: Effective in the 2014 reporting year, several substances were to be reported according to a reduced mass threshold. The mass threshold for reporting these substances was previously 10 tonnes. Following a review of the NPRI substance list, their thresholds were deemed insufficient to collect the relevant data on the quantities released, disposed of or transferred by facilities in Canada.

The changes from 2013 to 2014 in total releases and in the total number of facilities reporting each substance are indicated in Table 3-1 below. For two of these substances (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate), one less facility reported releases in 2014 compared with 2013, as a result of changes made to their operational practices. In the case of isoprene, a slight decrease is noted in the quantities of releases reported despite the increase in the number of facilities that reported releases for this substance: one facility in particular indicated that it had instituted pollution prevention activities.

Table 3-1 2013-2014 comparison of total direct releases reported and number of reporting facilities

Substance name (and new mass reporting threshold)	2013		2014		Change in number of reporting facilities	Change in direct releases (in kg)
	Number of reporting facilities	Total direct releases (in kg)	Number of reporting facilities	Total direct releases (in kg)		
Acrylonitrile (1,000 kg; 0.1% concentration)	5	3,487	7	6,066	2	2,579
Bisphenol A (1,000 kg; 1% concentration)	6	1.0	18	81	12	80
Hydrazine (and its salts) (1,000 kg; 1% concentration)	4	934	4	1,285	0	351
Isoprene (100 kg; 1% concentration)	9	8,001	15	7,922	6	-78
Quinoline (50 kg of total PAHs released, 5 kg of quinoline released)	4	200	11	228	7	28
Toluene-2,4-diisocyanate (100 kg; 0.1% concentration)	5	-	4	0.373	-1	0.373
Toluene-2,6-diisocyanate (100 kg; 0.1% concentration)	4	-	3	0.125	-1	0.125
Toluene diisocyanate (mixed isomers) (100 kg; 0.1% concentration)	9	12	14	132	5	120
Nonylphenol and its ethoxylates (1,000 kg; 1% concentration)	43	24,835	62	52,485	19	27,650

More detailed information on [these changes and on other changes made to NPRI reporting requirements](#) for the 2014 reporting year can be found on the NPRI website.

4 Overall Picture for 2014

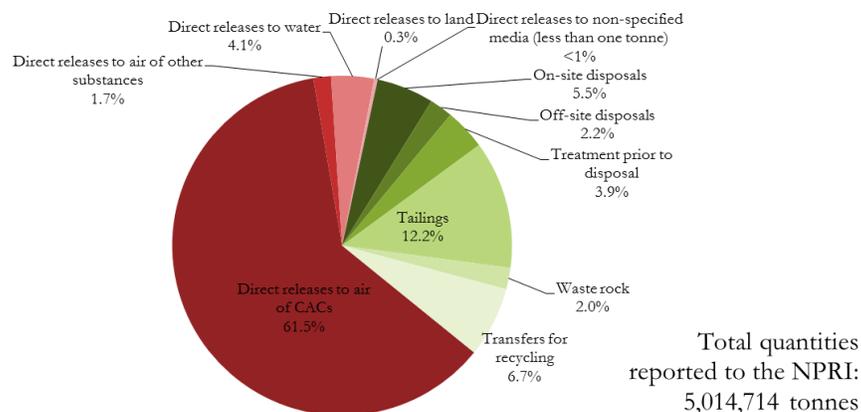
For the 2014 reporting year, 7,720 industrial, commercial and institutional facilities reported to the NPRI on the substances that they released into the environment (air, water, land), and/or disposed of or transferred to other facilities for recycling or treatment. This represents a decrease in the number of facilities reporting compared to the 7,811 reporting facilities in 2013.⁴ This decrease is attributed in particular to several facility closures. The number of facilities that do not meet NPRI reporting criteria also increased, from 707 in 2013 to 852 in 2014: this also contributed to the reduction in the number of NPRI reporting facilities.

In 2014, 343 substances were reportable to the NPRI according to various thresholds, compared to 346 in 2013. A facility is required to report the quantities of these substances released or managed if it meets the [NPRI reporting requirements](#).

Figure 4-1 below provides an overall breakdown of the quantities reported to the NPRI in 2014.

- Direct releases to air represented 63% of the quantities reported: this includes criteria air contaminants (CACs), which accounted for 61%, and other NPRI substances directly released to air, which represented nearly 2%.
- Direct releases to surface waters accounted for 4%, and releases to land, 0.3% of the total quantities reported in 2014.
- The quantities disposed of or transferred accounted for 32% of the quantities reported to the NPRI in 2014.

Figure 4-1 Breakdown of the total quantities reported in 2014, by reporting category



The total quantities released directly to air, water and land and to non-specified media decreased by 2% (65,829 tonnes) compared with 2013, while the total reported quantities of substances disposed of or transferred decreased by 5% (90,457 tonnes) between 2013 and 2014. More detailed information on these changes is provided in sections 6 and 7 of this report.

⁴ At the time of drafting of the summary report for 2013, 7,582 facilities had submitted reports. More than 400 facilities subsequently submitted an update or a report for 2013. It should be noted that the NPRI reporting system is available year-round and that facilities can submit reports or corrected data at any time, regardless of the reporting year. Hence, at the time of drafting of this summary report for 2014, a total of 7,811 facilities had submitted reports to the NPRI for 2013.

5 Location of Facilities Reporting to the NPRI

The 7,720 facilities that reported on direct releases, disposals and transfers to the NPRI in 2014 are distributed across all the provinces and territories of Canada, as shown in the map in Figure 5-1 and in Table 5-1.

Figure 5-1 Map of facilities reporting to the NPRI for 2014, by industry sector

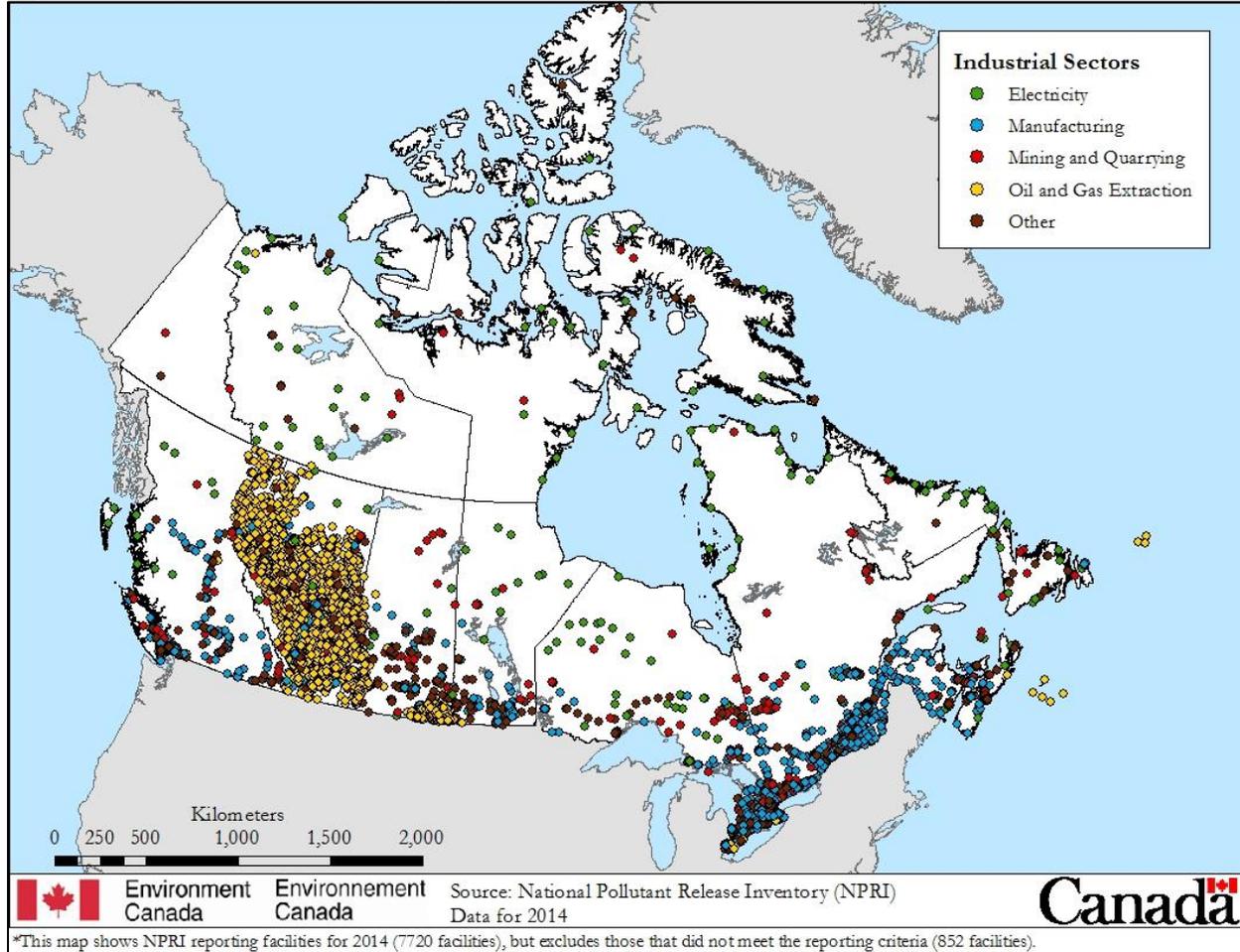


Table 5-1 Location of facilities reporting to the NPRI for 2014, by province and territory

Province	Number of facilities	Percentage
Alberta	3,193	41%
Ontario	1,656	22%
Quebec	808	11%
Saskatchewan	790	10%
British Columbia	769	10%
Manitoba	168	2%
Nova Scotia	107	1%
New Brunswick	70	1%
Newfoundland and Labrador	69	1%
Northwest Territories	39	< 1%

Province	Number of facilities	Percentage
Nunavut	38	< 1%
Prince Edward Island	11	< 1%
Yukon	2	< 1%
Total	7,720	100%

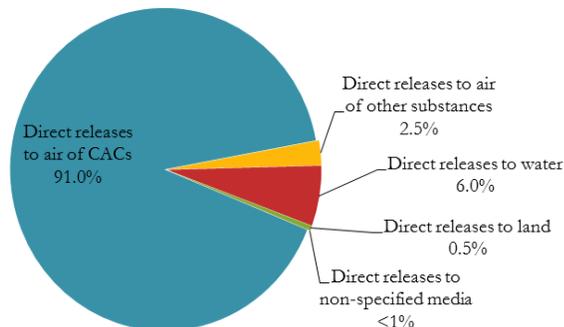
6 Data on Direct Releases to Air, Water and Land

This section presents the breakdown of total reported direct releases⁵ for the 2014 reporting year, the changes compared to 2013, the substances and main sectors associated with these releases, as well as the changes over time of total releases since 2005.

As indicated in Figure 6-1, the majority of the direct releases reported to the NPRI in 2014 were releases to air and were mainly compounds classified as criteria air contaminants (CACs). CACs include carbon monoxide, sulphur dioxide, nitrogen oxides, volatile organic compounds, total particulate matter, particulate matter with a diameter of less than 10 microns and particulate matter with a diameter of less than 2.5 microns. For analysis purposes, only total particulates are studied, since they include particulate matter with a diameter of less than 10 microns and 2.5 microns. For more information on this topic, see section 9 (Technical Notes).

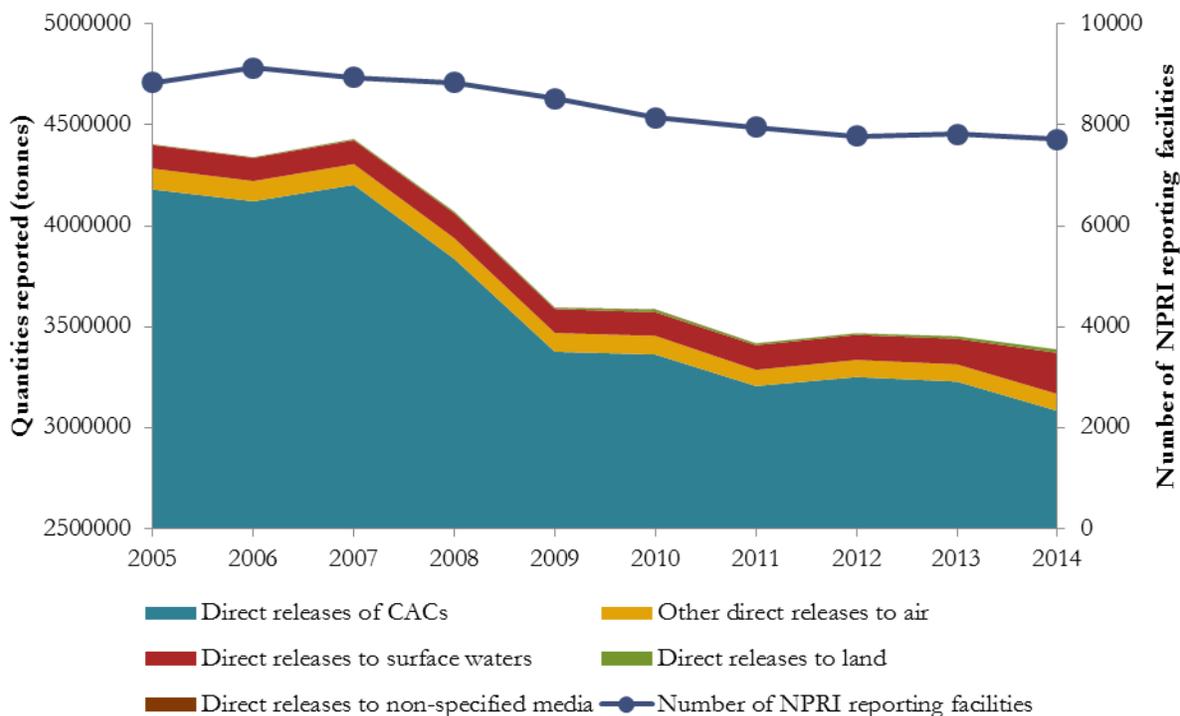
Direct releases of other NPRI substances are studied separately from CACs in this report.

Figure 6-1 Breakdown of total direct releases reported to the NPRI for 2014



⁵ Direct releases include total direct releases to air, water and land as well as releases to non-specified media (releases of less than one tonne reported irrespective of the receiving media (air, water or land)).

Figure 6-2 Changes over time of total direct releases by medium since 2005 relative to the number of facilities



Generally, the quantities released directly into the environment tend to decline in keeping with decreases in the number of facilities reporting. Between 2013 and 2014, total direct releases reported to the NPRI fell by 65,829 tonnes, a 2% decrease which was associated with a 1% decrease in the number of facilities (91 facilities). The 5% decrease in direct releases of CACs was the main contributor to this decline. However, in 2014, following an accidental spill that occurred at a mining facility in British Columbia, a 60% increase (77,374 tonnes) in direct releases to surface waters was observed, which offset this overall decline.

As illustrated in Figure 6-2, total direct releases to air, surface waters and land reported to the NPRI decreased by nearly 22% (987,663 tonnes) between 2005 and 2014. This difference is made up of a notable reduction in direct releases reported between 2008 and 2009. Reductions continued in the following years (2010-2014) at a lower and more stable rate.

6.1 Direct Releases to Air of Criteria Air Contaminants (CACs)

Similar to previous years, direct releases of CACs to air accounted for 61% of the total quantities reported to the NPRI and 91% of the direct releases reported to the NPRI in 2014, or 3,081,857 tonnes.

Figure 6-3 Map of facilities reporting direct releases to air of CACs in 2014, by sector, and reported total quantities of these releases

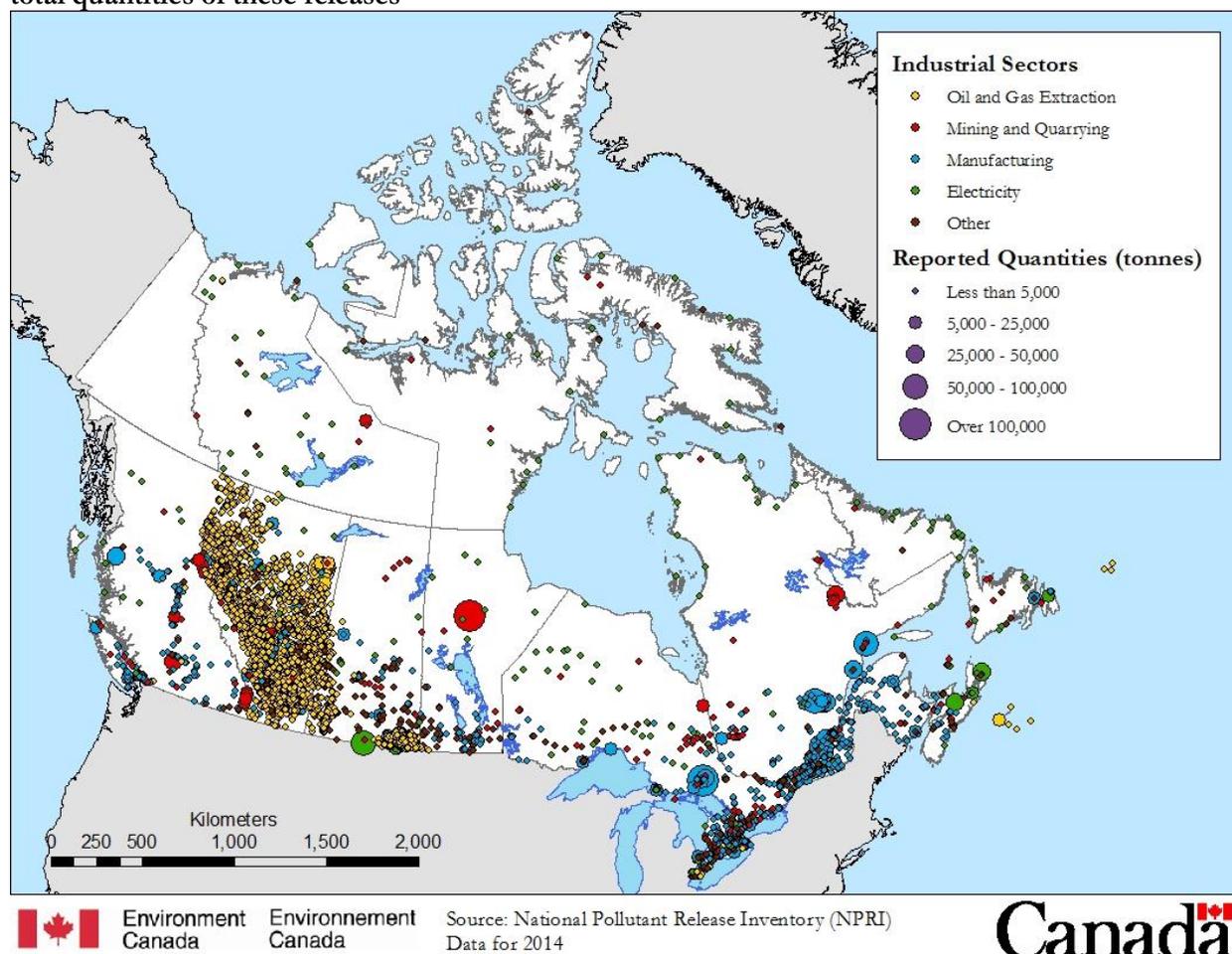


Figure 6-3 shows the location of NPRI reporting facilities that reported direct releases to air of substances other than CACs. Aluminum smelters from the manufacturing sector in Quebec reported significant releases of carbon monoxide from aluminum electrolysis. A foundry in southern Ontario and a mining facility in Manitoba each reported over 100,000 tonnes of sulphur dioxide releases. Finally, the many electric power generation stations seen on this map are coal-burning stations which release large quantities of sulphur dioxide and nitrogen oxide.

It is important to monitor these releases, as CACs contribute to smog and acid rain, and reduce air quality. Criteria air contaminants come from many sources: discharges through a stack, vent or other points of release; losses from storage and handling of materials; fugitive emissions (releases that cannot be captured and unintentional releases); and spills and accidental releases. Road dust, generated by vehicles operating on-site at a facility, is also taken into account. Table 6-1 provides the breakdown of the types of direct releases of CACs to air for 2014.

Table 6-1 Breakdown of the types of direct releases of CACs to air in 2014

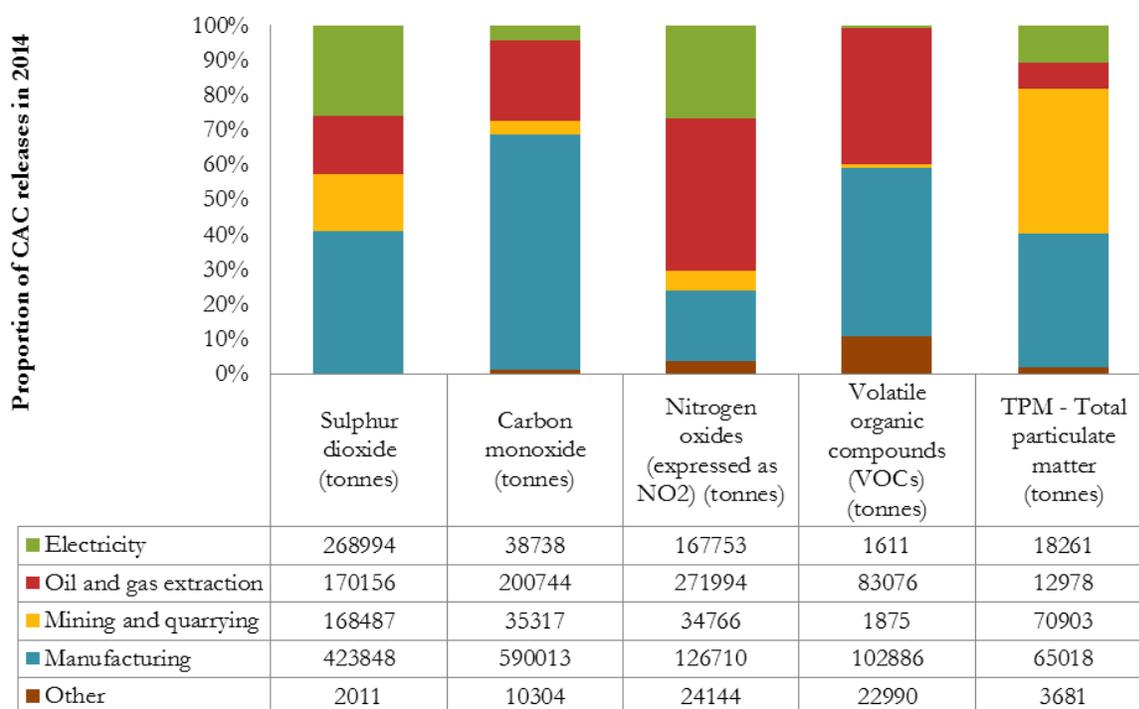
Type of release	Percentage	Total (tonnes)
Stacks	86.3%	2,658,585
Road dust	5.3%	164,600
Fugitive emissions	5.7%	176,531

Type of release	Percentage	Total (tonnes)
Storage and handling	1.8%	53,819
Other non-point releases	0.9%	27,665
Spills	< 1%	657
Total	100%	3,081,857

Similar to 2013, the sectors with the largest reported direct releases of CACs for 2014, as illustrated in Figure 6-4, were primary metal smelting, oil and gas extraction, and electric power generation.

However, there are other major sources of these pollutants, such as motor vehicles, residential heating, forest fires and agriculture. For more information concerning these other sources, see the [2013 Air Pollutant Emission Summaries](#).

Figure 6-4 Sectoral breakdown of direct releases of criteria air contaminants in 2014



Total direct releases of CACs reported to the NPRI decreased by approximately 5% (145,466 tonnes) between 2013 and 2014. Facilities with above-average direct releases reported in 2014: (1) having changed their emission factors (sawmills); (2) reduced their production levels (various sectors including electric power generation, aluminum smelters and coal mining); (3) changed their technology (removal of the Söderbergh pot from an aluminum smelter located in Quebec); and (4) used inputs producing lower emissions (coal containing less sulphur used for electric power generation).

6.2 Direct Releases to Air of Other Substances

Direct releases of substances to air other than criteria air contaminants (CACs) accounted for slightly more than 2% of direct releases reported to the NPRI in 2014, or 83,633 tonnes.

Table 6-2 provides the breakdown of the various types of direct releases to air reported to the NPRI in 2014.

Table 6-2 Breakdown of the types of direct releases to air in 2014

Type of release	Percentage	Total (tonnes)
Stacks	77.3%	64,606
Fugitive emissions	16.2%	13,551
Storage and handling	3.8%	3,153
Other non-point	2.6%	2,142
Spills	0.2%	181
Total	100%	83,633

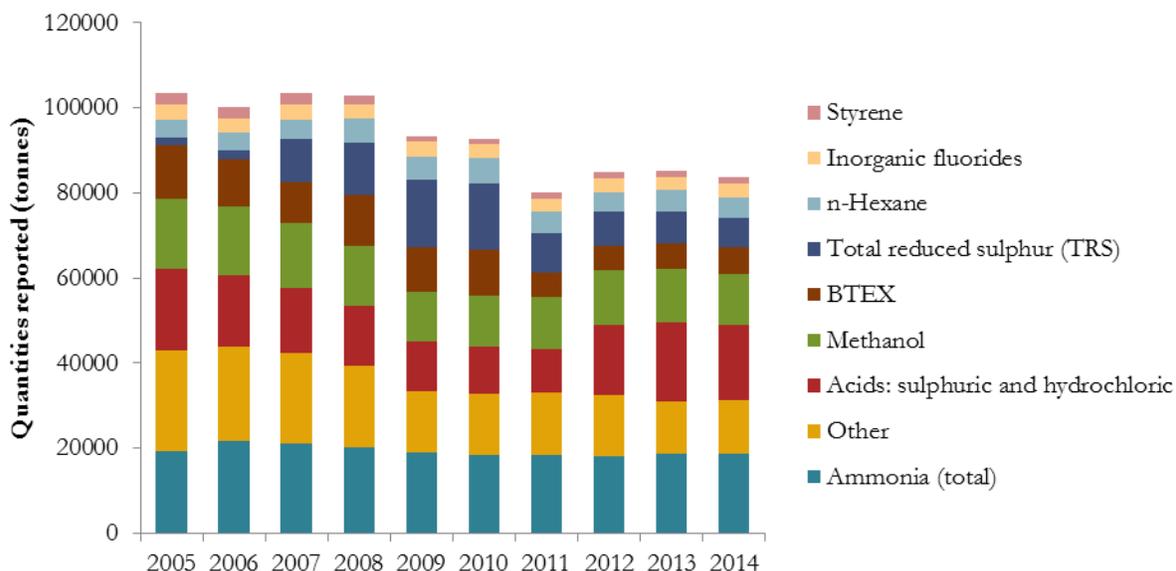
Ammonia, methanol, hydrochloric acid and sulphuric acid are the reported substances that were released in the largest amounts directly to air in 2014 (for specific details concerning the direct releases of these substances, see section 10 of this report: Annex – Breakdown of 2014 NPRI Facility Reported Data by Substance, and by Substance Category).

The manufacturing sector reported the highest releases directly to air for substances other than CACs, and pulp, paper and paperboard mills and wood product manufacturing were major contributors to these releases.

Between 2013 and 2014, direct releases to air of substances other than CACs reported to the NPRI decreased by approximately 1,722 tonnes, a 2% decrease. Collectively, the individual variations among facilities offset this reduction in releases: while factories in the manufacturing group (including pulp and paper mills, the non-ferrous metals smelting and refining industry, and primary aluminum production) reported decreases in releases to air, the electricity and oil extraction sectors reported increases in releases to air of substances other than CACs, thereby offsetting the decreases reported in the other sectors.

The changes over time of direct releases to air reported to the NPRI for substances other than CACs over the past ten years are presented in Figure 6-5. Between 2005 and 2014, these releases decreased by 19% (19,906 tonnes). In 2009, and overall reduction of these releases was mainly from multiple facility closures in the manufacturing sector.

Figure 6-5 Changes over time of direct releases to air: substances accounting for 85% of these releases (excluding CACs)

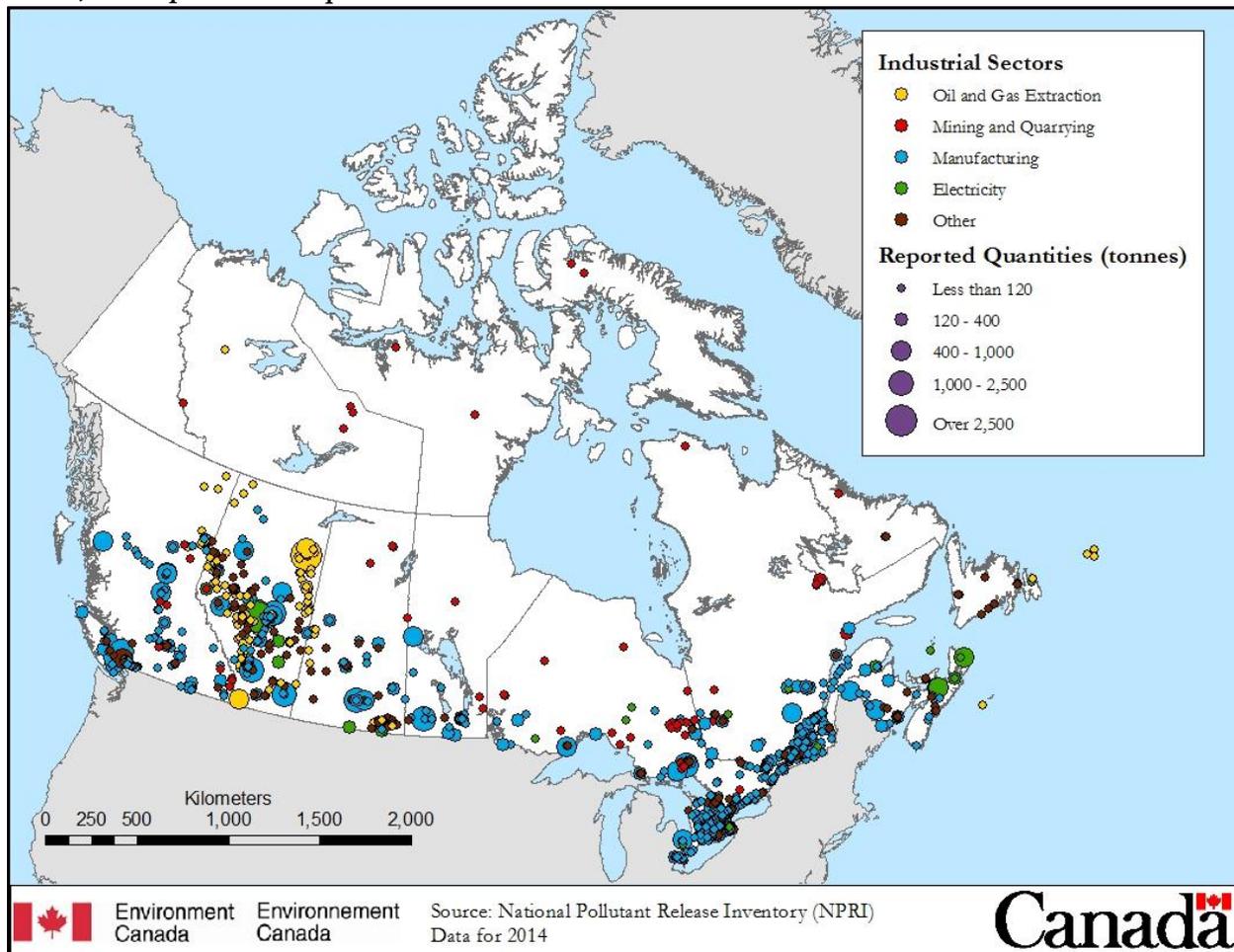


Between 2007 and 2010, the increase in direct releases to air of total reduced sulphur (TRS) was due to growth in the oil and gas sector. In 2011, the reduction in total releases of TRS occurred following changes in their measurement methodology at the source and in the emission factors used. BTEX substances (benzene, toluene, ethylene and xylene) reported from this sector also decreased in a similar fashion and for similar reasons.

Since 2012, reported direct releases of hydrochloric and sulphuric acids have increased, and this is attributable to the use of a new emission factor for calculating releases to air by the electricity sector. The metal fabrication sector also reported changes in production levels since 2008 that may have impacted air emissions of these acids.

Figure 6-6 shows the location of NPRI reporting facilities that reported direct releases to air of substances other than CACs. When compared with Figure 5-1, this map shows that the facilities which contribute the most to the direct releases to air of NPRI substances other than CACs are mainly in the manufacturing sector. Certain facilities in the non-conventional oil extraction and coal-burning electric power generation sectors stand out on the map, given the magnitude of the releases reported.

Figure 6-6 Map of facilities reporting direct releases to air of substances other than CACs in 2014, by sector, and reported total quantities of these releases



6.3 Direct Releases to Surface Waters

Direct releases to surface waters accounted for 4% of the total quantities reported to the NPRI in 2014 and 6% of total direct releases, or 204,561 tonnes.

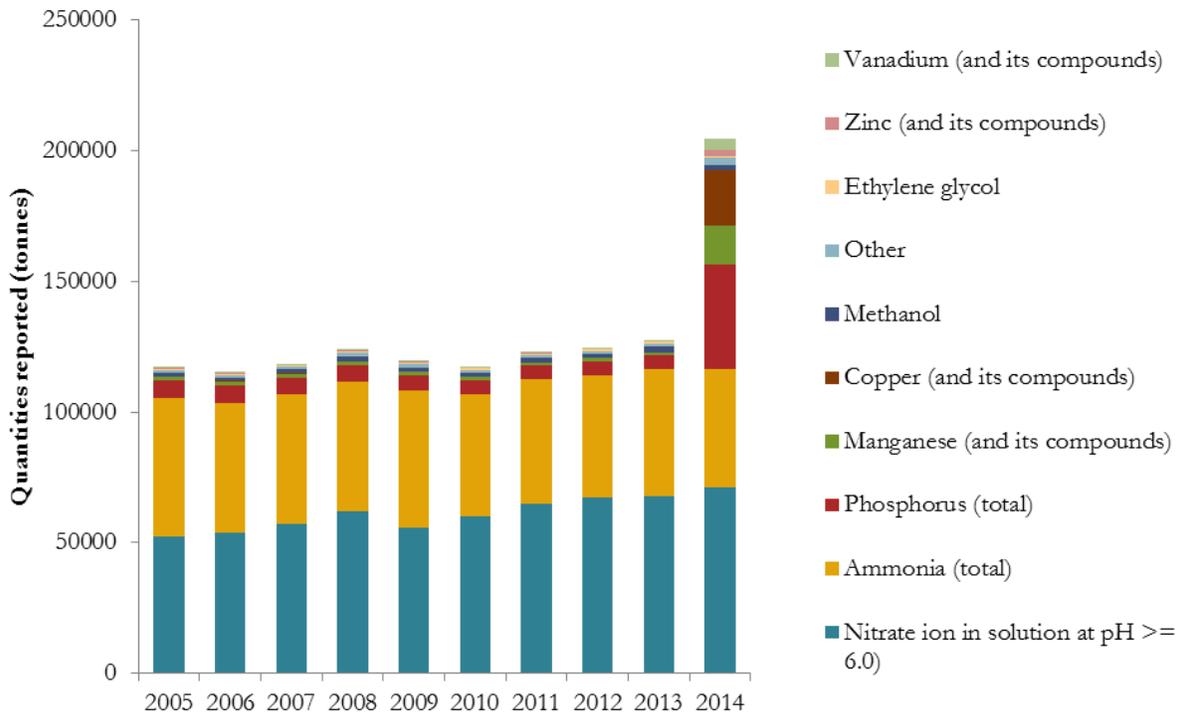
Direct releases to surface waters include direct discharges, accidental spills and leaks. Table 6-3 details the proportions for each type of direct release. For NPRI reporting purposes, releases from wastewater treatment plants are included under this category, but discharges to wastewater treatment plants are reported under the category of off-site transfers for treatment prior to final disposal (municipal treatment plants).

Table 6-3 Breakdown of the types of releases to surface waters in 2014

Type of release	Percentage	Total (tonnes)
Direct releases	63.5%	129,793
Accidental spills	36.6%	74,767
Leaks	<1%	1.6
Total	100%	204,561

As in the 2013 reporting year, the substances reported as released directly to water in the largest amounts for 2014 were nitrate, ammonia, phosphorus and manganese, as shown in Figure 6-7. Between 2013 and 2014, releases to surface waters reported to the NPRI increased by 60% (77,374 tonnes). A significant increase was observed in the quantities of phosphorus, manganese, copper, zinc and vanadium released in 2014 following an accidental spill from the retention ponds of a mining facility in British Columbia. Prior to this spill, these substances were largely disposed of as tailings, however, once the tailings retention pond dam was breached, these substances were consequently released to surface waters. This accidental spill in August 2014 resulted in a total reported release of 74,127 tonnes.

Figure 6-7 Changes over time of direct releases to surface waters: substances accounting for 85% of these releases

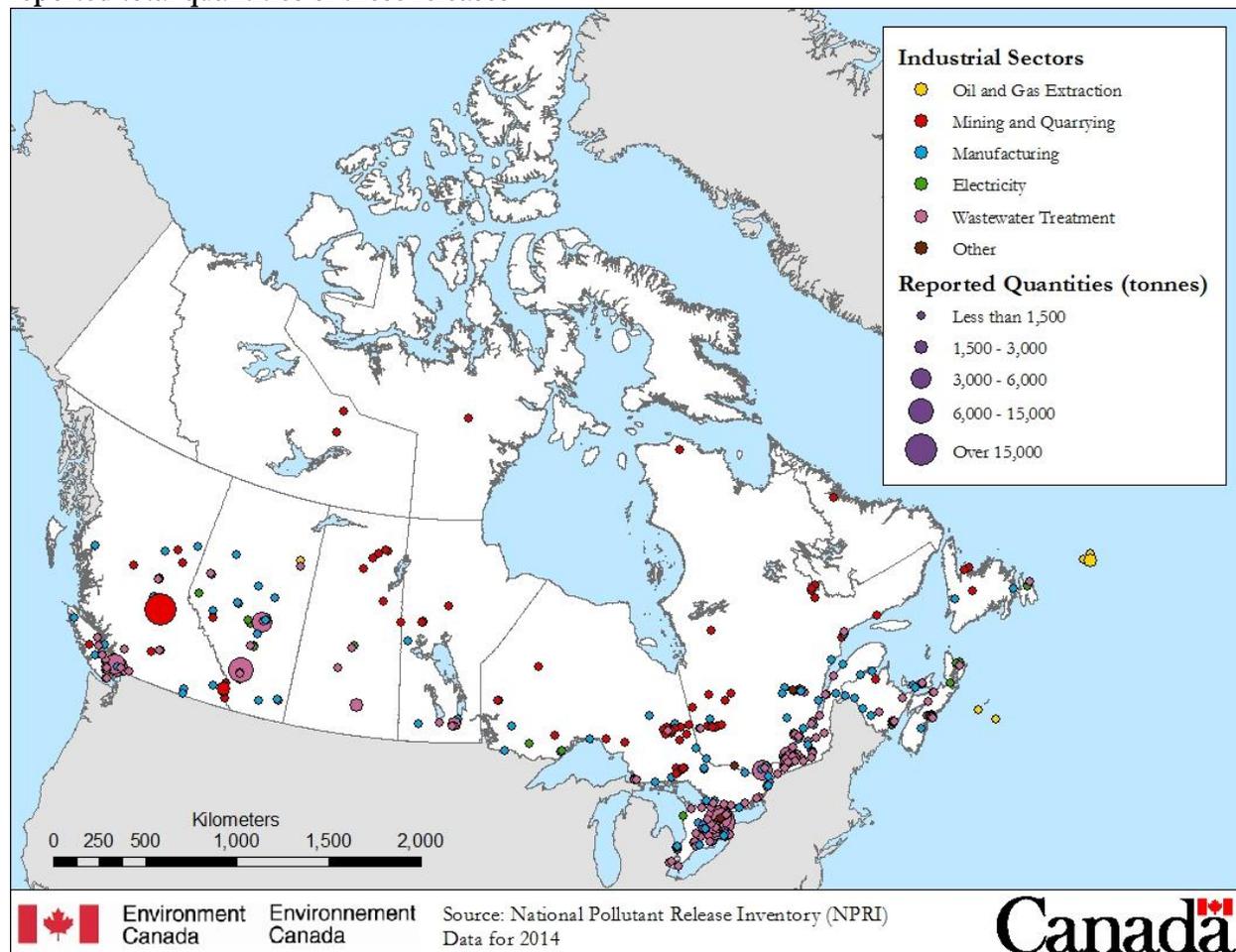


The largest direct releases to surface water were from the sector comprising water, wastewater and other systems: this sector is mainly composed of municipal wastewater treatment plants. Wastewater is a term typically used to describe liquid wastes from two types of sources. The first source, sanitary sewage, is generated from homes, businesses, institutions and industries. The second source, stormwater, is generated from rain or melting snow that drains off rooftops, lawns, parking lots, roads and other urban surfaces.

Direct releases to surface waters between 2005 and 2013 remained stable. The increase in 2014 was the result of an accidental spill from the retention pond of a mining facility in British Columbia.

The map which follows in Figure 6-8 shows the location of the facilities that reported direct releases to surface waters for 2014. Given the magnitude of the direct releases to surface waters that wastewater treatment plants must manage, this sector was considered separately from the “Other” sectors for the purposes of this map. It is also possible to identify the location of the above-mentioned mining facility in British Columbia, given the magnitude of the releases reported.

Figure 6-8 Map of facilities reporting direct releases to surface waters for 2014, by sector and reported total quantities of these releases



6.4 Direct Releases to Land

Direct releases to land represented 0.3% of the total quantities reported to the NPRI in 2014 and 0.5% of reported direct releases, or 16,009 tonnes. Direct releases to land (surface or underground) include accidental

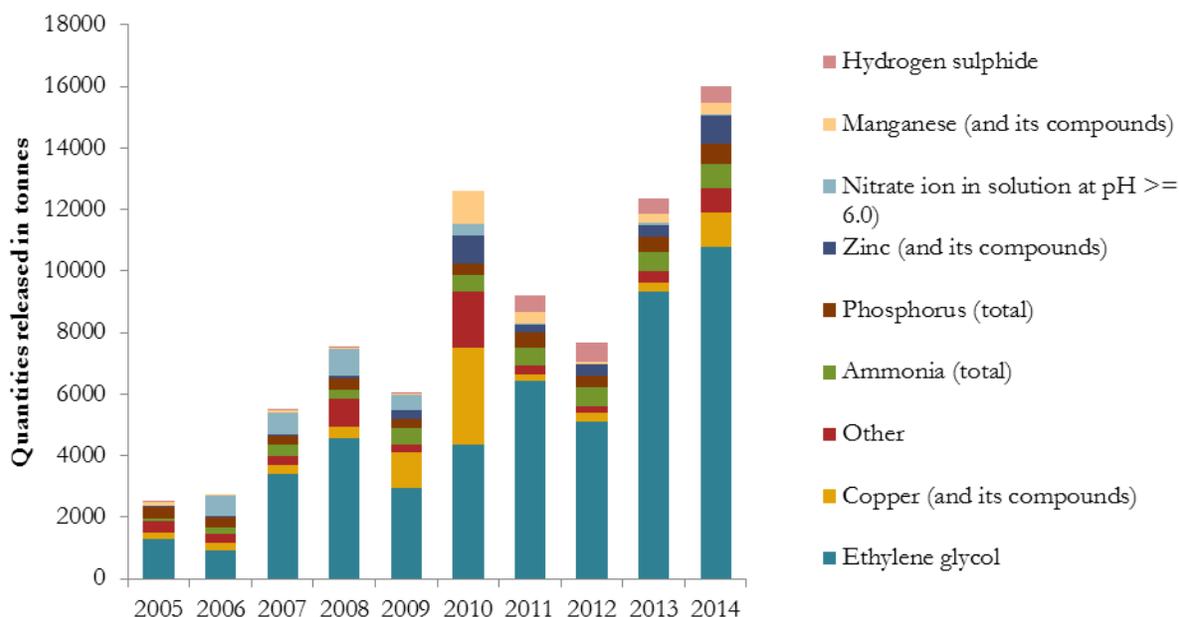
spills, leaks, and other releases to land which are not spills, leaks or disposals (e.g. application of aircraft de-icing products). The breakdown of direct releases to land reported in 2014 is provided in Table 6-4.

Table 6-4 Breakdown of types of direct releases to land in 2014

Type of release	Percentage	Total (tonnes)
Accidental spills	0.1%	8.0
Leaks	<1%	0.883
Other	99.9%	16,000
Total	100%	16,009

As illustrated in Figure 6-9, the substances reported as released directly to land in the largest quantities for 2014 were ethylene glycol, copper (and its compounds), ammonia, phosphorus and manganese (and its compounds).

Figure 6-9 Changes over time of direct releases to land: substances accounting for 85% of these releases

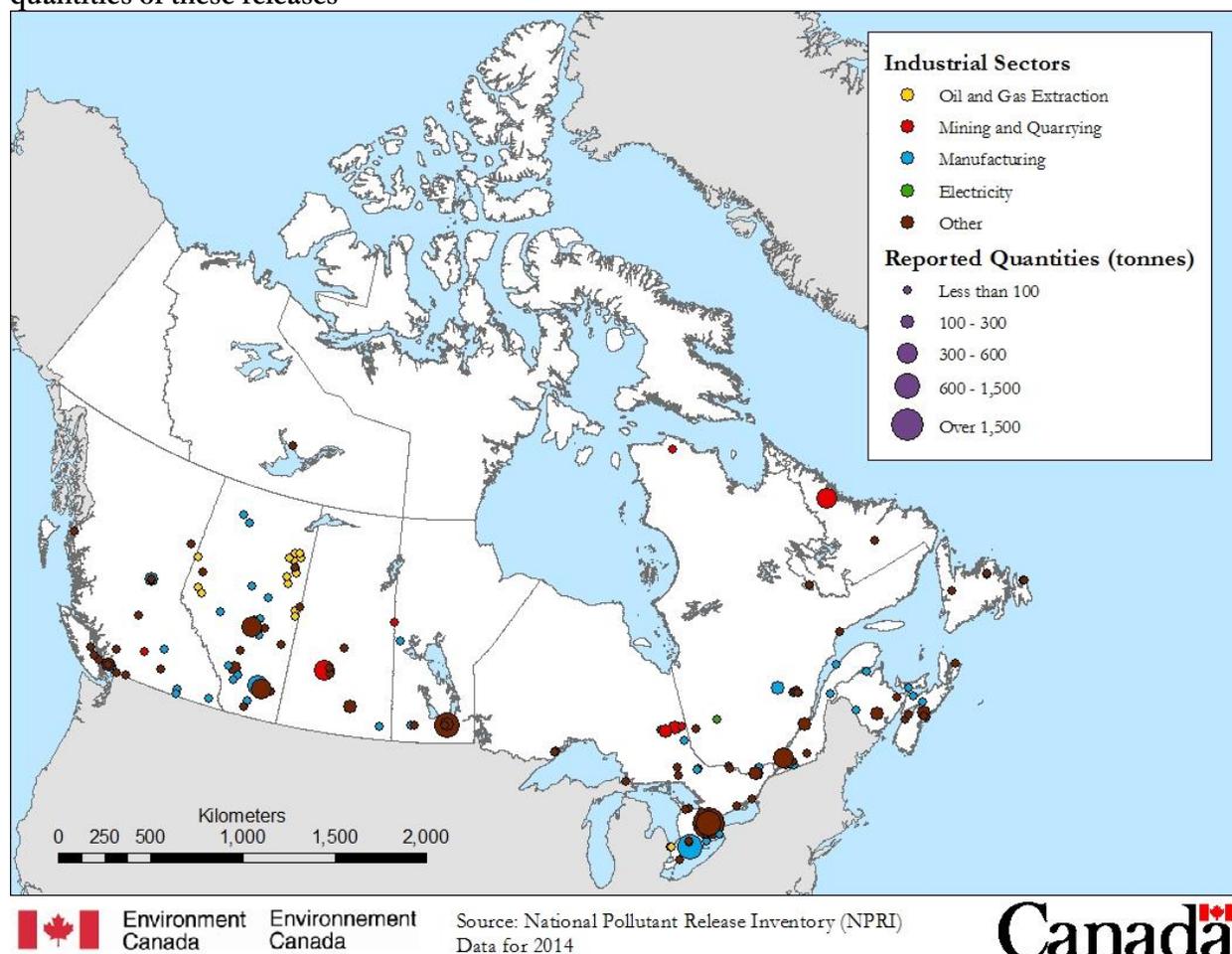


Between 2013 and 2014, direct releases to land increased by 29% (3,641 tonnes). Three major reasons explain this variation:

First, ethylene glycol accounted for 60% of direct releases to land in 2014, as a result of its use as a de-icing agent in airports, use which fluctuates based on seasonal weather conditions. Second, the Defence Services sector also reported in 2014 direct releases to land of certain metals, mainly during firing exercises. Finally, the increases in copper and zinc in 2014 can be attributed to a hardware manufacturing facility in Ontario.

Figure 6-10 shows the location of the facilities that reported direct releases to land for 2014: the number of such facilities is very small and they were mainly facilities in the Scheduled Air Transportation sector and the Support Activities for Air Transportation sector (classified here in the “Other” sector).

Figure 6-10 Map of facilities reporting direct releases to land for 2014, by sector and reported total quantities of these releases



7 Data on Disposals and Transfers

This section provides a breakdown of the quantities of substances disposed of or transferred, as reported to the NPRI; the main substances and sectors; as well as the changes over time of the quantities disposed of or transferred since 2005.

The management of these substances is divided into two categories: disposals and transfers, which are further divided into sub-categories, as defined below:

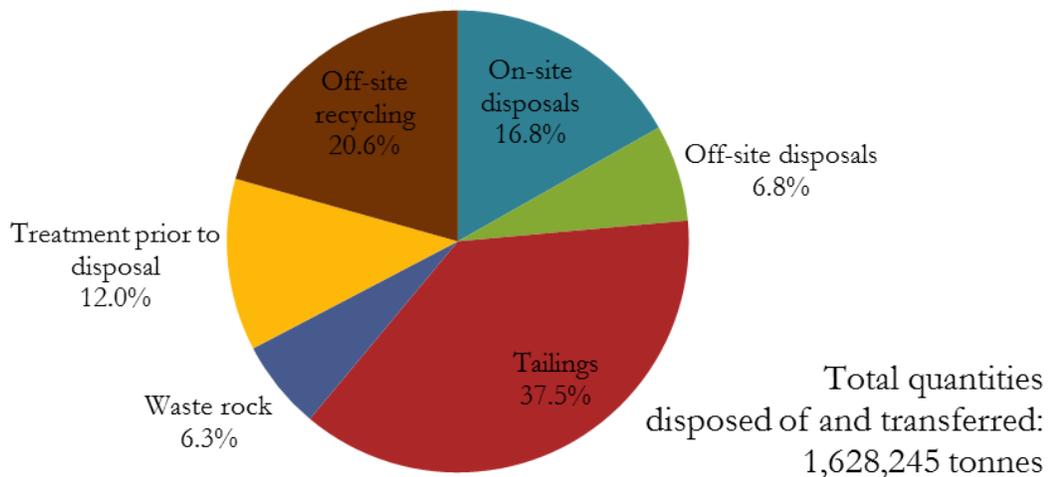
- On-site disposals: a substance can be permanently disposed of by various methods, including landfilling, underground injection or land application. This is termed on-site disposal if it takes place on the site of the reporting facility.
- Off-site disposals: when the disposal takes place outside the site, this is termed “off-site” disposal. These transfers can take place within Canada or outside the country. The methods used are the same as for on-site disposals.
- Off-site transfer for treatment prior to disposal: also called “treatment prior to disposal” or “treatment”; this category indicates that a substance may have been altered physically, chemically,

biologically, by incineration or by treatment in a municipal treatment plant before being disposed of off site.

- Tailings: are the waste material that remains after the processing of ore, ore concentrate or other mined materials (e.g. oil sands) to extract marketable components such as metals, minerals or bitumen. Depending on the type of process used and the material being recovered, tailings could include finely ground rock material, sand, clay, water, chemicals used in the process, or residual metals, minerals or bitumen.
- Waste rock: is rock that is removed during mining operations to provide access to the ore, and is not further processed at that time. Waste rock generally consists of fragmented pieces of rock of various sizes.
- Off-site transfers for recycling: also called “off-site recycling” or “recycling”, associated with the activities that keep a material or component of the material from becoming a waste destined for final disposal. Facilities that meet the NPRI reporting thresholds submit information on the quantities of substances that they transfer *off site* for recycling. On-site recycling activities do not have to be reported.

The quantities of substances disposed of or transferred reported to the NPRI accounted for 32% of the quantities reported to the NPRI in 2014, or 1,628,245 tonnes.

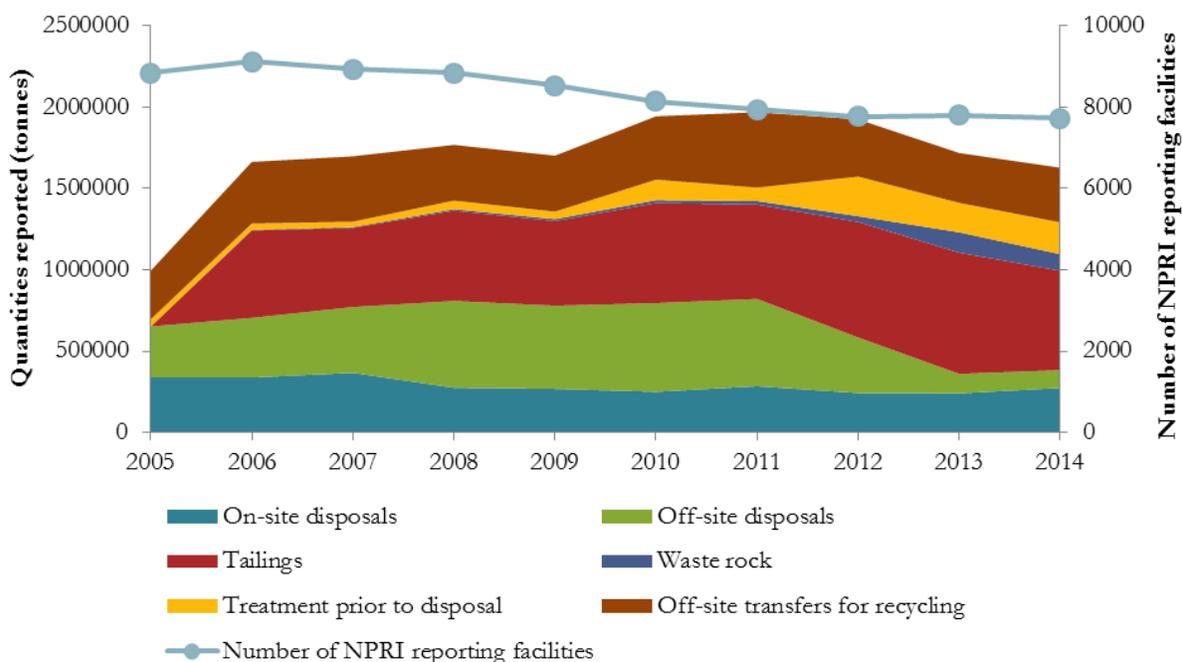
Figure 7-1 Breakdown of total disposals and total transfers reported to the NPRI in 2014



As can be seen in Figure 7-1, the majority of the quantities disposed of or transferred reported to the NPRI in 2014 come from the management of tailings, whether on site or off site.

Figure 7-2 which follows presents the breakdown of these reported quantities over the last ten years and makes it possible to compare the changes between 2013 and 2014, as well as to note the changes over time of the reports since 2005.

Figure 7-2 Changes over time of total quantities reported to the NPRI between 2005 and 2014

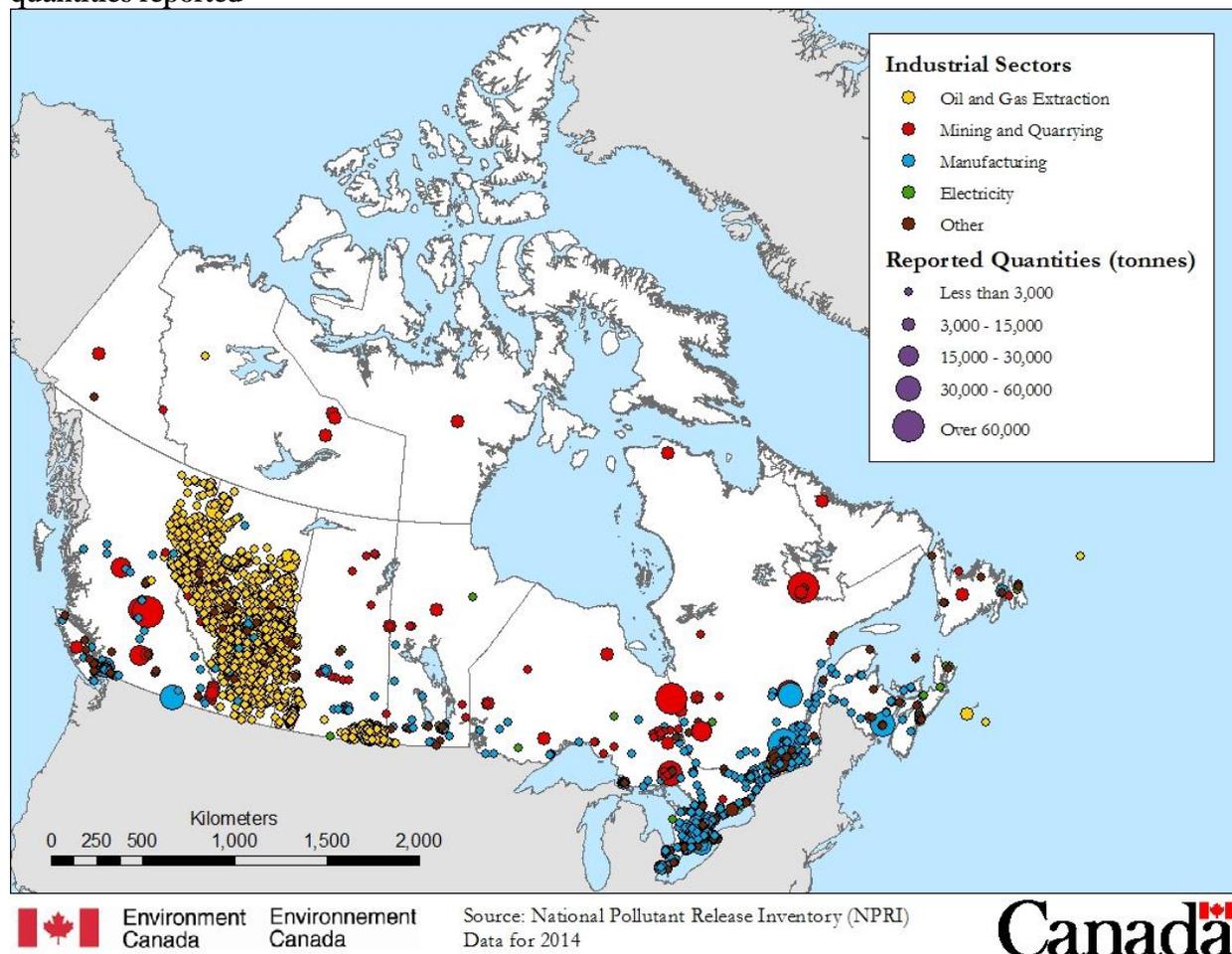


Between 2013 and 2014, the total reported quantities of substances disposed of or transferred decreased by 5% (90,457 tonnes). The quantities of NPRI substances contained in tailings and waste rock reported by the mining and quarrying sector contributed the most to this decline. However, this reduction is offset by an increase in the quantities disposed of on site, treated prior to disposal and recycled.

In 2005, tailings and waste rock were not reported to the NPRI; they were added to the inventory in 2006, which explains the sudden increase in the quantities of tailings and waste rock reported. These managed quantities remained quite stable between 2006 and 2014, with a slight decrease of 2% (35,911 tonnes); the increases in tailings and waste rock and in treatment prior to disposal are offset by decreases in the other disposal and recycling categories.

Figure 7-3 which follows presents the facilities that reported disposals and transfers for 2014, across Canada. The sectors contributing the most to the quantities of NPRI substances disposed of or transferred were the manufacturing sector, as well as the mining and oil and gas sectors.

Figure 7-3 Map of facilities that reported disposals and transfers for 2014, by sector and total quantities reported



In the case of off-site transfers for treatment prior to final disposal, physical treatment is the most commonly used method, and includes drying, evaporation, encapsulation and vitrification. The treatment of a substance in a municipal wastewater treatment plant is also one of the most commonly used treatment methods.

8 Pollution Prevention Information Reported to the NPRI

Pollution prevention (P2) is defined in the *Canadian Environmental Protection Act, 1999* (CEPA 1999) as: “the use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants and waste, and reduce the overall risk to the environment or human health.” Pollution prevention seeks to prevent the creation of pollutants rather than managing them after they have been created. This often results in cost savings for facilities. For more information on P2 see the [Pollution prevention section of Environment Canada’s website](#).

8.1 Pollution Prevention Planning

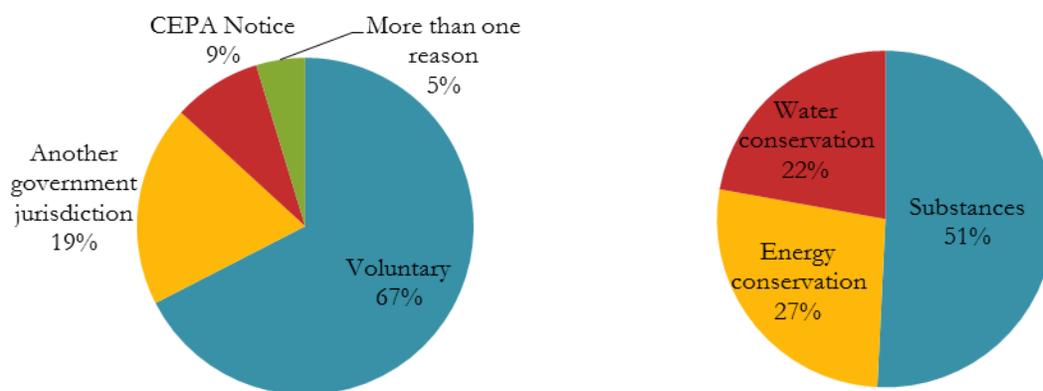
Under the NPRI, facilities are required to report whether a documented P2 plan is in place for their operation and whether this plan was updated during the reporting year. Facilities must then indicate if P2 plans were

prepared or implemented (a) to meet a requirement of P2 Planning Notice published under the CEPA 1999; (b) for another government jurisdiction (i.e. other federal government department, province, municipality); or (c) on a voluntary basis.

In 2014, 1,060 facilities reported having a documented P2 plan compared to 1,023 in 2013. Of this number, 523 facilities reported having updated their plan in the 2014 reporting year. As illustrated in Figure 8-1, 715 plans were prepared on a voluntary basis, 90 were prepared to fill the requirement of a CEPA Notice and 205 were prepared for another government jurisdiction; 50 plans were prepared for more than one reason.

Facilities can also report if their plan addresses substances, energy conservation, and/or water conservation, as illustrated in Figure 8-2. In 2014, 786 plans addressed substances, 419 plans addressed energy conservation and 343 plans addressed water conservation.

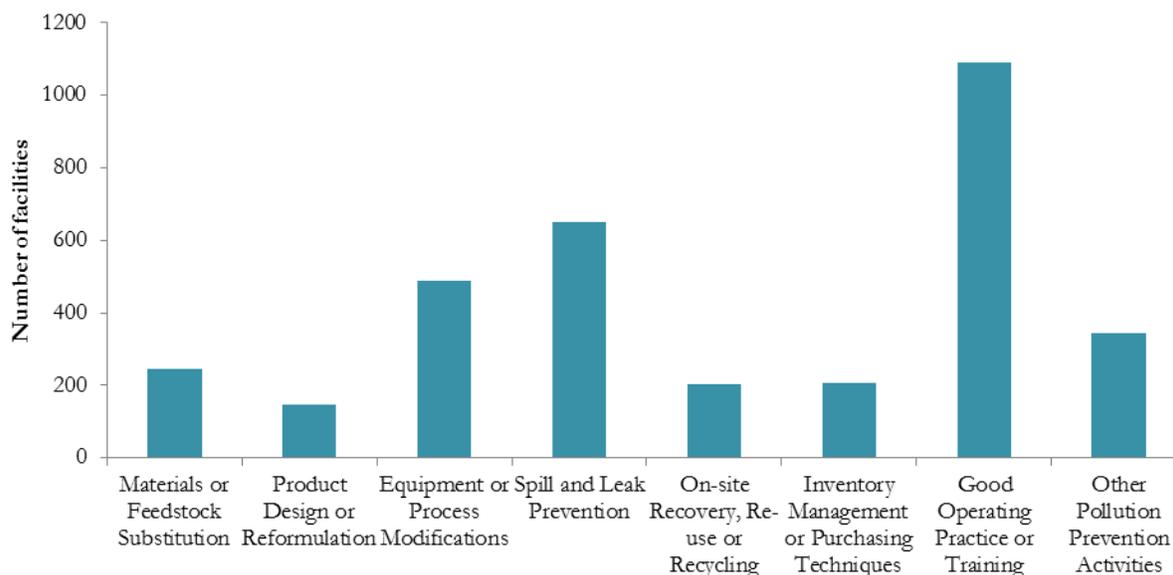
Figure 8-1 Reason for preparing the P2 plan in 2014 **Figure 8-2 Issues addressed within P2 plan 2014**



8.2 Pollution Prevention Activities

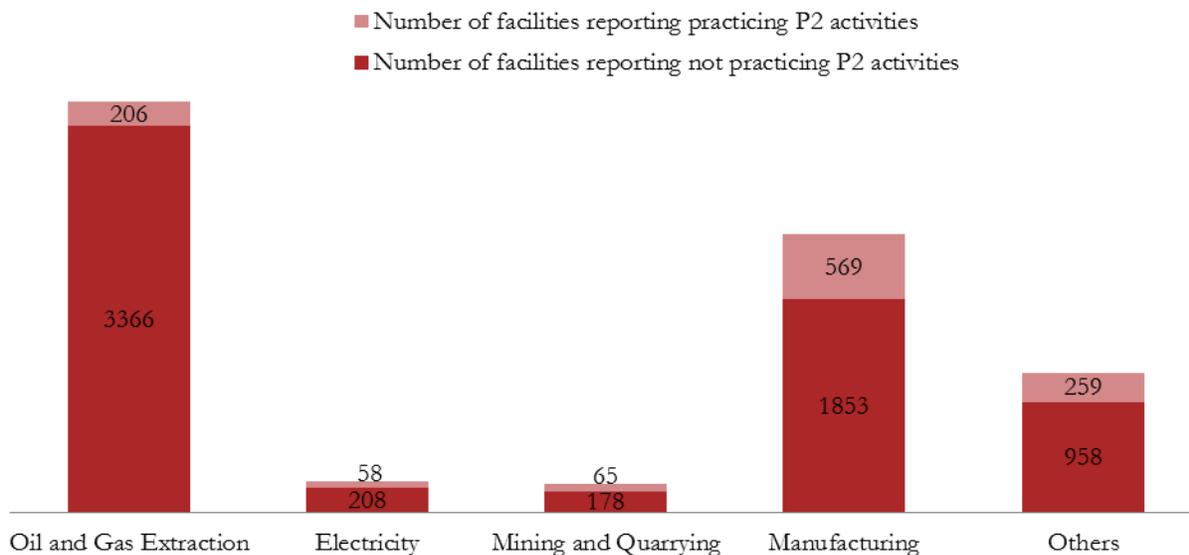
Under the NPRI, facilities are provided an opportunity to report on any P2 activities they may have completed at their facility for the reporting period (regardless of whether they have a P2 plan or not). In 2014, 1,157 facilities reported having implemented at least one P2 activity (1,153 in 2013), for a total of 3,374 P2 activities reported (3,258 in 2013). Figure 8-3 shows the number of facilities that reported practising P2 activities within each of the P2 activity categories. The most frequent P2 activity that was reported was under the Good Operating Practices or Training category, with 1,090 activities reported, followed by Spill and Leak Prevention, with 649 activities reported.

Figure 8-3 Number of P2 activities reported in 2014, by activity category



As illustrated in Figure 8-4, over 27% of facilities in the Mining and Quarrying sector reported practising at least one P2 activity, while 23% in the Manufacturing sector reported at least one P2 activity; 22% of facilities in the Electricity sector and 6% in the Oil and Gas sector reported P2 activities in 2014.

Figure 8-4 Proportion of facilities reporting practising P2 activities in 2014, by sector



The distribution of facilities practising P2 activities across Canada is outlined in Table 8-1. The provinces and territories with the highest percentage of facilities reporting P2 activities in 2014 were Yukon Territory (50%), followed by Prince Edward Island (45%) and Quebec (33%). Conversely, only 3% of facilities in Nunavut and 9% in Alberta and Saskatchewan reported P2 activities in 2014. Northwest Territories (77%), Newfoundland (55%) and Yukon (50%) were the provinces and territories with the highest percentage of

facilities reporting having a P2 plan in place for their operations. Only 4% of facilities in Alberta and 5% in Saskatchewan reported having a P2 plan in place.

Table 8-1 Proportion of facilities reporting practising at least one P2 activity and proportion of facilities reporting having a P2 plan in place in 2014, by province and territory

Provinces/ Territories	Number of NPRI reporting facilities	Number of facilities practising P2 activities	% of facilities practising P2 activities	Number of facilities with a P2 plan	% of facilities with a P2 plan
Alberta	3,193	279	9%	131	4%
British Columbia	769	153	20%	147	19%
Manitoba	168	17	21%	21	18%
New Brunswick	70	21	30%	20	29%
Newfoundland and Labrador	69	12	17%	38	55%
Nova Scotia	107	35	16%	30	20%
Northwest Territories	39	7	18%	30	77%
Nunavut	38	1	3%	10	26%
Ontario	1,656	293	18%	380	23%
Prince Edward Island	11	5	45%	4	36%
Quebec	808	264	33%	212	26%
Saskatchewan	790	69	9%	36	5%
Yukon	2	1	50%	1	50%

9 Technical Notes

The following are the specific assumptions and considerations taken into account by Environment Canada for analysis purposes in this report:

- This NPRI overview report is based on data reported by facilities as of September 8, 2015. Data for 2014 from facilities that reported after this date were not included in the analysis. In some cases, facilities submitted their original reports before this date, but subsequently updated their data after this date – these updates for 2014 may not be reflected in the analysis. Environment Canada has conducted a number of data quality control checks on the data submitted by facilities, to examine completeness, data integrity and compliance with mandatory reporting requirements. Environment Canada continues to analyze the data. The data provided in this report are for information purposes only. Any interpretation of the data must consider the possible presence of estimation, calculation or input errors made by facilities.
- Some of the totals reflected in the text, charts and tables may not add due to rounding.
- In total, 7,720 facilities reported one or more substances to the NPRI for 2014. This number does not include facilities that reported only that they closed or did not meet the NPRI requirements. In fact, facilities that reported manufacturing, processing or using one or more substances for the previous year are required to notify Environment Canada if they no longer meet the reporting requirements the following year. Changes in ownership or the closure of a facility must also be reported to the NPRI. These types of reports are not included in this Overview report; however, they are available to the public through the NPRI [online data search](#) and [downloadable databases](#).
- Total reduced sulphur (TRS) was added to the NPRI substance list for the 2007 reporting year due to concerns about its impact on air quality. Total reduced sulphur consists of six individual substances. Three of these substances (hydrogen sulphide [H₂S], carbon disulphide [CS₂] and carbonyl sulphide [COS]) are also listed individually in the NPRI substance list. Therefore, there is a potential for “double counting” if data on total reduced sulphur and the individual substances are combined. To avoid double counting, the three individual substances were excluded for the analysis of releases to air, whereas total reduced sulphur was excluded for the analysis of releases to other media and of quantities disposed of or transferred. In 2014, changes were made to the reporting criteria for TRS: only releases to air of this substance are now reportable to the NPRI. However, the possibility of double counting still exists: the individual substances comprising the above-mentioned TRS are excluded from the analysis of releases to air.
- Information on the geographic location of facilities includes adjustments for facilities that reported mailing addresses and/or latitude and longitude coordinates that may differ from their actual physical location.
- The following five air pollutants are included in the analysis for Criteria Air Contaminants (CACs): total particulate matter (TPM), carbon monoxide, nitrogen oxides (expressed as NO₂), sulphur dioxide and volatile organic compounds. These CACs are listed under Part 4 of the NPRI substance list and were added starting with the 2002 reporting year. Ammonia released to air can also be considered a CAC, but it is included under the category of “Direct Releases to Air, Water and Land (Excluding CACs)”, given that it is also released to water in large quantities.
- When calculating total direct air releases for particulate matter, road dust emissions were included. To avoid double or triple counting of particulate matter, only the TPM values were used. PM₁₀ and PM_{2.5}

have lower reporting thresholds (0.5 tonnes for PM₁₀ and 0.3 tonnes for PM_{2.5}) compared to the 20-tonne threshold for TPM: in certain cases, a facility may have reported only PM₁₀ and/or PM_{2.5} and not have met the reporting criteria for TPM; in other cases, a facility may report a quantity of PM_{2.5} or PM₁₀ greater than the quantity reported for TPM. However, the discrepancy between the maximum values reported regardless of the particulate matter fraction reported and the values for total particulates was 0.2% in 2014. Given this small difference, only the TPM value was used in this report to avoid double or triple counting.

- Facilities reporting releases of less than one tonne of a [Part 1A substance](#) are not required to report the specific media of the release (i.e. to air, water or land). In these cases, they have the option to report only a value for total releases: they are described in this report as “releases to non-specified media.” For a given Part 1A substance, therefore, total releases reported to the NPRI may be larger than the sum of reported releases to air, water and land.
- In this report, industrial sectors are based on [Statistics Canada’s North American Industry Classification System \(NAICS\)](#). For most of the discussion of industrial sources, 4-digit NAICS codes were used in order to compare sectors. However, if most of the releases of a 4-digit NAICS sector came from a single 6-digit sub-sector, the 6-digit sector was used to provide additional context.
- Facilities may report negative values for substances contained in waste rock or tailings. Reporting of a negative value for waste rock or tailings indicates that the quantity of a substance removed from the management area exceeded the quantity of the substance deposited in that area for a given year. Total amounts for disposals may vary depending on whether the negative values are considered.
- For more detailed information on the potential for double counting, negative values for tailings and other points concerning data analysis, please consult the [Guide for Using and Interpreting National Pollutant Release Inventory \(NPRI\) Data](#) web page.

10 Annex – Breakdown of 2014 NPRI Facility Reported Data by Substance, and by Substance Category

*All substances marked with an asterisk are listed in Schedule 1 of the CEPA 1999 (Toxic Substances List).

10.1 Part 1A – Substances listed at the original NPRI threshold (10 tonnes, 1%)

Reporting threshold: The substance is manufactured, processed or otherwise used (MPO) in a quantity of 10 tonnes or more, at a concentration $\geq 1\%$ by weight (except for by-products and mine tailings, which have no concentration threshold) and employees (including contractors) worked $\geq 20,000$ hours at the facility (or an activity for which the employees threshold does not apply took place).

Table 10-1 Part 1A – Substances listed at the original NPRI threshold

CAS No.	Substance name	Releases (tonnes)					Disposals (tonnes)		Off-site transfers for recycling (tonnes)
		Air	Water	Land	Non-specified media	Total	On-site	Off-site	
100-41-4	Ethylbenzene	391	3.3	2.3	16	413	1,701	176	2,147
100-42-5	Styrene*	1,390	-	1.1	5.3	1,397	4.2	162	9.9
100-44-7	Benzyl chloride*	-	-	-	0.000	0.000	0	0	-
10049-04-4	Chlorine dioxide	332	-	-	0.845	333	0	0	-
101-14-4	p,p'-Methylenebis(2-chloroaniline)	-	-	-	0.003	0.003	0	0.051	-
101-68-8	Methylenebis(phenylisocyanate)	7.0	-	2.9	2.2	12	0	47	81
103-23-1	Bis(2-ethylhexyl) adipate	1.1	-	-	0.266	1.4	0	2.9	59
106-46-7	p-Dichlorobenzene*	1.1	-	-	-	1.1	0	0.230	-
106-50-3	p-Phenylenediamine (and its salts)	-	-	-	-	-	0	0	0.138
106-99-0	1,3-Butadiene*	29	-	-	0.358	30	0	0	0.007
107-02-8	Acrolein*	102	8.4	-	0.205	111	0	0	-
107-06-2	1,2-Dichloroethane*	0.112	-	-	0.027	0.139	0.121	0	-
107-21-1	Ethylene glycol	71	606	10,776	6.0	11,459	2,350	4,828	7,489
108-05-4	Vinyl acetate*	219	-	-	0.278	219	2.1	11	6.8
108-10-1	Methyl isobutyl ketone*	193	0.025	-	4.2	197	17	91	287
108-31-6	Maleic anhydride	0.018	-	-	1.1	1.1	0	0	-
108-88-3	Toluene*	2,755	87	20	42	2,905	3,039	1,366	8,699
108-90-7	Chlorobenzene*	-	-	-	0.102	0.102	0	0	-
108-95-2	Phenol (and its salts)	181	49	0.100	0.737	232	210	21	291
109-86-4	2-Methoxyethanol*	-	-	-	0.003	0.003	5.3	38	2.1
110-54-3	n-Hexane*	4,845	8.8	49	29	4,932	449	2,196	2,356
110-80-5	2-Ethoxyethanol	-	-	-	0.032	0.032	3.6	21	1.4
110-82-7	Cyclohexane	934	0.734	13	16	964	774	412	245
110-86-1	Pyridine (and its salts)	-	-	-	0.004	0.004	3.3	19	1.3
111-15-9	2-ethoxyethyl acetate	-	-	-	-	-	0	6.3	-
111-42-2	Diethanolamine (and its salts)	5.8	0.335	-	0.346	6.4	27	0.090	2.3
111-76-2	2-Butoxyethanol*	383	-	-	7.3	390	64	333	107
111-77-3	2-(2-methoxyethoxy)ethanol*	-	-	-	0.046	0.046	0	0	0.125
115-07-1	Propylene*	504	0.497	0.200	1.9	507	0	1.4	0.140
1163-19-5	Decabromodiphenyl oxide*	-	-	-	-	-	0	0	-
117-81-7	Bis(2-ethylhexyl) phthalate*	0.374	-	-	0.135	0.509	0	23	55
117-84-0	Di-n-octyl phthalate	-	-	-	0.000	0.000	0	0	-
120-12-7	Anthracene*	25	0.111	0.010	1.3	26	0.358	1.3	0.001

CAS No.	Substance name	Releases (tonnes)					Disposals (tonnes)		Off-site transfers for recycling (tonnes)
		Air	Water	Land	Non-specified media	Total	On-site	Off-site	
120-80-9	Catechol*	-	-	-	0.024	0.024	0	0	-
120-82-1	1,2,4-Trichlorobenzene	0.579	-	-	-	0.579	0	0.230	-
121-14-2	2,4-Dinitrotoluene	-	-	-	-	-	0	0	-
121-44-8	Triethylamine	0.132	-	-	0.128	0.260	0.297	0	8.3
122-39-4	Diphenylamine	-	-	-	0.014	0.014	0	0.569	2.8
123-72-8	Butyraldehyde	-	-	-	0.043	0.043	0	0	-
123-91-1	1,4-Dioxane	0.064	3.1	-	-	3.2	0	0	-
124-40-3	Dimethylamine	3.8	-	-	-	3.8	0	0	-
127-18-4	Tetrachloroethylene*	142	-	-	1.3	144	0	394	106
128-37-0	2,6-Di- <i>t</i> -butyl-4-methylphenol	-	-	-	-	-	0	0	-
1300-71-6	Dimethyl phenol	-	-	-	0.990	0.990	0	0	-
131-11-3	Dimethyl phthalate	1.8	-	-	0.079	1.9	0	0	-
1313-27-5	Molybdenum trioxide	1.3	-	-	0,411	1.7	2.7	59	743
1319-77-3	Cresol (all isomers and their salts)	22	0.001	-	1.3	23	3.0	13	90
1330-20-7	Xylene (all isomers)*	2,631	18	20	37	2,706	2,432	958	9,009
1332-21-4	Asbestos (friable form)*	-	-	36	0	36	33,430	707	25
1344-28-1	Aluminum oxide (fibrous forms)	44	-	-	1.6	45	915	91	2,509
13463-40-6	Iron pentacarbonyl	-	-	-	-	-	0	0	-
139-13-9	Nitrilotriacetic acid (and its salts)	-	-	-	0.022	0.022	0	0	-
140-88-5	Ethyl acrylate	0.082	-	-	-	0.082	0	0	-
141-32-2	Butyl acrylate	3.0	-	-	0.220	3.2	0	0.002	0.001
149-30-4	2-Mercaptobenzothiazole	-	-	-	-	-	0	6.5	2.5
1634-04-4	Methyl tert-butyl ether	8.5	-	-	0.963	9.5	14	7.7	120
34077-87-7	HCFC-123 and all isomers*	2.2	4.8	-	0.002	7.0	0	0	-
4098-71-9	Isophorone diisocyanate	-	-	-	0.010	0.010	0	0	-
463-58-1	Carbonyl sulphide	-	-	-	0.305	0.305	2.3	0	-
50-00-0	Formaldehyde*	1,329	43	0.004	3.9	1,376	27	14	10
5124-30-1	1,1-Methylenebis(4-isocyanatocyclohexane)	-	-	-	0.001	0.001	0	0	-
554-13-2	Lithium carbonate	-	-	-	-	-	0	0	3.3
55-63-0	Nitroglycerin	-	1.3	-	-	1.3	0	0	-
56-23-5	Carbon tetrachloride*	-	-	-	0.060	0.060	1.2	0	-
62-53-3	Aniline (and its salts)*	-	-	-	0.007	0.007	6.0	25.6253	-
62-56-6	Thiourea *	-	-	-	-	-	0	0	-
630-20-6	1,1,1,2-Tetrachloroethane	-	-	-	-	-	0	0.230	-
63938-10-3	HCFC-124 and all isomers*	-	-	-	0.382	0.382	0	0	-
64-18-6	Formic acid	0.503	-	-	0.330	0.834	0	29.1998	-
64-67-5	Diethyl sulphate*	-	-	-	-	-	0	0	-
64-75-5	Tetracycline hydrochloride	-	-	-	-	-	0	0	-
67-56-1	Methanol*	11,844	2,066	369	22	14,301	10,752	8,102	2,384
67-63-0	Isopropyl alcohol*	972	-	-	13	985	18	360	856
67-66-3	Chloroform	82	0.400	-	0.530	83	0.212	0	-
68-12-2	N,N-Dimethylformamide	0.298	-	-	0.006	0.304	0.034	0	35
68920-70-7	Alkanes, C6-18, chloro*	-	-	-	-	-	0	3.7	10
71-36-3	n-Butyl alcohol	451	-	-	6.1	457	15	45	207
71-43-2	Benzene*	546	144	7.0	21	718	1,528	995	952
7429-90-5	Aluminum (fume or dust)	95	1.8	-	1.2	98	840	149	3,050
7440-62-2	Vanadium (except when in an alloy) and its compounds*	45	4,262	49	1.3	4,357	20,071	625	4,846
74-83-9	Bromomethane*	0.000	-	-	-	0.000	0	0	-
74-85-1	Ethylene*	1,539	-	0.100	1.5	1,541	0.600	0	502
74-87-3	Chloromethane	31	0.103	-	0.017	32	0	0	-

CAS No.	Substance name	Releases (tonnes)					Disposals (tonnes)		Off-site transfers for recycling (tonnes)
		Air	Water	Land	Non-specified media	Total	On-site	Off-site	
74-90-8	Hydrogen cyanide	95	-	-	0	95	0	0	-
75-00-3	Chloroethane	0.214	-	-	-	0.214	0	0	-
75-01-4	Vinyl chloride*	0.303	0.001	-	-	0.304	0	0	-
75-05-8	Acetonitrile	23	-	-	0.098	23	1.6	6.5	61
75-07-0	Acetaldehyde*	742	7.8	-	0.413	751	0.020	0.010	-
75-09-2	Dichloromethane*	70	-	-	2.6	73	4.3	30	362
75-15-0	Carbon disulphide	-	-	-	0.878	0.878	0.380	0	-
75-21-8	Ethylene oxide*	1.5	-	-	0.781	2.3	2.2	15	0.966
75-45-6	HCFC-22*	1.1	-	-	0.185	1.3	0	0	-
7550-45-0	Titanium tetrachloride	-	-	-	0.108	0.108	0	0.113	-
75-65-0	tert-Butyl alcohol	5.8	-	-	-	5.8	0	0	-
75-68-3	HCFC-142b*	-	-	-	0.001	0.001	-	-	-
75-69-4	CFC-11*	-	-	-	-	-	0	0	-
75-71-8	CFC-12*	-	-	-	-	-	0	0	-
7632-00-0	Sodium nitrite	0.465	0.350	-	0.368	1.2	0	7.8	0.499
7637-07-2	Boron trifluoride*	-	-	34.29	-	34.29	34.29	0	-
7647-01-0	Hydrochloric acid	13,606	103	4.7	7.6	13,721	51	22	1,523
7664-39-3	Hydrogen fluoride*	3,144	-	-	0.566	3,144	0	0	-
7664-93-9	Sulphuric acid	4,230	34	0.621	9.9	4,275	0.958	38	150,611
7681-49-4	Sodium fluoride*	0.001	29	-	0.164	29	411	2,737	-
7697-37-2	Nitric acid	13	18	0.000	2.3	33	4.7	0.685	125
7723-14-0	Phosphorus (yellow or white)	0.386	0.397	-	0.050	0.833	1,844	32	38
7726-95-6	Bromine	9.4	-	-	0.124	9.5	0	0	-
77-73-6	Dicyclopentadiene	0.632	-	-	1.8	2.4	2.8	0.107	-
7782-41-4	Fluorine	21,043	78,143	-	-	99,186	0	0	-
7782-50-5	Chlorine	264	32	0.220	6.1	302	6.3	14	14
7783-06-4	Hydrogen sulphide	-	94	543	7.7	645	131,470	32,688	226
7789-75-5	Calcium fluoride*	23	43	-	0.385	66	45,862	1,277	1,699
78-83-1	i-Butyl alcohol	234	-	-	4.5	238	4.0	23	251
78-87-5	1,2-Dichloropropane	-	-	-	-	-	0	0	-
78-92-2	sec-Butyl alcohol	-	-	-	0.005	0.005	0	0	0.070
78-93-3	Methyl ethyl ketone*	1,122	19	-	9.5	1,150	24	508	1,690
79-00-5	1,1,2-Trichloroethane	-	-	-	-	-	0	0.600	-
79-01-6	Trichloroethylene*	28	-	-	1.7	30	0.317	0.931	15
79-06-1	Acrylamide*	-	-	-	0.000	0.000	0	0.013	-
79-10-7	Acrylic acid (and its salts)	-	-	-	0.048	0.048	0	0.060	-
79-11-8	Chloroacetic acid (and its salts)	-	-	-	-	-	0	0	-
79-21-0	Peracetic acid (and its salts)	22	-	-	-	22	0	0	-
79-34-5	1,1,2,2-Tetrachloroethane	-	-	-	0.014	0.014	33	0.230	-
80-15-9	Cumene hydroperoxide	-	-	-	0.005	0.005	0	0	0.983
80-62-6	Methyl methacrylate	39	-	-	2.7	42	0	6.8	-
81-88-9	C.I. Food Red 15	-	-	-	0.001	0.001	0	0	-
84-74-2	Dibutyl phthalate	-	-	-	0.744	0.744	17	70	18
85-44-9	Phthalic anhydride	0.087	-	-	0.118	0.205	0	0	-
85-68-7	Butyl benzyl phthalate	0.015	-	-	0.001	0.016	0	0.040	3.0
872-50-4	N-Methyl-2-pyrrolidone	42	-	-	0.513	42	26	8.9	99
9016-87-9	Polymeric diphenylmethane diisocyanate	0.364	-	1.5	0.962	2.8	0	61	203
91-20-3	Naphthalene*	72	0.034	0.000	5.5	77	11	30	476
924-42-5	N-Methylolacrylamide	-	-	-	0	0	0	0	-
92-52-4	Biphenyl	5.3	0.012	-	0.516	5.8	0.100	0.095	33

CAS No.	Substance name	Releases (tonnes)					Disposals (tonnes)		Off-site transfers for recycling (tonnes)
		Air	Water	Land	Non-specified media	Total	On-site	Off-site	
94-36-0	Benzoyl peroxide	0.004	-	-	-	0.004	0	0	1.000
95-50-1	o-Dichlorobenzene	-	-	-	0.067	0.067	0	0.230	-
95-63-6	1,2,4-Trimethylbenzene*	602	0.148	4.0	14	619	191	92	2,796
96-33-3	Methyl acrylate	-	-	-	0.510	0.510	0	0.000	-
98-82-8	Cumene	35	-	-	1.3	36	0	0.044	11
98-86-2	Acetophenone	-	-	-	0.103	0.103	0	0	-
989-38-8	C.I. Basic Red 1	-	-	-	0.000	0.000	0	0	-
NA – 01	Antimony (and its compounds)	0.537	12	0.007	0.828	13	296	233	169
NA – 04	Chromium (and its compounds)	12	8.3	38	6.4	64	21,823	1,258	11,881
NA – 05	Cobalt (and its compounds)	4.5	436	4.8	0.808	446	6,320	73	138
NA – 06	Copper (and its compounds)	250	21,478	1,114	8.0	22,849	84,236	1,559	18,919
NA – 07	Cyanides (ionic)	23	0.909	0.024	1.3	26	925	0	-
NA – 09	Manganese (and its compounds)	108	14,893	386	9.5	15,398	304,734	5,680	20,632
NA – 11	Nickel (and its compounds)*	138	689	26	4.7	857	53,179	752	3,993
NA – 13	Silver (and its compounds)	0.505	0.009	-	0.057	0.571	96	11	149
NA – 14	Zinc (and its compounds)	365	2,481	898	10	3,754	48,081	12,003	26,748
NA – 16	Ammonia (total)*	18,578	45,163	793	11	64,544	15,504	7,006	781
NA – 17	Nitrate ion in solution at pH >= 6.0	4.2	71,369	20	0.089	71,394	472	996	247
NA – 21	Octylphenol and its ethoxylates	-	-	-	0.011	0.011	0	1.6	0.085
NA – 22	Phosphorus (total)	52	39,733	678	10	40,474	153,609	18,688	3,046
NA - M14	Total Reduced Sulphur (TRS)	7,038	-	-	8.1	7,046	-	-	-

10.2 Part 1B – Substances listed at an alternate threshold

Reporting threshold: The substance is manufactured, processed or otherwise used (MPO) in quantities equal to or exceeding reporting thresholds listed below, and employees (including contractors) worked $\geq 20,000$ hours at the facility (or an activity for which the employees threshold does not apply took place).

Table 10-2 Part 1B – Substances listed at an alternate threshold

CAS No.	Substance name	Threshold (mass and concentration)	Releases (kg)				Disposals (kg)		Off-site transfers for recycling (kg)
			Air	Water	Land	Total	On-site	Off-site	
107-13-1	Acrylonitrile*	1,000 kg MPO, 0.1%	6,066	-	-	6,066	0	990	-
26471-62-5	Toluenediisocyanate (mixed isomers)*	100 kg MPO, 0.1%	132	-	-	132	0	0	-
302-01-2	Hydrazine (and its salts)*	1,000 kg MPO, 1%	58	1,227	-	1,285	0	0	-
584-84-9	Toluene-2,4-diisocyanate*	100 kg MPO, 0.1%	0	-	-	0	0	0	-
78-00-2	Tetraethyl lead*	50 kg MPO, 0.1%	2.0	-	-	2	17,898	0	-
78-79-5	Isoprene*	100 kg MPO, 1%	7,922	-	-	7,922	247	31	-
80-05-7	Bisphenol A*	100 kg MPO, 1%	81	-	-	81	0	2,935	57
91-08-7	Toluene-2,6-diisocyanate*	100 kg MPO, 0.1%	0	-	-	0	0	0	-
NA - 02	Arsenic (and its compounds)*	50 kg MPO, 0.1%	47,554	269,444	11,275	328,273	18,779,546	681,465	338,119
NA - 03	Cadmium (and its compounds)*	5 kg MPO, 0.1%	6,276	6,372	375	13,023	918,740	155,950	342,496
NA - 08	Lead (and its compounds)*	50 kg MPO, 0.1%	104,244	145,782	102,499	352,524	14,150,322	2,845,185	40,741,640
NA - 10	Mercury (and its compounds)*	5 kg MPO	2,359	2,322	107	4,788	69,388	12,369	13,303
NA - 12	Selenium (and its compounds)	100 kg MPO, 0.000005%	16,302	54,628	109	71,039	1,393,508	189,516	36,656
NA - 19	Hexavalent chromium (and its compounds)*	50 kg MPO, 0.1%	1,250	803	621	2,674	492,704	48,943	64,985
NA - 20	Nonylphenol and its ethoxylates*	1,000 kg MPO, 1%	4,267	48,219	-	52,485	360	674	12,093
NA - 37	Thallium (and its compounds)	100 kg MPO, 1%	30	1,067	26	1,123	10,411	0	-

10.3 Part 2 – Polycyclic aromatic hydrocarbons

Reporting threshold: Polycyclic aromatic hydrocarbons (PAHs) were incidentally manufactured or present in mine tailings, and were released, disposed of or transferred for recycling in a combined quantity of ≥ 50 kilograms, and employees (including contractors) worked $\geq 20,000$ hours at the facility (or where an activity for which the employees threshold does not apply took place). Wood preservation facilities using creosote must report regardless of the mass threshold for PAHs and regardless of the number of hours worked by employees.

Table 10-3 Part 2 – Polycyclic aromatic hydrocarbons

CAS No.	Substance name	Releases (kg)				Disposals (kg)		Off-site transfers for recycling (kg)
		Air	Water	Land	Total	On-site	Off-site	
129-00-0	Pyrene - PAH*	38,235	25	1.2	38,261	31,340	17,969	11,831
189-55-9	Dibenzo(a,i)pyrene - PAH*	98	3.3	-	101	0	63	18
189-64-0	Dibenzo(a,h)pyrene - PAH*	-	0.266	-	0.266	0	0	8.0
191-24-2	Benzo(g,h,i)perylene - PAH*	2,822	15	54	2,891	3,929	2,242	888
191-30-0	Dibenzo(a,l)pyrene - PAH*	0.003	-	-	0.003	0	0	8.0
192-65-4	Dibenzo(a,e)pyrene - PAH*	0.028	0.266	-	0.294	0	0	-
192-97-2	Benzo(e)pyrene - PAH*	6,468	8.2	77	6,553	9,767	2,461	172
193-39-5	Indeno(1,2,3-c,d)pyrene - PAH*	2,452	25	0.019	2,476	2,644	2,648	443
194-59-2	7H-Dibenzo(c,g)carbazole - PAH*	0.090	-	-	0.090	0	0	9.0
198-55-0	Perylene - PAH*	1,302	13	27	1,342	11,067	1,115	224
205-82-3	Benzo(j)fluoranthene - PAH*	77	0.500	-	78	2,002	101	127
205-99-2	Benzo(b)fluoranthene - PAH*	12,836	3.7	0.008	12,839	2,120	5,479	133
206-44-0	Fluoranthene - PAH*	49,239	26	1.5	49,267	8,665	6,423	5,036
207-08-9	Benzo(k)fluoranthene - PAH*	3,659	0.612	-	3,660	197	1,435	127
208-96-8	Acenaphthylene - PAH*	20,622	6.3	857	21,486	758	626	28,243
218-01-9	Benzo(a)phenanthrene - PAH*	16,993	1.9	0.247	16,995	6,207	7,078	1,578
224-42-0	Dibenz(a,j)acridine - PAH*	2.1	0.266	-	2.4	0	0	9.0
226-36-8	Dibenz(a,h)acridine - PAH*	0.841	0.239	-	1.1	0	0	-
3697-24-3	5-Methylchrysene - PAH*	0.269	0.627	-	0.896	0	0	19
50-32-8	Benzo(a)pyrene - PAH*	5,059	7.4	43	5,110	5,310	9,839	311
53-70-3	Dibenzo(a,h)anthracene - PAH*	770	5.9	-	776	1,349	2,686	12
5385-75-1	Dibenzo(a,e)fluoranthene - PAH*	0.302	-	-	0.302	0	5.0	-
5522-43-0	1-Nitropyrene - PAH*	0.209	-	-	0.209	0	5.0	-
56-49-5	3-Methylcholanthrene - PAH*	0.001	0.275	-	0.276	0	0	8.0
56-55-3	Benzo(a)anthracene - PAH*	9,796	9.3	0.037	9,805	40,315	9,436	1,814
57-97-6	7,12-Dimethylbenz(a)anthracene - PAH*	1.7	0.266	-	2.0	0	0	8.0
83-32-9	Acenaphthene - PAH*	9,318	28	0.356	9,347	18,070	1,440	8,530
85-01-8	Phenanthrene - PAH*	53,644	318	25	53,987	102,933	21,605	54,120
86-73-7	Fluorene - PAH*	8,304	109	57	8,469	14,096	1,599	20,643
91-22-5	Quinoline (and its salts)*	228	-	-	228	647	9.0	-
NA - P/H	PAHs, total unspciated*	3,315	187	209	3,712	274	532	547

10.4 Part 3 – Dioxins, furans and hexachlorobenzene

Activity-based reporting threshold: Facilities must report if any of the following activities took place:

- incineration
- chlorinated solvent production
- metal smelting
- power generation
- iron and steel manufacturing
- pulp and paper manufacturing
- titanium dioxide pigment production
- cement manufacturing
- magnesium production
- wood preservation using pentachlorophenol

Table 10-4 Part 3 – Dioxins, furans and hexachlorobenzene

CAS No.	Substance name	TEQ	Releases (grams)				Disposals (grams)		Off-site transfers for recycling (grams)
			Air	Water	Land	Total	On-site	Off-site	
118-74-1	Hexachlorobenzene*	N/A	3,254	-	0.085	3,254	4,934	2,076	-
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin*	1	0.866	0.333	0	1.2	5.4	2.1	0.267
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin*	0.1	0.163	0.063	0.000	0.226	1.7	1.8	1.2
3268-87-9	Octachlorodibenzo-p-dioxin*	0.001	0.235	0.060	0.001	0.295	0.080	1.8	0.009
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin*	0.01	0.096	0.056	0.001	0.152	1.0	0.848	0.228
39001-02-0	Octachlorodibenzofuran*	0.001	0.014	0.006	0.002	0.022	0.007	0.130	0.004
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin*	0.1	0.104	0.038	0	0.142	1.1	0.555	0.198
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin*	0.5	0.808	0.316	0	1.1	7.7	3.7	1.2
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran*	0.1	0.717	0.085	0.001	0.803	3.5	2.6	1.2
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran*	0.01	0.015	0.076	0.000	0.091	0.021	0.061	0.022
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran*	0.5	3.7	0.357	0	4.1	10	9.2	3.4
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran*	0.05	0.243	0.038	0	0.281	0.840	1.2	0.178
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran*	0.1	0.199	0.041	0.000	0.240	0.947	1.5	0.484
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin*	0.1	0.160	0.059	0.000	0.219	2.3	2.0	0.902
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran*	0.1	0.179	0.032	0.000	0.211	0.802	1.5	0.572
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran*	0.01	0.086	0.016	0.001	0.104	0.106	0.644	0.104
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran*	0.1	0.469	0.059	0.000	0.528	0.906	2.7	1.0
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran*	0.1	0.091	0.030	0.000	0.121	0.223	0.442	0.057
Units in Grams TEQ:									
NA - D/F	Dioxins and furans - total*	N/A	11	1.7	0.013	12	37	33	11

10.5 Part 4 – Criteria air contaminants

Reporting threshold: The substance is released to the air from a facility in quantities equal to or exceeding the release thresholds listed below.

Table 10-5 Part 4 – Criteria air contaminants

CAS No.	Substance name	Reporting threshold (tonnes released)	Releases to air (tonnes)
11104-93-1	Nitrogen oxides (expressed as NO ₂)*	20	625,368
630-08-0	Carbon monoxide	20	875,116
7446-09-5	Sulphur dioxide*	20	1,033,496
NA - M08	PM - Total Particulate Matter	20	335,439
NA - M09	PM10 - Particulate Matter <= 10 Microns*	0.5	140,221
NA - M10	PM2.5 - Particulate Matter <= 2.5 Microns*	0.3	52,884
NA - M16	Volatile Organic Compounds (VOCs)*	10	212,437

10.6 Part 5 – Speciated volatile organic compounds

Reporting threshold: The substance is released to air in a quantity of ≥ 1 tonne and the 10-tonne air release threshold for VOCs (under Part 4) was met.

Table 10-6 Part 5 – Speciated volatile organic compounds

CAS No.	Substance name	Releases to air (tonnes)
100-42-5	Styrene*	1,217
103-71-9	Phenyl isocyanate*	0
106-46-7	p-Dichlorobenzene*	0,001
106-99-0	1,3-Butadiene*	31
107-06-2	1,2-Dichloroethane*	6.6
108-05-4	Vinyl acetate*	215
108-10-1	Methyl isobutyl ketone*	292
108-65-6	GE - Propylene glycol methyl ether acetate (PGMEA)*	379
108-88-3	Toluene*	2,904
108-90-7	Chlorobenzene*	1.1
109-99-9	Tetrahydrofuran*	26
110-54-3	n-Hexane*	4,036
111-76-2	2-Butoxyethanol*	483
112-07-2	GE - Ethylene glycol butyl ether acetate (EGBEA)*	40
112-15-2	GE - Diethylene glycol ethyl ether acetate (DEGEEA)*	18
112-25-4	GE - Ethylene glycol hexyl ether (EGHE)*	1.6
112-34-5	GE - Diethylene glycol butyl ether (DEGBE)*	56
115-07-1	Propylene*	1,069
115-10-6	Dimethylether*	182
123-35-3	Myrcene*	107
123-86-4	n-Butyl acetate*	1,325
124-04-9	Adipic acid*	6.2
127-91-3	Beta-Pinene*	1,357
1330-20-7	Xylene (all isomers)*	2,378
141-78-6	Ethyl acetate*	2,244
25167-67-3	Butene (all isomers)*	954
25264-93-1	Hexene (all isomers)*	495
25551-13-7	Trimethylbenzene (all isomers excluding 1,2,4-Trimethylbenzene)*	198
27133-93-3	Methylindan (all isomers)*	0
420-56-4	Trimethylfluorosilane*	0
50-00-0	Formaldehyde*	2,751
5131-66-8	GE - Propylene glycol butyl ether (PGBE)*	53
555-10-2	Beta-Phellandrene*	1,295
5989-27-5	D-Limonene*	539
62-53-3	Aniline (and its salts)*	0,001
64-17-5	Ethanol*	18,921
64475-85-0	Mineral spirits*	98
64741-65-7	MSG#1 - Heavy alkylate naphtha*	63
64742-47-8	MSG#2 - Hydrotreated light distillate*	1,113
64742-48-9	MSG#1 - Hydrotreated heavy naphtha*	426
64742-88-7	MSG#1 - Solvent naphtha medium aliphatic*	463
64742-89-8	MSG#1 - Solvent naphtha light aliphatic*	626
64742-94-5	Heavy aromatic solvent naphtha*	197
64742-95-6	Light aromatic solvent naphtha*	789
67-56-1	Methanol*	9,866

CAS No.	Substance name	Releases to air (tonnes)
67-63-0	Isopropyl alcohol*	1,418
68956-56-9	Terpene (all isomers)*	13
71-43-2	Benzene*	642
7379-12-6	2-Methyl-3-hexanone*	0
74-85-1	Ethylene*	1,786
74-86-2	Acetylene*	169
74-98-6	Propane*	6,667
78-93-3	Methyl ethyl ketone*	969
8001-58-9	Creosote*	0
8030-30-6	Naphtha*	17
8032-32-4	MSG#1 - VM & P naphtha*	225
8042-47-5	White mineral oil*	79
8052-41-3	Stoddard solvent*	369
80-56-8	Alpha-Pinene*	2,624
95-63-6	1,2,4-Trimethylbenzene*	633
98-00-0	Furfuryl alcohol*	298
NA - 23	Anthraquinone (all isomers)*	0
NA - 24	Butane (all isomers)*	11,906
NA - 25	Cycloheptane (all isomers)*	376
NA - 26	Cyclohexene (all isomers)*	6.8
NA - 27	Cyclooctane (all isomers)*	25
NA - 28	Decane (all isomers)*	199
NA - 29	Dihydronaphthalene (all isomers)*	0.032
NA - 30	Dodecane (all isomers)*	6.4
NA - 31	Heptane (all isomers)*	3,637
NA - 32	Hexane (all isomers excluding n-hexane)*	3,457
NA - 33	Nonane (all isomers)*	377
NA - 34	Octane (all isomers)*	1,616
NA - 35	Pentane (all isomers)*	14,398
NA - 36	Pentene (all isomers)*	752