



# National Pollutant Release Inventory

National Overview  
1998

Canada

*Canadian Environmental Protection Act*



Environment  
Canada

Environnement  
Canada

## **National and Regional NPRI Offices**

### **National and Regional NPRI Offices**

#### **Headquarters**

National Pollutant Release Inventory  
Environment Canada  
9th Floor, Place Vincent Massey  
351 St. Joseph Blvd.  
Hull, QC  
K1A 0H3  
Tel: (819) 953-1656  
Fax: (819) 994-3266  
E-mail: NPRI@ec.gc.ca

#### **Newfoundland and Labrador, Prince Edward Island, New Brunswick and Nova Scotia**

National Pollutant Release Inventory  
Environment Canada  
16th Floor, Queen Square  
45 Alderney Drive  
Dartmouth, NS  
B2Y 2N6  
Tel: (902) 426-4482  
Fax: (902) 426-8373  
E-mail: npri\_atl@ec.gc.ca

#### **Quebec**

National Pollutant Release Inventory  
Environment Canada  
105 McGill Street, 4th Floor  
Montreal, QC  
H2Y 2E7  
Tel: (514) 283-7303  
Fax: (514) 496-6982  
E-mail: Chantal.Menard@ec.gc.ca

#### **Ontario**

National Pollutant Release Inventory  
Environment Canada  
4905 Dufferin Street, 2nd Floor  
Downsview, ON  
M3H 5T4  
Tel: (416) 739-5886 / 739-5891  
Fax: (416) 739-4326  
E-mail: npri\_ontario@ec.gc.ca

#### **Manitoba, Saskatchewan, Alberta, Northwest Territories and Nunavut**

National Pollutant Release Inventory  
Environment Canada  
Twin Atria #2, Room 200  
4999-98 Avenue  
Edmonton, AB  
T6B 2X3  
Tel: (780) 951-8726 / 951-8730  
Fax: (780) 495-2615  
E-mail: Art.Beckett@ec.gc.ca,  
Nancy.Taschuk@ec.gc.ca

National Pollutant Release Inventory  
Environment Canada  
123 Main Street, Suite 150  
Winnipeg, MB  
R3C 4W2  
Tel: (204) 983-7788  
Fax: (204) 983-0960

National Pollutant Release Inventory  
Environment Canada  
Room 300, Park Plaza  
2365 Albert Street  
Regina, SK  
S4P 4K1  
Tel: (306) 780-6001  
Fax: (306) 780-6466

National Pollutant Release Inventory  
Environment Canada  
3rd Floor, Diamond Plaza  
5204 - 50th (Franklin) Avenue  
Yellowknife, NT  
X1A 2R2  
Tel: (867) 669-4727  
Fax: (867) 873-8185

National Pollutant Release Inventory  
Environment Canada  
Iqaluit, Nanavut  
Tel: (867) 979-3660  
Fax: (867) 979-8608

#### **British Columbia and Yukon**

National Pollutant Release Inventory  
Environment Canada  
224 West Esplanade  
North Vancouver, BC  
V7M 3H7  
Tel: (604) 666-3890  
Fax: (604) 666-6800  
E-mail: Michael.DeAbreu@ec.gc.ca

National Pollutant Release Inventory  
Environment Canada  
91782 Alaska Highway  
Whitehorse, YT  
Y1A 5B5  
Tel: (867) 667-3402  
Fax: (867) 667-7962  
E-mail: Benoit.Godin@ec.gc.ca



# National Pollutant Release Inventory

National Overview  
1998

***Canadian Environmental Protection Act***

---



Environment  
Canada

Environnement  
Canada

## **Acknowledgements:**

**Prepared by:** Lynne Patenaude

## **In collaboration with:**

**NPRI National Office:** François Cadoret  
Wilfrid Jan  
François Lavallée  
Steve McCauley  
Allison Pilling  
Michelle Raizenne  
Marie-Anne Resiga  
Lynne Robinson-Lewis

**NPRI Regional Offices:** **Pacific and Yukon Region**

Michael DeAbreu  
Benoit Godin

**Prairie and Northern Region**

Art Beckett  
Terry Mah  
Nancy Taschuk

**Ontario Region**

Sandra Di Giantomasso  
Elsa Lobo  
Suzanne Spicer

**Quebec Region**

Anne-Marie Carter

**Atlantic Region**

Chris Roberts

**National Office of Pollution Prevention:**

Martine Dumais

© Minister of Public Works and Government Services Canada

Catalogue # En-40-495/1-1998-2E

ISBN 0-662-28968-4

ISSN -1492-4730 (print) (1492-4749 - on-line edition)



## Executive Summary

The 1998 National Overview is the sixth annual report published under Environment Canada's National Pollutant Release Inventory (NPRI) program. The report provides information on 176 listed substances, specifically their on-site releases to air, water, land and underground injection and off-site transfers for disposal or recycling.

The NPRI is the only legislated, nation-wide, publicly-accessible inventory of its type in Canada. One of the fundamental objectives of the NPRI is to provide Canadians with access to pollutant release information for facilities located in their communities. In addition, the NPRI supports a number of environmental initiatives by providing information that assists governments and others in identifying priorities for action, encourages industry to take voluntary measures to reduce releases, allows the tracking of progress in reducing releases, and supports a number of regulatory initiatives across Canada.

Although NPRI data are useful as a starting point in identifying some of the sources of pollutants and their possible risks to human health and the Canadian environment, they represent only a portion of all chemical releases and transfers to the Canadian environment from a range of industrial and non-industrial sources. Releases of a particular pollutant by a facility reporting to the NPRI should, therefore, be considered in the overall context of other pollutants and sources.

The 1998 National Overview includes data from the NPRI for the calendar years 1997 and 1998, as they appeared in the NPRI database on March 29, 2000. Non-confidential NPRI information and data are also accessible on the Internet at Environment Canada's NPRI Web site at <[www.ec.gc.ca/pdb/npri/](http://www.ec.gc.ca/pdb/npri/)>. It should be noted that the NPRI data on the Web site are updated regularly as a result of new or revised reports submitted by facilities. As a result of revisions submitted after March 29, 2000, quantities identified in this report may, at times, differ from those listed on the national database.

### New features of the 1998 NPRI report include:

- **New report format** – The NPRI annual report has a different format for 1998. To improve timeliness of national data release, this 1998 National Overview is part of a series of reports and fact sheets to be issued this year to present NPRI data. A companion document, *About the National Pollutant Release Inventory*, describes the inventory and provides context and background information. This National Overview is focused on the national picture and on changes from 1997 to 1998. Fact sheets to be released later in 2000 will provide more in-depth trend analysis and overviews of pollutant releases and transfers by province, territory or region, information previously included in the yearly NPRI Summary Report.
- **Mandatory reporting of recycling activities** – In previous years, the reporting of recycling activities was optional. As a result of public consultations in 1996, facilities now must report the quantities of substances transferred off site for recycling, the nature of the recycling activity and the name and address of the receiving facility.

## **Highlights of the 1998 NPRI National Overview (based on analysis of all data from 1997 to 1998)**

In 1998, facilities across Canada reported:

- on-site releases totalling 160 166 tonnes, a decrease of 1 427 tonnes (–0.9%) from 1997,
- off-site transfers for disposal of 88 489 tonnes, a decrease of 9 610 tonnes (–9.8%) from 1997, and
- 245 798 tonnes of NPRI substances transferred off site for recycling, which included 13 078 tonnes transferred off site for energy recovery. No year-to-year comparisons are made because reporting was optional in previous years.

A total of 2 007 Canadian facilities submitted 7 448 pollutant reports to the NPRI in 1998. Of the 176 substances on the NPRI list in 1998, the NPRI received reports on 135 substances. These numbers are similar to the information reported for 1997.

# Table of Contents

<b>Executive Summary</b> .....	i
<b>1. Introduction</b> .....	1
1.1 Supplementary Analyses .....	1
1.2 Confidential Information .....	1
<b>2. Tracking Progress</b> .....	3
2.1 Year-to-Year Analysis of NPRI Data (1997-1998) .....	4
2.2 On-site Releases in 1998 .....	6
2.2.1 On-site Releases by Environmental Media in 1998 – 25 NPRI Pollutants Released in the Largest Quantities .....	7
2.2.2 On-site Releases by Industrial Sector in 1998 .....	8
2.2.3 On-site Releases by Facility in 1998 .....	11
2.3 Off-site Transfers for Disposal in 1998 .....	13
2.3.1 Off-site Transfers for Disposal in 1998 – 25 NPRI Pollutants Transferred Off Site in the Largest Quantities .....	14
2.3.2 Off-site Transfers for Disposal by Industrial Sector in 1998 .....	16
2.3.3 Off-site Transfers for Disposal by Facility in 1998 .....	17
2.4 Off-site Transfers for Recycling in 1998 .....	19
2.5 NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1998 .....	22
2.5.1 On-site Releases of NPRI-list, CEPA-toxic and Carcinogenic Pollutants in 1998 .....	24
2.5.2 On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants by Industrial Sector in 1998 .....	28
2.5.3 Off-site Transfers for Disposal of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1998 .....	29
2.5.4 Off-site Transfers for Disposal of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants by Industrial Sector in 1998 .....	31
<b>3. Pollution Prevention in 1998</b> .....	33
3.1 Reporting Requirements .....	33
3.2 Pollution-Prevention Activities Reported in 1998 .....	33
<b>4. Comparison to Other Release Sources</b> .....	37
4.1 Overview of Other Release Sources .....	37
4.2 Fuel Distribution and Mobile Sources .....	37
4.3 Greenhouse Gases .....	37
4.4 Criteria Air Contaminants .....	39
4.5 Accelerated Reduction/Elimination of Toxics (ARET) .....	39
<b>5. Supplementary Tables and Analyses</b> .....	41
<b>Bibliography</b> .....	42
Additional References .....	43
<b>Appendix 1 – Alphabetical Listing of the 1998 NPRI Substances</b> .....	45
<b>Appendix 2 – Facilities Reporting the Largest On-site Releases in 1998, by Pollutant</b> ....	47
<b>Appendix 3 – Information Summaries on NPRI Pollutants Reported in the Largest Quantities</b> .....	85





## Addenda

The 1998 NPRI National Overview is based on information that was received by Environment Canada prior to **March 29, 2000**. Some companies provided new or revised information to Environment Canada after this date. Information received between March 29 and June 14 has been incorporated in an updated version of the 1998 NPRI database, which is available electronically on the NPRI Internet website at <http://www.ec.gc.ca/pdb/npri/>. The following information provides additional context regarding the following sections in the 1998 NPRI National Overview:

### 1. Appendix 2 - Acetaldehyde

**Abitibi-Consolidated Inc., Division Port-Alfred** (NPRI # 2636), La Baie, Québec, originally reported on-site releases in air of **10.9 tonnes** of acetaldehyde. This value was reported in error, and has since been revised. The new value is below the reporting criteria. This facility is not required to report for this substance. Total release quantities for acetaldehyde should be reduced accordingly.

### 2. Appendix 2 - tert-Butyl Alcohol

**3M Canada Company (London)** (NPRI # 3198), London, Ontario, originally reported on-site releases in air of **12.260 tonnes** of *tert*-butyl alcohol. This value was reported in error, and has since been revised to **6.728 tonnes**. This revised number does not change the facility's ranking for this substance. Total release quantities for *tert*-butyl alcohol should be reduced accordingly.

### 3. Appendix 2 - Chlorine Dioxide

**Weyerhaeuser Canada Ltd., Kamloops Pulp Division** (NPRI # 2924), Kamloops, British Columbia, originally reported on-site releases in air of **32.000 tonnes** of chlorine dioxide. This value was reported in error, and has since been revised to **25.000 tonnes**. This revised number changes the facility's ranking for this substance. Total release quantities for chlorine dioxide should be reduced accordingly.

### 4. Appendix 2 - Copper (and its compounds)

**Siemens-Westinghouse, Coil Manufacturing Company** (NPRI #5759), Mississauga, Ontario, originally reported on-site releases to land of **153.987 tonnes** of copper (and its compounds). This value was reported in error, and has since been revised to **0 tonnes**. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for copper (and its compounds) should be reduced accordingly.

### 5. Appendix 2 - Cyanides (ionic)

**Placer Dome North America, Musselwhite Mine** (NPRI # 5656), Thunder Bay, Ontario, originally reported on-site releases to water of **0.032 tonnes** and on-site releases to air of **0.834 tonnes** of cyanides (ionic). These values were reported in error, and have since been revised. The revised on-site releases to water is **0.015 tonnes** and to air is **0 tonnes**. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. The release quantities for cyanides (ionic) should be reduced accordingly.

### 6. Appendix 2 - Formaldehyde

**Abitibi-Consolidated Inc., Division Port-Alfred** (NPRI # 2636), La Baie, Québec, originally reported on-site releases to water of **157.700 tonnes** and on-site releases in air of **0.700 tonnes** of formaldehyde. These values were reported in error, and have since been revised. The revised on-site releases to water is **10.600 tonnes** and to air is **3.800 tonnes**. These revised numbers change the facility's ranking for this substance. Total release quantities for formaldehyde should be adjusted accordingly.

## 7. Appendix 2 - Molybdenum Trioxide

**Atlas Steels Inc., Atlas Specialty Steels** (NPRI # 3158), Welland, Ontario, originally reported on-site releases in air of **0.479 tonnes** of molybdenum trioxide. This value was reported in error, and has since been revised to **0.005 tonnes**. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for molybdenum trioxide should be reduced accordingly.

## 8. Appendix 2 - Naphthalene

**Trentonworks Ltd.** (NPRI # 4993), Trenton, NS, originally reported on-site releases in air of **28.990 tonnes** of naphthalene. This value was reported in error, as the facility does not release this substance. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for naphthalene should be reduced accordingly.

## 9. Appendix 2 - Nitric Acid

**Decor Products International** (NPRI # 3850), Midland, Ontario, originally reported on-site releases in air of **2.800 tonnes** of nitric acid. This value was reported in error, as the facility does not release nitric acid. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for nitric acid should be reduced accordingly.

## 10. Appendix 2 - Phosphoric Acid

**Abitibi-Consolidated Inc., Division Kénogami** (NPRI # 0979), Jonquière, Québec, originally reported an on-site release to water of **3.200 tonnes** of phosphoric acid. This value was reported in error, as the facility does not release phosphoric acid. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for phosphoric acid should be reduced accordingly.

## 11. Appendix 2 - Phosphoric Acid

**Decor Products International** (NPRI # 3850), Midland, Ontario, originally reported on-site releases to air of **1.000 tonnes** of phosphoric acid. This value was reported in error, as the facility does not release phosphoric acid. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for phosphoric acid should be reduced accordingly.

## 12. Appendix 2 - Phosphorus (yellow or white)

**F.F. Soucy Inc.** (NPRI # 4790), Rivière-du-Loup, Québec, originally reported on-site release to water of **4.700 tonnes** of phosphorus (yellow or white). This substance was reported in error, as the facility does not release phosphorus (yellow or white). This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for phosphorus (yellow or white) should be reduced accordingly.

## 13. Appendix 2 - Phosphorus (yellow or white)

**Les Services Safety Kleen (Mercier) Ltée.** (NPRI # 5449), Mercier, Québec, originally reported on-site releases in air of **11.327 tonnes** of phosphorus (yellow or white). This substance was reported in error, as the facility does not release phosphorus (yellow or white). This facility should not be mentioned in the listing for this substance in Appendix 2 of this report. Total release quantities for phosphorus (yellow or white) should be reduced accordingly.

#### 14. Appendix 2 - Phosphorous (yellow or white)

**Irving Paper** (NPRI # 3394), Saint John, New Brunswick, originally reported on-site releases to water of **10.972 tonnes** of phosphorous (yellow or white). This value was reported in error, as the facility does not release this form of phosphorous. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for phosphorus (yellow or white) should be reduced accordingly.

#### 15. Appendix 2 - Phthalic Anhydride

**Ashland Canada Inc., Resin & Chemical Division** (NPRI # 0120), Mississauga, Ontario, originally reported total releases of **0.555 tonnes** of phthalic anhydride. This value was reported in error, and has since been revised to **0.489 tonnes**. This facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for phthalic anhydride should be reduced accordingly.

#### 16. Appendix 2 - Sulphuric Acid

**Alberta Power Limited, Battle River Generating Station** (operated by ATCO Electric) (NPRI # 1033), Forestburg, Alberta, originally reported on-site releases in air of **641.417 tonnes** of sulphuric acid. This value was based on a stack survey. A revised number of **27.080 tonnes** was obtained using emission factors. This revised number changes the facility's ranking for this substance. Total release quantities for sulphuric acid should be reduced accordingly.

#### 17. Appendix 2 - Sulphuric Acid

**Avenor Maritimes Inc., Dalhousie Mill** (NPRI # 4876), Dalhousie, New Brunswick, originally reported on-site releases in air of **1 642.000 tonnes** of sulphuric acid. This value was reported in error, and has since been revised to **1.642 tonnes**. This revised number changes the facility's ranking for this substance. Total release quantities for sulphuric acid should be reduced accordingly.

#### 18. Appendix 2 - Sulphuric Acid

**Sheerness Generating Station** (operated by ATCO Electric) (NPRI # 1036), Hanna, Alberta, originally reported on-site releases in air of **1 743.655 tonnes** of sulphuric acid. This value was originally based on a stack survey. A revised number of **32.500 tonnes** was obtained using emission factors. This revised number changes the facility's ranking for this substance. Total release quantities for sulphuric acid should be reduced accordingly.

#### 19. Appendix 2 - Vanadium (fume or dust)

**North Atlantic Refining Ltd.** (NPRI # 4316), Come by Chance, Newfoundland, originally reported on-site releases in air of **61.917 tonnes** of vanadium (fume or dust). This value was reported in error, as the facility does not produce this form of vanadium. Due to a data processing error, this facility should not be mentioned in the listing for this substance in Appendix 2 of the report. Total release quantities for vanadium (fume or dust) should be reduced accordingly.

#### 20. Table 4 and Appendix 2 - Zinc (and its compounds)

**Ispat Sidbec Inc., Acierie** (NPRI # 3649), Contrecoeur, Québec, originally reported on-site releases to land of **2 698.160 tonnes** of zinc (and its compounds). This value was reported in error, and has since been revised. The revised number for releases to land is **1 965.330 tonnes**. This facility should not be mentioned in Table 4 of the report. This revised number does not change the facility's ranking for this substance. Total release quantities for zinc (and its compounds) should be reduced accordingly.



## 1. Introduction

This 1998 National Overview is the sixth annual report in the series published under the NPRI program. Its format has changed from earlier years. Readers should refer to the companion document *About the National Pollutant Release Inventory* for a description of the program as well as contextual and background information for this report. It can be obtained from the NPRI offices listed on the inside front cover, or on Environment Canada's NPRI Web site at <[www.ec.gc.ca/pdb/npri](http://www.ec.gc.ca/pdb/npri)>. Supplementary Tables that complement this National Overview are also available on the NPRI Web site and are identified in Chapter 5.

This report reflects on-site releases to the environment and off-site transfers for recycling and disposal of pollutants reported to Environment Canada, by facility, for the calendar year 1998. It also provides information on changes since 1997. Data included in this report are as they appeared in the NPRI database on March 29, 2000. Appendix 1 lists the 176 substances on the 1998 NPRI list.

The terms "pollutant" and "substance" are used and referenced throughout this report. "Pollutant" is used to describe a substance which is released on site to the environment or transferred off site for disposal; "substance" is used when describing any other activities (recycling or energy recovery) or programs.

A total of 2 007 Canadian facilities reported to the NPRI in 1998. A facility must file one report for each pollutant that meets the NPRI reporting requirements. Facilities across Canada submitted 7 448 pollutant reports to the NPRI in 1998.

Chapter 2 provides information on the 1998 reported data<sup>1</sup> and includes a year-to-year comparison (1997-1998), using all data reported to the NPRI for the following elements:

- number of reporting facilities,
- number of pollutant reports,
- on-site releases,
- off-site transfers for disposal,
- off-site transfers for recycling (a mandatory reporting requirement beginning in 1998), and
- on-site releases and off-site transfers of NPRI-listed, CEPA-toxic and carcinogenic pollutants.

### 1.1 Supplementary Analyses

Other reports and analyses are developed and made available to the public throughout the year on the NPRI Web site. These reports include multi-year trend analyses, provincial and regional summaries, additional supplementary tables such as those summarizing releases by industrial sectors and other special features.

### 1.2 Confidential Information

Any person who provides information to the Minister of the Environment, under the provisions of Part II of the *Canadian Environmental Protection Act* (CEPA) 1988, which was in force when the *Canada Gazette* notice for the 1998 NPRI was published, may submit a written request that the information be treated

---

1 Because of rounding of on-site release and off-site transfer quantities throughout this report, individual values may not equal the totals.

as confidential. The request for confidentiality must accompany the NPRI report submitted to Environment Canada, and must meet criteria set out in the *Access to Information Act*.

At the time of publication of this report, four companies representing six facilities were granted confidential status for information provided to the 1998 NPRI. The following NPRI data were reported by those facilities:

- Total pollutant reports: 38
- Total on-site releases in 1998: 66 tonnes
- Total off-site transfers for disposal in 1998: 3 489 tonnes
- Total off-site transfers for recycling in 1998: 69 tonnes
- Total off-site transfers for energy recovery in 1998: 0 tonnes

Data presented in this report do not include confidential information.

## 2. Tracking Progress

One of the main purposes of the NPRI is to provide Canadians with a tool to track progress in reducing on-site releases and off-site transfers for disposal of listed pollutants in Canada. Data in this National Overview represent NPRI information reported by facilities in the 1998 reporting year, providing an overview of changes in reported releases and transfers from 1997 to 1998. Longer-term trend analysis using matched data sets<sup>2</sup> will be undertaken later in 2000.

There are many reasons for changes to facility releases and transfers off site for disposal. Some reported changes showing increases or decreases are real – that is, they reflect changes in the quantities of pollutants released or transferred. In other cases, the changes in reported releases are the result of other factors.

The number of facilities reporting to the NPRI changes each year. Some cease reporting because they have gone out of business or because they do not meet reporting requirements. This could be because of changes in processes and material use. In many cases, companies deliberately reduce or eliminate the use of NPRI substances. New facilities appear each year because of compliance promotion, changes in the type of substances used, or increases in use from year to year.

Other changes may be the result of facilities refining their reporting methodologies. In many instances, companies have measured their releases in response to the publication of facility-specific information, based on estimated values.

The summary tables found in this report highlight the percent change from 1997 to 1998. Further explanation is warranted for two aspects of this calculation – the release or transfer quantity and percent contribution to the national total for that pollutant, and the percent change from 1997 to 1998. The second value is only of significance if releases or transfers were reported in relatively large quantities in 1997. Releases or transfers of small quantities in 1997 may show large changes (e.g., +109%) when expressed in terms of a percentage, but the change in tonnage is actually small. This is attributable to the formula used to calculate percent change between 1997 and 1998:

$$\% \text{ Change} = \frac{[(\text{Total Quantity in 1998}) - (\text{Total Quantity in 1997})]}{(\text{Total Quantity in 1997})} \times 100\%$$

The baseline year is 1997. If the 'Total Quantity in 1997' was comparatively small (e.g., 0.001 tonnes) compared to the 'Total Quantity in 1998' (e.g., 10 tonnes), the percent change for this example would be:

$$\% \text{ Change} = \frac{[(10 \text{ tonnes}) - (0.001 \text{ tonnes})]}{0.001 \text{ tonnes}} \times 100\% = + 9\,999\%$$

<sup>2</sup> A matched data set selects only those facilities that reported in 1997 and 1998 for the same pollutants. A matched data set tracks trends for a constant set of facilities and pollutant reports.

## 2.1 Year-to-Year Analysis of NPRI Data (1997-1998)

Table 1 provides an overview of all NPRI information from 1997 to 1998.

- Total number of facilities reporting:
  - 1 989 (1997)
  - 2 007 (1998)
    - an increase of 18 (+0.9%) from 1997
- Total number of pollutant reports submitted:
  - 7 415 (1997)
  - 7 448 (1998)
    - an increase of 33 (+0.4%) from 1997
- Total reported pollutants:
  - 138 (1997)
  - 135 (1998)
    - a decrease of 3 (–2.2%) from 1997
- Total on-site releases:
  - 161 593 tonnes (1997)
  - 160 166 tonnes (1998)
    - a decrease of 1 427 tonnes (–0.9%) from 1997
- Total off-site transfers for treatment and disposal:
  - 98 099 tonnes (1997)
  - 88 489 tonnes (1998)
    - a decrease of 9 610 tonnes (–9.8%) from 1997
- Total off-site transfers for recycling, excluding energy recovery (mandatory in 1998):
  - 245 798 tonnes (1998)
    - no year-to-year comparisons are made because reporting was optional in previous years
- Total off-site transfers for energy recovery:
  - 13 078 tonnes (1998)
    - no year-to-year comparisons are made because reporting was optional in previous years



**TABLE 1**  
**NATIONAL SUMMARY OF NPRI INFORMATION (1997-1998)**

	1997	1998	Change (1997-1998)	% Change (1997-1998)
<b>Total Facilities</b>	1 989	2 007	18	0.9
<b>Total Pollutant Reports</b>	7 415	7 448	33	0.4
<b>Pollutants Reported</b>	138	135	-3	-2.2
<i>On-site Releases (tonnes):</i>				
Air	109 664.3	110 319.3	655.0	0.6
Water	14 877.1	13 298.1	-1 579.0	-10.6
Land	18 614.2	19 762.5	1 148.3	6.2
Underground Injection	18 224.6	16 599.3	-1 625.3	-8.9
<b>Total On-site Releases</b>	<b>161 593.0</b>	<b>160 165.6</b>	<b>-1 427.4</b>	<b>-0.9</b>
<i>Off-site Transfers for Treatment (tonnes):</i>				
Physical	3 483.4	2 270.9	-1 212.5	-34.8
Chemical	10 571.2	8 661.8	-1 909.4	-18.1
Biological	2 937.0	2 632.2	-304.8	-10.4
Incineration	12 902.4	12 235.6	-666.8	-5.2
MSTP	9 954.2	8 774.4	-1 179.8	-11.9
<b>Total Off-site Treatment</b>	<b>39 848.2</b>	<b>34 574.9</b>	<b>-5 273.3</b>	<b>-13.2</b>
<i>Off-site Transfers for Final Disposal (tonnes):</i>				
Landfill	49 689.7	45 094.8	-4 594.9	-9.2
Storage	3 991.5	3 933.3	-58.2	-1.5
Underground Injection	4 359.4	4 358.6	-0.8	0.0
Land Treatment	209.9	527.5	317.6	151.3
<b>Total Off-site Final Disposal</b>	<b>58 250.6</b>	<b>53 914.3</b>	<b>-4 336.3</b>	<b>-7.4</b>
<b>Total Off-site Transfers</b>	<b>98 098.7</b>	<b>88 489.2</b>	<b>-9 609.5</b>	<b>-9.8</b>
<i>Off-site Transfers for Recycling (tonnes)*:</i>				
Recycling		245 798.3		
Energy Recovery		13 078.1		
<b>Total Recycling</b>		<b>258 876.4</b>		

\* Reporting of transfers for recycling was voluntary for 1997 and mandatory for 1998. As a result, no year-to-year comparison was made.

The following are highlights of year-to-year changes:

### 1. Total On-site Releases from 1997 to 1998

Table 1 shows that total on-site releases of 161 593 tonnes were reported in 1997 and 160 166 tonnes in 1998, a decrease of 1 427 tonnes (-0.9%). This decrease in total releases results from increased releases for some substances and decreased releases for others. More information on substance-by-substance changes may be found in Section 2.2. Examining a matched data set, which considers only those facilities that reported in 1997 and 1998 for the same pollutants, releases decreased by 3.3%. There were no major changes in reporting requirements and no other major factors that affected the data from 1997 to 1998. Thus, comparisons between 1997 and 1998 using the matched data set do not differ greatly from

those using all data. Analyses of releases and transfers for this report will be done using all data. Longer-term trend analysis using matched data sets will be later in 2000.

## **2. Off-site Transfers for Recycling in 1998**

New mandatory reporting requirements for recycling began in 1998. The 245 798 tonnes reported in 1998 as transfers for recycling provides a more accurate representation of annual recycling activity in Canada by facilities reporting to the NPRI than values reported in earlier years.

The total quantity of transfers to recycling is approximately equal to the total releases on site and transfers off site in waste. This illustrates the importance of recycling in the management of materials no longer useable in facilities generating these materials.

Mandatory reporting of transfers for recycling provides a more complete picture of overall environmental management activities at facilities. Recycling reduces the quantity of material sent for disposal and reduces the amount of raw materials used. Recycling activities do, in some cases, produce releases and wastes. However, recycling allows the reuse of materials that would otherwise be wastes.

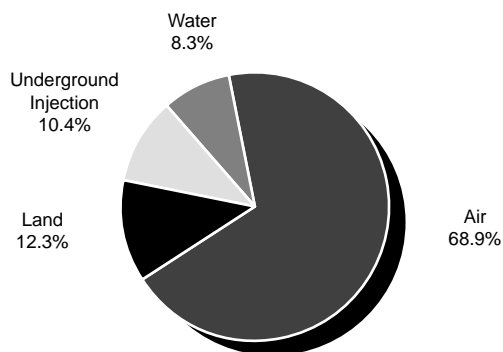
## **3. Impact of New Reporting Facilities and Missing Reporting Facilities**

A total of 2 007 facilities reported to the NPRI in 1998. This is a net increase of 18 over 1997. There were 164 facilities that reported in 1998 but not in 1997, which released 2 902 tonnes of NPRI pollutants in 1998. There were 146 facilities which released 2 503 tonnes of pollutants in 1997, but did not report to the NPRI in 1998. The difference between 1998 releases by new reporting facilities and 1997 releases by facilities that did not report in 1998 is approximately 400 tonnes.

Additional information on notable facility decreases and increases in on-site releases and off-site transfers is provided in Sections 2.2.3 and 2.3.3, respectively.

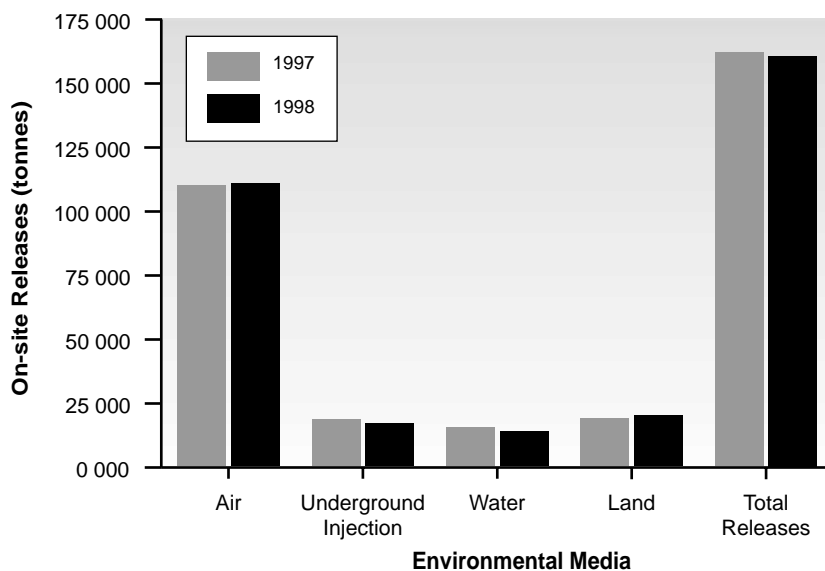
## **2.2 On-site Releases in 1998**

In 1998, facilities across Canada reported on-site releases totalling 160 241 tonnes. On-site releases decreased by 1 427 tonnes (-0.9%) from 1997, while the number of facilities reporting to the NPRI and the number of pollutant reports submitted increased slightly. Figure 1 shows that releases to air accounted for 110 319 tonnes (68.9%), releases to surface water for 13 298 tonnes (8.3%), releases to land for 19 763 tonnes (12.3%), and releases to underground injection for 16 599 tonnes (10.4%).



**Figure 1**  
On-site Releases in 1998

Figure 2 shows the changes in releases to each environmental medium from 1997 to 1998.



**Figure 2**  
On-site Releases by Environmental Media (1997-1998)

### 2.2.1 On-site Releases by Environmental Media in 1998 – 25 NPRI Pollutants Released in the Largest Quantities

Table 2 highlights the 25 NPRI pollutants released on site in the largest quantities by environmental media in 1998. On-site releases of these pollutants represent 91.7% of the national total and decreased by 597 tonnes (–0.4%) from 1997. There were 3 401 reports (68.9% of the total number of pollutant reports) received in 1998 for these 25 pollutants.

The first five pollutants released on site in the largest quantities remained the same from 1997 to 1998 – total ammonia, methanol, sulphuric acid, hydrochloric acid and xylene (mixed isomers).

The largest changes in total on-site releases are noted below:

- Sulphuric acid:
  - 10 814 tonnes (1997)
  - 14 798 tonnes (1998)
  - an increase of 3 984 tonnes (+26.9%) from 1997

More than 60% of this increase is the result of increased releases of sulphuric acid by electric power generation facilities, because of an increase in electricity generation and, in part, better measuring and estimating methods.

- Ethylene glycol:
  - 4 887 tonnes (1997)
  - 3 530 tonnes (1998)
  - a decrease of 1 357 tonnes (–38.4%) from 1997

This is partly the result of a decreased need for de-icing at airports because of differing weather conditions.

- Cyclohexane:
  - 3 304 tonnes (1997)
  - 1 999 tonnes (1998)
  - a decrease of 1 305 tonnes (–65.3%) from 1997.

One company, Nova Chemicals Ltd. (NPRI #4700) in Corunna, ON, reduced releases by more than 900 tonnes by commissioning new equipment to recover and recycle cyclohexane.

### 2.2.2 On-site Releases by Industrial Sector in 1998

Figure 3 presents the five industrial sectors reporting the largest on-site releases by sector in both 1997 and 1998. These sectors represent 68% of overall on-site releases for 1998. The sectors are identified by Standard Industrial Classification (SIC) codes, which are numerical identifiers for different types of businesses and industries. The NPRI also collects information using the North American Industry Classification System (NAICS) codes and will likely use NAICS codes to identify sectors in subsequent annual reports.

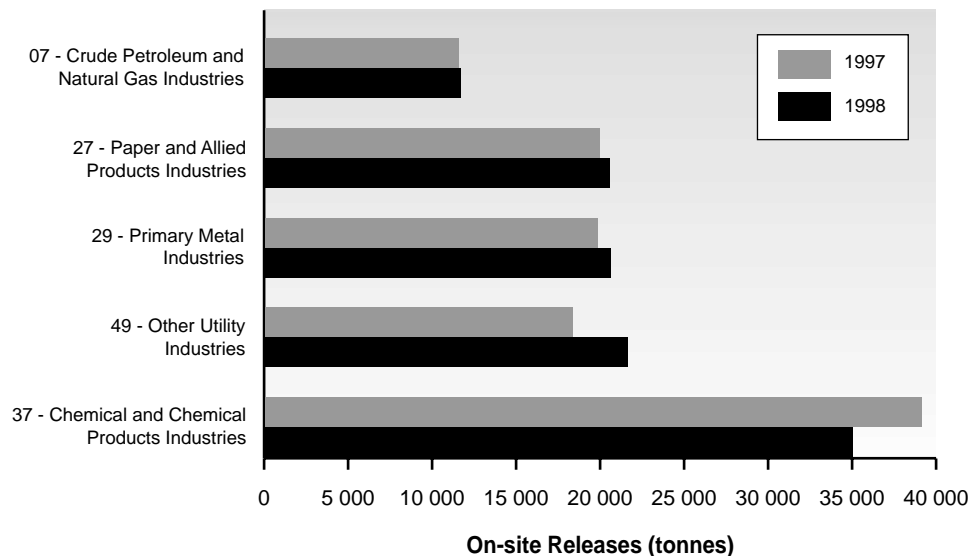
The following listing compares all 1997 and 1998 releases reported by the five industrial sectors with the largest on-site releases in 1998:

- SIC 37 – Chemical and Chemical Products Industries:
  - total on-site releases in 1997: 39 095 tonnes (330 facilities)
  - total on-site releases in 1998: 34 999 tonnes (332 facilities)
  - a decrease of 4 096 tonnes (–10.5%) from 1997
- SIC 49 – Other Utility Industries:
  - total on-site releases in 1997: 18 304 tonnes (50 facilities)
  - total on-site releases in 1998: 21 552 tonnes (49 facilities)
  - an increase of 3 248 tonnes (+17.7%) from 1997

**TABLE 2  
ON-SITE RELEASES BY ENVIRONMENTAL MEDIUM IN 1998 -  
25 NPRI POLLUTANTS RELEASED IN THE LARGEST QUANTITIES (1997-1998) (TONNES)**

CAS No.	Pollutant	1998						1997		
		Air	Underground Injection	Water	Land	Total	No. of Reports	Total	No. of Reports	
N/A	Ammonia (total)	18 908.0	7 349.2	7 132.3	550.1	33 944.3	255	34 737.8	251	
67-56-1	Methanol	13 956.7	4 757.2	1 010.6	60.6	19 798.2	287	19 967.3	286	
7664-93-9	Sulphuric acid	14 679.4	0.0	108.5	4.7	14 797.9	156	10 814.2	148	
7647-01-0	Hydrochloric acid	11 513.4	96.9	15.5	0.5	11 630.9	140	10 771.4	146	
1330-20-7	Xylene (mixed isomers)	6 961.7	38.9	2.3	4.8	7 019.2	292	7 371.9	290	
N/A	Zinc (and its compounds)	674.3	0.1	192.3	6 051.5	6 927.3	219	6 739.2	229	
108-88-3	Toluene	6 445.0	66.7	6.2	21.2	6 550.5	300	6 994.0	306	
78-93-3	Methyl ethyl ketone	4 542.5	386.0	0.0	1.4	4 936.3	143	5 164.3	140	
N/A	Nitrate ion in solution at pH ≥ 6.0	28.0	148.8	3 968.8	66.0	4 212.4	51	4 679.2	44	
107-21-1	Ethylene glycol	246.2	565.9	21.9	2 691.4	3 530.4	165	4 887.2	186	
67-64-1	Acetone	3 340.7	110.0	54.5	0.0	3 512.9	134	4 424.8	132	
7664-39-3	Hydrogen fluoride	3 404.5	0.7	0.0	0.0	3 405.2	44	3 141.4	39	
1332-21-4	Asbestos (friable form)	0.0	0.0	0.0	3 021.6	3 022.2	9	3 067.7	11	
N/A	Manganese (and its compounds)	93.0	0.0	339.1	2 194.1	2 635.4	191	2 932.9	179	
74-85-1	Ethylene	2 562.9	0.0	0.3	0.1	2 564.4	43	2 057.8	44	
75-09-2	Dichloromethane	2 212.7	0.0	0.0	0.0	2 215.1	53	2 447.7	56	
75-15-0	Carbon disulphide	2 195.2	0.0	0.0	0.0	2 196.1	26	3 094.1	22	
N/A	Arsenic (and its compounds)	173.0	1 719.8	4.5	183.6	2 081.7	30	2 114.7	30	
67-63-0	Isopropyl alcohol	2 043.9	3.0	0.0	0.0	2 055.5	166	2 179.6	175	
110-82-7	Cyclohexane	1 993.7	0.3	2.0	0.3	1 999.1	84	3 303.6	78	
N/A	Chromium (and its compounds)	51.5	2.4	21.8	1 876.5	1 959.9	135	955.9	122	
N/A	Lead (and its compounds)	544.3	0.0	17.6	1 060.9	1 628.0	125	1 531.0	120	
71-43-2	Benzene	1 475.5	103.2	1.7	0.5	1 585.8	100	1 773.2	100	
50-00-0	Formaldehyde	1 237.3	40.3	167.6	0.0	1 448.1	86	1 424.5	90	
N/A	Copper (and its compounds)	495.6	0.0	69.0	675.8	1 245.6	167	924.5	171	
<b>Total Largest On-site Releases</b>		<b>99 778.9</b>	<b>15 389.5</b>	<b>13 136.4</b>	<b>18 465.7</b>	<b>146 902.5</b>	<b>3 401</b>	<b>147 499.6</b>	<b>3 395</b>	
<b>National Total</b>		<b>110 318.6</b>	<b>16 599.3</b>	<b>13 298.1</b>	<b>19 762.5</b>	<b>160 165.6</b>	<b>4 933</b>	<b>161 593.0</b>	<b>4 949</b>	
<b>% of National Total</b>		<b>90.4</b>	<b>92.7</b>	<b>98.8</b>	<b>93.4</b>	<b>91.7</b>	<b>68.9</b>	<b>91.3</b>	<b>68.6</b>	

- SIC 29 – Primary Metal Industries:
  - total on-site releases in 1997: 19 783 tonnes (109 facilities)
  - total on-site releases in 1998: 20 551 tonnes (115 facilities)
    - an increase of 768 tonnes (+3.9%) from 1997
- SIC 27 – Paper and Allied Products Industries:
  - total on-site releases in 1997: 19 904 tonnes (103 facilities)
  - total on-site releases in 1998: 20 526 tonnes (102 facilities)
    - an increase of 622 tonnes (+3.4%) from 1997
- SIC 07 – Crude Petroleum and Natural Gas Industries:
  - total on-site releases in 1997: 11 546 tonnes (69 facilities)
  - total on-site releases in 1998: 11 642 tonnes (76 facilities)
    - an increase of 96 tonnes (+0.8%) from 1997



**Figure 3**  
**Industrial Sectors Reporting the Largest On-site Releases in 1998**

In 1998, the Chemical and Chemical Products Industries reported the largest on-site releases. This sector also has the largest number of facilities – 330 in 1998, or about three times as many facilities as either the Paper and Allied Products Industries or the Primary Metal Industries. Over the past year, facilities in the Chemical and Chemical Products Industries sector have reduced releases by 4 097 tonnes (–10.5%), the largest decrease in on-site releases by a sector for 1998.

The Other Utility Industries sector reported 21 552 tonnes, the second largest releases on site in 1998. Releases from Other Utility Industries increased by 3 248 tonnes (+17.7%) from 1997. The increase is partly a result of greater reported releases to air of sulphuric acid and hydrochloric acid from power generation utilities across Canada, a result of greater energy production and improved testing and estimation methods. This industrial sector reported the largest increase in on-site releases for 1998.

### 2.2.3 On-site Releases by Facility in 1998

Appendix 2 presents the largest on-site releases of NPRI pollutants, by facility, in 1998 for each NPRI substance. A maximum of 10 facilities are listed for each substance, however, the total releases and number of reports for each pollutant listed are also provided. Facilities reporting releases of less than 0.5 tonnes, and pollutants with total releases less than 0.5 tonnes are not listed.

Tables 3 and 4 highlight five facilities reporting to the NPRI the largest relative decreases and increases of on-site releases of a single NPRI pollutant from 1997 to 1998, respectively. These tables do not include increases or decreases due to changes in estimation methodologies, if clearly specified by the facility in the comment field. All facilities shown below reported a relative change of greater than 500 tonnes for at least one NPRI pollutant from 1997 to 1998.

**TABLE 3  
FACILITIES REPORTING THE LARGEST DECREASE IN ON-SITE RELEASES FROM 1997 TO 1998**

Facility	NPRI Pollutant and Reported Releases (tonnes)	Comments Provided by Facility
NPRI #2134 Agrium Products Inc. Redwater Fertilizer Operations Redwater/Municipal District of Sturgeon, AB	Ammonia (total) • 5 822 in 1997 • 4 199 in 1998 (decrease of 1 623 (-27.9%))	"...Redistillation of condensate in the urea plant resulted in a significant reduction in the amount of ammonia disposed of via the deepwell. Reductions in the amount of fertilizer fines disposed of via landfill were made in 1998 by increasing the amount of offspec product resale effort..."
NPRI #0444 Inco Limited Copper Cliff Smelter Complex Copper Cliff, ON	Sulphuric acid • 3 894 in 1997 • 2 796 in 1998 (decrease of 1 098 (-28.2%))	No comments provided by facility.
NPRI #4138 Amoco Canada Petroleum Co. Ltd. West Whitecourt Plant Whitecourt, AB	Carbon disulphide • 1 054 in 1997 • 92 in 1998 (decrease of 962 (-91.3%))	"...Carbon disulphide is formed in the sulphur recovery units and is not completely combusted in the tail gas incinerator..."
NPRI #4700 Nova Chemicals Ltd. St. Clair River Site Corunna, ON	Cyclohexane • 1 960 in 1997 • 1 058 in 1998 (decrease of 903 (-46.0%))	"...New production equipment which recovers and recycles cyclohexane was commissioned in early 98..."
NPRI #1162 Celanese Canada Inc. Edmonton Facility Edmonton, AB	Acetone • 1 414 in 1997 • 732 in 1998 (decrease of 683 (-48.3%))	No comments provided by facility.

**TABLE 4**  
**FACILITIES REPORTING THE LARGEST INCREASE IN ON-SITE RELEASES FROM 1997 TO 1998\***

Facility	NPRI Pollutant and Reported Releases (tonnes)	Comments Provided by Facility
NPRI #0444 Inco Limited Copper Cliff Smelter Complex Copper Cliff, ON	Chromium and its compounds • 649 in 1997 • 1 545 in 1998 (increase of 896 (+138.1%))	"...These chrome releases are in the form of spent chrome-magnesite refractory brick which is stockpiled for processing to recover infused metals. The manufacturer indicates the chrome as the III form..."
NPRI #1861 Ontario Power Generation Inc. Nanticoke G.S. Nanticoke, ON	Hydrochloric acid • 3 344 in 1997 • 4 234 in 1998 (increase of 890 (+26.6%))	No comments provided by facility.
NPRI #3649 Ispat Sidbec Inc. Acierie Contrecoeur, QC	Zinc and its compounds • 1 836 in 1997 • 2 707 in 1998 (increase of 871 (+47.4%))	"...les poussières d'aciérage contenant du zinc sont entreposées sur nos terrains dans des cellules avec membrane synthétique..."
NPRI #2515 Simplot Canada Limited Brandon, MB	Ammonia (total) • 1 023 in 1997 • 1 734 in 1998 (increase of 711 (+69.5%))	"...New Ammonia Plant was finished and ran for part of 1998 along with the existing two ammonia plants. They have subsequently been shut down and the ammonia emission numbers have decreased. Our #1 Nitric Acid plant utilized a purge gas stream from the old ammonia plants as a fuel source. This caused approximately 240 tonnes of ammonia emission annually. This practice has been stopped..."
NPRI #3269 Agrium Inc. Calgary, AB	Ammonia (total) • 1 352 in 1997 • 1 961 in 1998 (increase of 609 (+45.1%))	No comments provided by facility.

\* This table excludes facilities reporting a pollutant for the first time in 1998.



## 2.3 Off-site Transfers for Disposal in 1998

Table 1 in Section 2.1 provides the overview of the quantities transferred off site for either treatment prior to final disposal or for final disposal. In 1998, facilities across Canada reported off-site transfers for disposal totalling 88 489 tonnes, a decrease of 9 610 tonnes (-9.8%) from 1997.

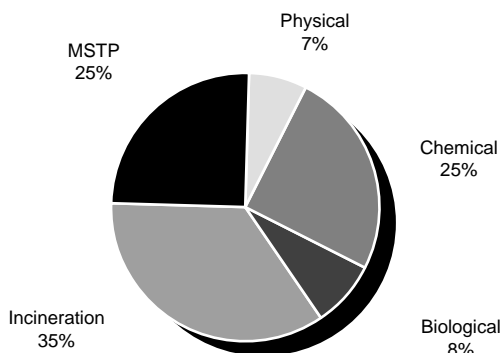
Off-site transfers for treatment prior to final disposal accounted for 34 575 tonnes (39.1% of total transfers), a decrease of 5 278 tonnes (-13.2%) from 1997. Off-site transfers sent directly to final disposal accounted for 53 914 tonnes (60.9% of total transfers), a decrease of 4 336 tonnes (-7.4%) from 1997.

The following breakdown for off-site transfers was reported by facilities in 1998:

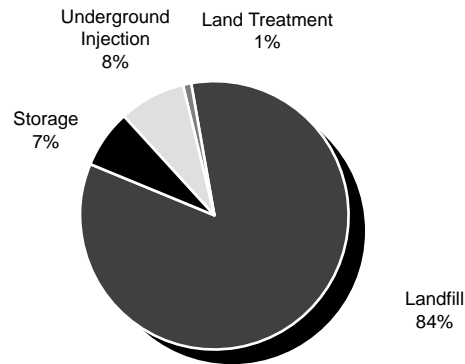
- Off-site transfers for treatment prior to final disposal in 1998:
  - Physical: 2 271 tonnes (2.6% of total transfers for disposal)
  - Chemical: 8 662 tonnes (9.8% of total transfers for disposal)
  - Biological: 2 632 tonnes (3.0% of total transfers for disposal)
  - Incineration: 12 236 tonnes (13.8% of total transfers for disposal)
  - Municipal sewage treatment plant (MSTP): 8 774 tonnes (9.9% of total transfers for disposal)
- Off-site transfers for final disposal in 1998:
  - Landfill: 45 095 tonnes (51.0% of total transfers for disposal)
  - Storage: 3 933 tonnes (4.4% of total transfers for disposal)
  - Underground injection: 4 359 tonnes (4.9% of total transfers for disposal)
  - Land treatment: 528 tonnes (0.6% of total transfers for disposal)

Overall, four categories of off-site transfers accounted for 74 766 tonnes (84.5%) in 1998 – landfill, incineration, MSTP and chemical treatment. The remaining off-site transfer categories accounted for 13 723 tonnes (15.5%) in 1998.

Figures 4 and 5 illustrate the relative contribution of off-site transfers for treatment prior to final disposal and for final disposal, respectively.



**Figure 4**  
Off-site Transfers for Treatment Prior to Final Disposal in 1998



**Figure 5**  
**Off-site Transfers for Final Disposal in 1998**

### 2.3.1 Off-site Transfers for Disposal in 1998 – 25 NPRI Pollutants Transferred Off Site in the Largest Quantities

Table 5 provides details on the 25 pollutants transferred off site in the largest quantities in 1998. These pollutants accounted for 84 947 tonnes or 96.0% of the total off-site transfers for disposal in 1998.

For 1998, the five pollutants transferred off site in the largest quantities were:

- Zinc (and its compounds) (26 174 tonnes)
- Manganese (and its compounds) (7 202 tonnes)
- Sulphuric acid (5 732 tonnes)
- Nitrate ion (in solution at pH  $\geq$  6.0) (5 087 tonnes)
- Hydrochloric acid (5 015 tonnes)

In comparison, the following pollutants were transferred off site in the largest quantities in 1997:

- Zinc (and its compounds) (35 593 tonnes)
- Manganese (and its compounds) (8 027 tonnes)
- Sulphuric acid (5 816 tonnes)
- Nitrate ion (in solution at pH  $\geq$  6.0) (5 349 tonnes)
- Xylene (mixed isomers) (4 923 tonnes)
- Toluene (4 821 tonnes)
- Methanol (3 831 tonnes)
- Hydrochloric acid (3 785 tonnes)

The largest change is a decrease of 9 419 tonnes in transfers off site for disposal of zinc and its compounds, across a broad range of sectors and facilities. The reason for this decrease is not known; analysis is being carried out.

**TABLE 5  
OFF-SITE TRANSFERS FOR DISPOSAL IN 1998 – 25 NPRI POLLUTANTS TRANSFERRED OFF SITE IN THE LARGEST QUANTITIES  
(TONNES)**

CAS No.	Pollutant	Physical	Chemical	Biological	Incineration	MSTP	Landfill	Storage	Underground Injection	Land Treatment	Total	No. of Reports
N/A	Zinc (and its compounds)	373.4	2 052.7	0.0	38.7	8.7	23 483.0	136.8	75.5	5.1	26 174.0	387
N/A	Manganese (and its compounds)	70.6	360.5	0.0	0.5	4.5	6 350.2	378.8	0.0	36.9	7 202.0	316
7664-93-9	Sulphuric acid	719.1	2 361.7	0.1	70.3	143.8	506.7	0.1	1 930.1	0.0	5 731.8	435
N/A	Nitrate ion in solution at pH ≥ 6.0	0.0	22.0	0.0	0.0	4 416.7	104.5	0.0	543.8	0.2	5 087.1	82
7647-01-0	Hydrochloric acid	322.1	2 637.0	0.0	30.1	1 791.2	6.8	0.1	12.3	215.0	5 014.6	287
1330-20-7	Xylene (mixed isomers)	24.1	113.9	3.4	1 452.8	0.1	1 789.2	1 355.2	3.5	0.0	4 742.2	328
67-56-1	Methanol	0.0	13.5	1 480.5	1 256.5	561.2	193.6	9.8	1 074.6	3.3	4 593.1	354
108-88-3	Toluene	23.2	68.6	4.2	2 682.7	1.5	843.8	794.6	4.5	0.0	4 423.0	340
N/A	Lead (and its compounds)	0.5	206.8	0.0	46.5	2.9	2 991.0	79.4	0.1	0.0	3 327.2	193
N/A	Chromium (and its compounds)	501.2	220.1	0.0	56.5	3.5	1 949.3	78.1	250.0	0.1	3 058.7	279
1332-21-4	Asbestos (friable form)	0.0	0.0	0.0	0.0	0.0	2 247.5	0.0	0.0	0.0	2 247.5	51
107-21-1	Ethylene glycol	37.1	41.0	881.3	253.8	597.5	67.7	47.5	129.7	0.0	2 055.7	282
67-64-1	Acetone	14.8	0.0	7.0	1 257.9	45.4	179.1	295.1	0.0	0.0	1 799.3	165
N/A	Copper (and its compounds)	4.5	68.7	0.0	5.3	4.9	1 334.5	65.9	0.0	0.0	1 483.8	339
78-93-3	Methyl ethyl ketone	9.7	26.3	0.0	799.0	17.1	320.9	271.3	0.1	0.0	1 444.4	167
67-63-0	Isopropyl alcohol	0.4	3.0	3.6	993.6	151.3	73.9	105.3	11.8	0.0	1 342.8	199
N/A	Ammonia (total)	0.0	39.0	65.6	38.0	624.7	64.0	0.9	195.6	173.5	1 201.2	309
110-82-7	Cyclohexane	0.0	0.0	0.0	731.2	0.0	0.0	0.0	0.3	0.0	731.5	90
N/A	Nickel (and its compounds)	91.8	123.5	0.0	1.3	4.3	362.8	35.6	18.6	0.4	638.4	201
71-36-3	n-Butyl alcohol	1.0	8.4	22.2	515.6	16.5	2.9	4.4	0.0	0.0	571.0	84
7664-38-2	Phosphoric acid	0.0	41.5	0.0	0.2	51.8	459.8	0.1	0.5	0.0	553.9	223
50-00-0	Formaldehyde	0.0	2.6	66.3	103.7	23.5	251.8	0.2	0.0	0.8	448.9	92
108-95-2	Phenol (and its salts)	0.0	4.4	61.4	190.4	157.2	13.9	0.4	1.0	0.0	428.7	66
108-10-1	Methyl isobutyl ketone	0.7	0.2	0.1	119.4	0.0	100.0	104.2	0.0	0.0	324.7	73
7429-90-5	Aluminum (fume or dust)	0.0	0.0	0.0	0.3	0.0	243.5	0.0	0.0	77.6	321.3	46
<b>Total Largest Off-site Transfers</b>		<b>2 194.2</b>	<b>8 415.4</b>	<b>2 595.8</b>	<b>10 644.2</b>	<b>8 628.1</b>	<b>43 940.4</b>	<b>3 763.8</b>	<b>4 251.9</b>	<b>512.9</b>	<b>84 946.6</b>	<b>5 388</b>
<b>National Total</b>		<b>2 270.9</b>	<b>8 661.8</b>	<b>2 632.2</b>	<b>12 235.6</b>	<b>8 774.4</b>	<b>45 094.8</b>	<b>3 933.3</b>	<b>4 358.6</b>	<b>527.5</b>	<b>88 489.2</b>	<b>7 448</b>
<b>% of National Total</b>		<b>96.6</b>	<b>97.2</b>	<b>98.6</b>	<b>87.0</b>	<b>98.3</b>	<b>97.4</b>	<b>95.7</b>	<b>97.6</b>	<b>97.2</b>	<b>96.0</b>	<b>72.3</b>

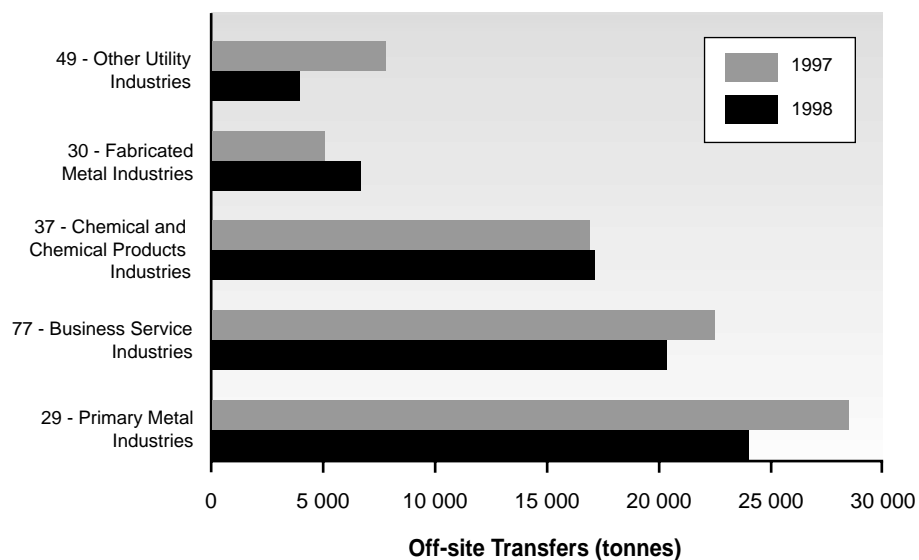
### 2.3.2 Off-site Transfers for Disposal by Industrial Sector in 1998

Figure 6 presents the five industrial sectors that reported the largest off-site transfers for disposal by sector in 1997 and 1998. These sectors accounted for more than 81% of total off-site transfers in 1998. The sectors are identified by Standard Industrial Classification (SIC) codes, which are numerical identifiers for different types of businesses and industries. The NPRI also collects information using the North American Industry Classification System (NAICS) codes and will likely use NAICS codes to identify sectors in subsequent annual reports.

The following listing compares all 1997 and 1998 off-site transfers reported by these five industrial sectors:

- SIC 29 – Primary Metal Industries:
  - total off-site transfers in 1997: 28 419 tonnes (63 facilities)
  - total off-site transfers in 1998: 23 950 tonnes (68 facilities)
    - a decrease of 4 469 tonnes (–15.7%) from 1997
- SIC 77 – Business Service Industries:
  - total off-site transfers in 1997: 22 452 tonnes (6 facilities)
  - total off-site transfers in 1998 20 300 tonnes (7 facilities)
    - a decrease of 2 152 tonnes (–9.6%) from 1997
- SIC 37 – Chemical and Chemical Products Industries:
  - total off-site transfers in 1997: 16 856 tonnes (218 facilities)
  - total off-site transfers in 1998: 17 081 tonnes (223 facilities)
    - an increase of 225 tonnes (+1.3%) from 1997
- SIC 30 – Fabricated Metal Products Industries (except Machinery and Transportation Equipment Industries):
  - total off-site transfers in 1997: 5 035 tonnes (94 facilities)
  - total off-site transfers in 1998: 6 623 tonnes (84 facilities)
    - an increase of 1 588 tonnes (+31.5%) from 1997
- SIC 49 – Other Utility Industries:
  - total off-site transfers in 1997: 7 750 tonnes (24 facilities)
  - total off-site transfers in 1998: 3 917 tonnes (20 facilities)
    - a decrease of 3 833 tonnes (–49.5%) from 1997

The Business Service Industries classification includes six waste-handling or -treatment facilities, which accounts for its relatively high level of transfers for disposal.



**Figure 6**  
**Industrial Sectors Reporting the Largest**  
**Off-site Transfers for Disposal in 1997 and 1998**

### 2.3.3 Off-site Transfers for Disposal by Facility in 1998

Tables 6 and 7 highlight five facilities reporting the largest relative decreases and increases in off-site transfers from 1997 to 1998, respectively. These facility listings are based on the largest change in off-site transfers by specific pollutant reported to the NPRI from 1997 to 1998. These tables do not include increases or decreases due to changes in estimation methodologies, if clearly specified by the facility in the comment field. All facilities shown reported a relative change of greater than 250 tonnes for at least one NPRI pollutant from 1997 to 1998.

**TABLE 6**  
**FACILITIES REPORTING THE LARGEST DECREASE IN OFF-SITE TRANSFERS FOR DISPOSAL FROM 1997 TO 1998**

Facility	NPRI Pollutant and Reported Off-site Transfers (tonnes)	Comments Provided by Facility
NPRI #1698 New Brunswick Power Belledune Thermal Generating Station Belledune, NB	Zinc (and its compounds) • 3 264 in 1997 • 27 in 1998 (decrease of 3 237 (-99.2%))	"...Material is sent to an NBDOE approved landfill..."
NPRI #5645 Philip Enterprises Inc. Parkdale Avenue Facility Hamilton, ON	Zinc (and its compounds) • 4 518 in 1997 • 2 384 in 1998 (decrease of 2 134 (-47.2%))	No comments provided by facility.
NPRI #3855 Lake Erie Steel Company Nanticoke, ON	Zinc (and its compounds) • 1 480 in 1997 • 0 in 1998 (decrease of 1 480)	"...Material is being stored for future recycling not landfill..."
NPRI #3713 Dofasco Inc. Hamilton, ON	Zinc (and its compounds) • 5 759 in 1997 • 4 756 in 1998 (decrease of 1 002 (-17.4%))	No comments provided by facility.
NPRI #4328 Sorveco, Société en commandite Coteau-du-Lac, QC	Zinc (and its compounds) • 841 in 1997 • 0 in 1998 (decrease of 841)	No comments provided by facility.

**TABLE 7**  
**FACILITIES REPORTING THE LARGEST INCREASE IN OFF-SITE TRANSFERS FOR DISPOSAL FROM 1997 TO 1998\***

Facility	NPRI Pollutant and Reported Off-site Transfers (tonnes)	Comments Provided by Facility
NPRI #5645 Philip Enterprises Inc. Parkdale Avenue Facility Hamilton, ON	Xylene (mixed isomers) • 931 in 1997 • 1 902 in 1998 (increase of 971 (+104.4%))	No comments provided by facility.
NPRI #4984 La Corporation Corbec Division Québec Québec, QC	Hydrochloric acid • 367 in 1997 • 1 190 in 1998 (increase of 823 (+224.3%))	No comments provided by facility.
NPRI #5645 Philip Enterprises Inc. Parkdale Avenue Facility Hamilton, ON	Toluene • 433 in 1997 • 884 in 1998 (increase of 451 (+104.2%))	No comments provided by facility.
NPRI #4988 Corbec Corporation Montreal Division Lachine, QC	Sulphuric acid • 89 in 1997 • 526 in 1998 (increase of 437 (+491.2%))	No comments provided by facility.
NPRI #1162 Celanese Canada Inc. Edmonton Facility Edmonton, AB	Methanol • 0.3 in 1997 • 280 in 1998 (increase of 280)	No comments provided by facility.

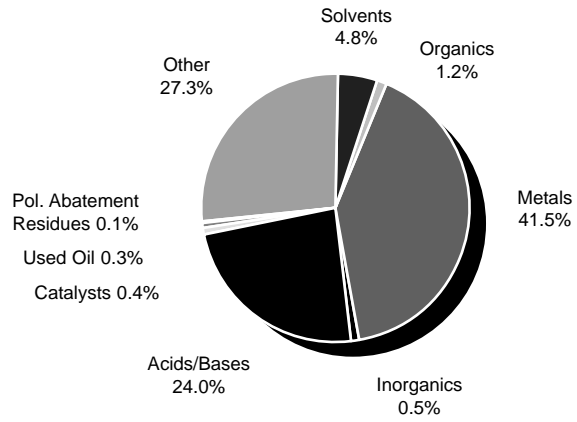
\* This table excludes facilities reporting a pollutant for the first time in 1998.

## 2.4 Off-site Transfers for Recycling in 1998

In previous years, reporting of recycling activities was optional. As a result of public consultations in 1996, facilities now must report the quantities of substances transferred off site for recycling, the nature of the recycling activity and the name and address of the receiving facility. No year-to-year comparisons are made because only an incomplete picture of the quantities transferred off site for recycling exists for 1997. This section considers separately recycling and energy-recovery activities in 1998.

Generally, materials transferred off site for recycling include those sold to recyclers, such as metal shavings or turnings, material sent off site for processing, cleaning or reclamation and returned to the facility, and those materials sent back to suppliers for credit or payment. Energy recovery is applicable only when the energy recovered from combustion is used as an alternative to fossil fuels or other forms of energy.

In 1998, facilities across Canada reported 245 798 tonnes transferred off site for recycling (excluding energy recovery). Figure 7 shows the breakdown by recycling activity type in 1998.



**Figure 7**  
**Recycling Activity by Type in 1998**

Table 8 provides a summary of 10 NPRI substances transferred off site for recycling in the largest quantities in 1998. These substances contributed 229 191 tonnes (93.2%) to the overall total for recycling (excluding energy recovery) for 1998.



**TABLE 8  
OFF-SITE TRANSFERS FOR RECYCLING IN 1998 - 10 NPRI SUBSTANCES TRANSFERRED IN THE LARGEST QUANTITIES (TONNES)**

CAS No.	Substance	Solvents	Organics	Metals	Inorganics	Acids or Bases	Catalysts	Pollution Abatement			No. of Reports		
								Residues	Used Oil	Other		Total	
7664-93-9	Sulphuric acid	0.0	0.0	341.6	4.7	57 849.6	0.0	0.0	0.0	775.5	3 279.9	62 251.3	28
N/A	Zinc (and its compounds)	0.3	2.8	37 270.9	3.9	0.0	0.0	147.4	0.0	12.3	2 605.6	40 043.3	158
N/A	Chromium (and its compounds)	0.0	0.0	8 378.7	702.8	0.0	0.0	5.6	0.0	0.0	26 651.3	35 738.4	120
N/A	Copper (and its compounds)	0.0	0.0	18 011.8	56.8	0.0	0.0	2.6	0.0	0.0	5 156.3	23 227.4	160
N/A	Manganese (and its compounds)	0.0	0.0	15 175.2	31.8	0.0	0.0	115.9	0.0	0.0	5 933.3	21 256.2	166
N/A	Nickel (and its compounds)	0.0	0.0	4 051.6	51.6	0.0	197.1	4.9	0.0	0.0	16 194.6	20 499.7	108
N/A	Lead (and its compounds)	0.0	1.4	14 473.6	0.0	0.0	0.0	24.1	0.0	0.0	861.8	15 360.9	80
1330-20-7	Xylene (mixed isomers)	3 724.9	23.4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	400.3	4 148.9	86
108-88-3	Toluene	2 198.0	20.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	1 894.2	4 112.6	79
107-21-1	Ethylene glycol	4.9	1 904.3	0.0	0.0	0.0	0.0	0.0	0.0	2.5	641.0	2 552.7	37
<b>Total Largest Transfers for Recycling</b>		<b>5 928.2</b>	<b>1 952.0</b>	<b>97 703.3</b>	<b>851.5</b>	<b>57 849.6</b>	<b>197.1</b>	<b>301.0</b>	<b>790.3</b>	<b>63 618.3</b>	<b>229 191.4</b>	<b>1 022</b>	
<b>National Total</b>		<b>11 735.9</b>	<b>2 930.4</b>	<b>101 974.6</b>	<b>1 292.1</b>	<b>58 878.3</b>	<b>900.4</b>	<b>306.6</b>	<b>794.3</b>	<b>66 985.6</b>	<b>245 798.3</b>	<b>1 588</b>	
<b>% of National Total</b>		<b>50.5</b>	<b>66.6</b>	<b>95.8</b>	<b>65.9</b>	<b>98.3</b>	<b>21.9</b>	<b>98.2</b>	<b>99.5</b>	<b>95.0</b>	<b>93.2</b>	<b>64.4</b>	

In 1998, facilities across Canada reported total transfers off site for energy recovery of 13 078 tonnes. Table 9 provides a summary of 10 NPRI substances transferred off site for energy recovery in the largest quantities in 1998. These substances contributed 11 917 tonnes (91.1%) to the overall total for energy recovery in 1998.

**TABLE 9  
OFF-SITE TRANSFERS FOR ENERGY RECOVERY IN 1998 – 10 NPRI  
POLLUTANTS TRANSFERRED IN THE LARGEST QUANTITIES (TONNES)**

CAS No.	Substance	Energy Recovery	No. of Reports
1330-20-7	Xylene (mixed isomers)	5 364.2	50
108-88-3	Toluene	3 077.5	43
78-93-3	Methyl ethyl ketone	1 205.8	31
67-64-1	Acetone	570.3	17
67-63-0	Isopropyl alcohol	318.4	28
75-09-2	Dichloromethane	311.3	10
100-41-4	Ethyl benzene	307.2	14
108-10-1	Methyl isobutyl ketone	282.9	13
108-05-4	Vinyl acetate	271.9	2
67-56-1	Methanol	207.5	21
<b>Total Largest Transfers for Energy Recovery</b>		<b>11 917.1</b>	<b>229</b>
<b>National Total</b>		<b>13 078.1</b>	<b>334</b>
<b>% of National Total</b>		<b>91.1</b>	<b>68.6</b>

## 2.5 NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1998

In 1998, there were 25 CEPA-toxic and carcinogenic substances on the NPRI list, as shown in Table 10. Benzyl chloride was added this year after it was classified in 1999 by the International Agency for Research on Cancer (IARC) as a probable human carcinogen. Acrylonitrile was removed from the list of NPRI-listed, CEPA-toxic and carcinogenic substances in 1997; it was re-evaluated by the IARC and is no longer classified as a probable human carcinogen.

**TABLE 10**  
**CEPA-TOXIC AND CARCINOGENIC POLLUTANTS ON THE NPRI IN 1998**

CAS No.	Pollutant	CEPA Schedule 1 <sup>1</sup>	PSL 1 CEPA-toxic <sup>2</sup>	IARC <sup>3</sup>	ARET
79-06-1	Acrylamide			2A	B3
N/A	Arsenic (and its compounds)		Y	1	
1332-21-4	Asbestos (friable form)	Y		1	B2
71-43-2	Benzene		Y	1	B3
100-44-7	Benzyl chloride			2A	B2
117-81-7	<i>Bis</i> (2-ethylhexyl) phthalate		Y		B1
106-99-0	1,3-Butadiene			2A	B3
N/A	Cadmium (and its compounds)		Y	1	
56-23-5	Carbon tetrachloride	Y			B2
N/A	Chromium (and its compounds)		Y	1	
107-06-2	1,2-Dichloroethane		Y		B2
75-09-2	Dichloromethane		Y		B2
64-67-5	Diethyl sulphate			2A	
77-78-1	Dimethyl sulphate			2A	
106-89-8	Epichlorohydrin			2A	B3
75-21-8	Ethylene oxide			1	B2
50-00-0	Formaldehyde			2A	B3
N/A	Lead (and its compounds)	Y			
N/A	Mercury (and its compounds)	Y			
101-14-4	<i>p,p'</i> -Methylenebis(2-chloroaniline)			2A	A1
N/A	Nickel (and its compounds)		Y	1	
96-09-3	Styrene oxide			2A	
127-18-4	Tetrachloroethylene		Y	2A	B2
79-01-6	Trichloroethylene		Y	2A	B3
75-01-4	Vinyl chloride	Y		1	

1 Pollutants listed on Schedule 1 List of Toxic Substances of the CEPA

2 Pollutants from the first Priority Substances List (PSL 1) assessed as toxic under Section 11 of the CEPA. No pollutants from the second PSL (PSL 2) are yet on this list, as none of the substances for which final PSL 2 assessments were available, as of March 29, 2000, were classified as CEPA-toxic.

3 Carcinogens classified as Carcinogenic (1) or Probably Carcinogenic (2A) by the International Agency for Research on Cancer (IARC)

A review of 1997 and 1998 data for NPRI-listed, CEPA-toxic and carcinogenic pollutants shows:

- Number of facilities reporting NPRI-listed, CEPA-toxic and carcinogenic pollutants:
  - 778 in 1997
  - 786 in 1998 (an increase of eight facilities (+1.0%) from 1997)
- Number of pollutant reports submitted for NPRI-listed, CEPA-toxic and carcinogenic pollutants:
  - 1 277 in 1997
  - 1 275 in 1998 (a decrease of two reports (-0.2%) from 1997)

### 2.5.1 On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1998

In 1998, on-site releases of all NPRI pollutants totalled 160 166 tonnes. Table 11 shows that on-site releases of NPRI-listed, CEPA-toxic and carcinogenic pollutants totalled 15 156 tonnes in 1997 and 15 844 tonnes in 1998 (an increase of 688 tonnes or 4.5%). The contribution of these pollutants to the overall national total in 1998 was 9.9%.

Several NPRI-listed, CEPA-toxic and carcinogenic pollutants are groups rather than single substances, such as arsenic and its compounds, nickel and its compounds and chromium and its compounds. In most cases, the most commonly released forms of these compounds were determined to be toxic under the CEPA as a result of a priority substance assessment.

For chromium and its compounds, however, the most common form is trivalent chromium, which is neither CEPA-toxic nor carcinogenic as defined by the International Agency for Research on Cancer. Only the compound hexavalent chromium was determined to be CEPA-toxic. Trivalent chromium may be converted, under some conditions, to hexavalent chromium. Since the NPRI typically has no means of identifying which chromium compounds are released, all reported releases of chromium and its compounds are included in the NPRI-listed, CEPA-toxic and carcinogenic pollutants for the analyses in this section of the report.

One facility, Inco Limited (NPRI #0444), Copper Cliff, ON, released 1 545 tonnes of chromium and its compounds in 1998, an increase of 896 tonnes (+138.1%) since 1997. This release to land, in the form of spent chrome-magnesite refractory brick which had been processed to recover infused metals and then landfilled on site, accounts for nearly 10% of total on-site releases of NPRI-listed, CEPA-toxic and carcinogenic pollutants in 1998.

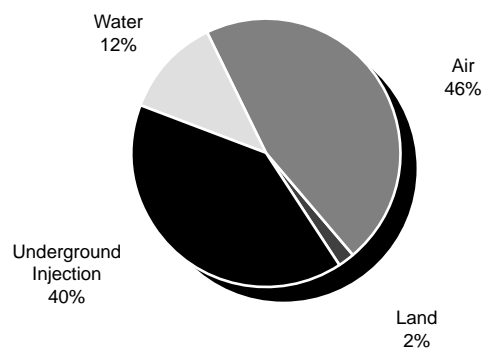
The facility commented that the pollutant released was trivalent chromium, not hexavalent chromium. On-site releases of NPRI-listed, CEPA-toxic and carcinogenic pollutants would have decreased by 207 tonnes (-1.4%) since 1997 if this facility's releases of chromium and its compounds were removed from the analysis.

In 1998, on-site releases of NPRI-listed, CEPA-toxic and carcinogenic pollutants were reported as releases to:

- Air: 7 324 tonnes (a decrease of 553 tonnes (-7.0%) since 1997)
- Underground injection: 1 866 tonnes (a decrease of 61 tonnes (-3.1%) since 1997)
- Land: 6 349 tonnes (an increase of 1 205 tonnes (+23.4%) since 1997)
- Water: 271 tonnes (an increase of 101 tonnes (+59.1%) since 1997)

As noted above, one facility accounted for 896 tonnes of the increased releases to land of NPRI-listed, CEPA-toxic and carcinogenic pollutants.

Figure 8 provides an overview of on-site releases, by environmental media, of NPRI-listed, CEPA-toxic and carcinogenic pollutants in 1998.



**Figure 8**  
**On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Substances in 1998**

**TABLE 11**  
**NATIONAL SUMMARY OF NPRI-LISTED, CEPA-TOXIC AND**  
**CARCINOGENIC POLLUTANT INFORMATION (1997-1998)**

	1997	1998	Change (1997-1998)	% Change (1997-1998)
<b>Total Facilities</b>	<b>778</b>	<b>786</b>	<b>8</b>	<b>1.0</b>
<b>Total Reports</b>	<b>1 277</b>	<b>1 275</b>	<b>-2</b>	<b>-0.2</b>
<b>Pollutants Reported</b>	<b>24</b>	<b>24</b>	<b>0</b>	<b>0.0</b>
<i>On-site Releases (tonnes):</i>				
Air	7 876.844	7 324.168	-552.676	-7.0
Water	170.321	271.023	100.702	59.1
Land	5 144.088	6 348.853	1 204.765	23.4
Injection	1 926.655	1 866.073	-60.582	-3.1
<b>Total On-site Releases</b>	<b>15 155.622</b>	<b>15 844.466</b>	<b>688.844</b>	<b>4.5</b>
<i>Off-site Transfers for Treatment (tonnes):</i>				
Physical	757.120	611.778	-145.342	-19.2
Chemical	620.896	625.904	5.008	0.8
Biological	64.530	67.236	2.706	4.2
Incineration	684.185	646.260	-37.925	-5.5
MSTP	43.954	34.675	-9.279	-21.1
<b>Total Off-site Treatment</b>	<b>2 170.685</b>	<b>1 985.853</b>	<b>-184.832</b>	<b>-8.5</b>
<i>Off-site Transfers for Disposal (tonnes):</i>				
Landfill	8 822.799	8 545.010	-277.789	-3.1
Storage	162.536	289.263	126.727	0.8
Underground Injection	252.700	272.141	19.441	7.7
Land Treatment	51.664	1.312	-50.352	-97.5
<b>Total Off-site Final Disposal</b>	<b>9 289.699</b>	<b>9 107.726</b>	<b>-181.973</b>	<b>-2.0</b>
<b>Total Off-site Transfers</b>	<b>11 460.384</b>	<b>11 093.579</b>	<b>-366.805</b>	<b>-3.2</b>
<i>Off-site Transfers for Recycling (tonnes)*:</i>				
Recycling		72 971.892		
Energy Recovery		770.199		
<b>Total Recycling</b>		<b>73 742.091</b>		

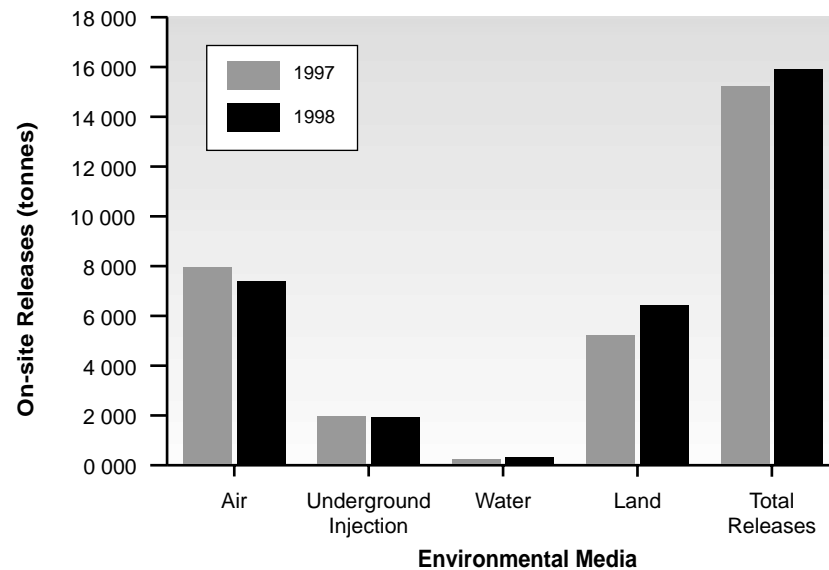
\* Reporting of transfers for recycling was voluntary for 1997 and mandatory for 1998. As a result, no year-to-year comparison was made.

Table 12 provides an overview of the 24 NPRI-listed, CEPA-toxic and carcinogenic pollutants reported to the NPRI in 1997 and 1998, and also presents the breakdown of releases of these 24 pollutants by environmental medium. No facilities submitted reports for diethyl sulphate in 1997 or 1998.

**TABLE 12  
ON-SITE RELEASES OF NPRI-LISTED, CEPA-TOXIC AND CARCINOGENIC POLLUTANTS (1997-1998) AND ON-SITE RELEASES BY ENVIRONMENTAL MEDIUM IN 1998 (TONNES)**

Pollutant	1998						1997	1997-1998	1997-1998	1997-1998
	Underground			1998						
	Air	Injection	Water	Land	Total	Total				
Acrylamide	0.230	0.000	0.000	0.000	0.530	0.627	-0.097	-15.5		
Arsenic (and its compounds)	172.981	1 719.839	4.464	183.579	2 081.749	2 114.699	- 32.950	- 1.6		
Asbestos (friable form)	0.000	0.000	0.000	3 021.630	3 022.159	3 067.678	- 45.519	- 1.5		
Benzene	1 475.536	103.155	1.650	0.523	1 585.782	1 773.153	- 187.371	- 10.6		
Benzyl chloride	0.008	0.000	0.000	0.000	0.138	0.140	-0.002	- 1.4		
Bis(2-ethylhexyl) phthalate	8.383	0.000	0.000	0.136	8.593	19.920	- 11.327	- 56.9		
1,3-Butadiene	105.785	0.000	0.000	0.000	106.032	111.705	- 5.673	- 5.1		
Carbon tetrachloride	0.464	0.000	0.000	0.000	0.464	0.337	0.127	37.7		
Chromium (and its compounds)	51.548	2.403	21.771	1 876.456	1 959.896	955.892	1 004.004	105.0		
1,2-Dichloroethane	25.846	0.000	0.162	0.352	26.360	19.703	6.657	33.8		
Dimethyl sulphate	0.013	0.000	0.000	0.000	0.013	0.010	0.003	30.0		
Epichlorohydrin	0.000	0.000	0.000	0.000	0.003	0.004	-0.001	- 25.0		
Ethylene oxide	18.517	0.325	0.000	0.000	19.799	18,449	1.350	7.3		
Formaldehyde	1 237.252	40.300	167.599	0.000	1 448.108	1 424,486	23.622	1.7		
Lead (and its compounds)	544.295	0.040	17.551	1 060.938	1 628.024	1 531.001	97.023	6.3		
Mercury (and its compounds)	0.937	0.000	0.063	0.000	1.017	2.527	- 1.510	- 59.8		
p,p'-Methylenebis(2-chloroaniline)	0.000	0.000	0.000	0.000	0.005	0.006	-0.001	- 16.7		
Nickel (and its compounds)	433.283	0.011	56.476	202.568	696.740	654,700	42.040	6.4		
Styrene oxide	0.000	0.000	0.000	0.000	0.343	0.469	-0.126	- 26.9		
Tetrachloroethylene	125.443	0.000	0.038	0.000	126.106	149,061	- 22.955	- 15.4		
Trichloroethylene	843.162	0.000	0.000	0.000	844.492	772,571	71.921	9.3		
Vinyl chloride	25.463	0.000	0.079	0.000	26.001	43,997	- 17.996	- 40.9		
	<b>7 324.168</b>	<b>1 866.073</b>	<b>271.023</b>	<b>6 348.853</b>	<b>15 844.466</b>	<b>15 155.622</b>	<b>688.844</b>	<b>4.5</b>		

Figure 9 illustrates quantities of NPRI-listed, CEPA-toxic and carcinogenic pollutants released to air, underground injection, water and land, and total releases in 1997 and 1998.



**Figure 9**  
**Summary of National On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants by Environmental Media (1997-1998)**

### 2.5.2 On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants by Industrial Sector in 1998

Pollutants that are CEPA-toxic, carcinogenic or suspected of being carcinogenic are sometimes associated with only one or two easily-identifiable industrial sectors. Figure 10 illustrates the largest on-site releases of NPRI-listed, CEPA-toxic and carcinogenic pollutants by industrial sector in 1998. More than 80% of on-site releases were reported by five sectors.

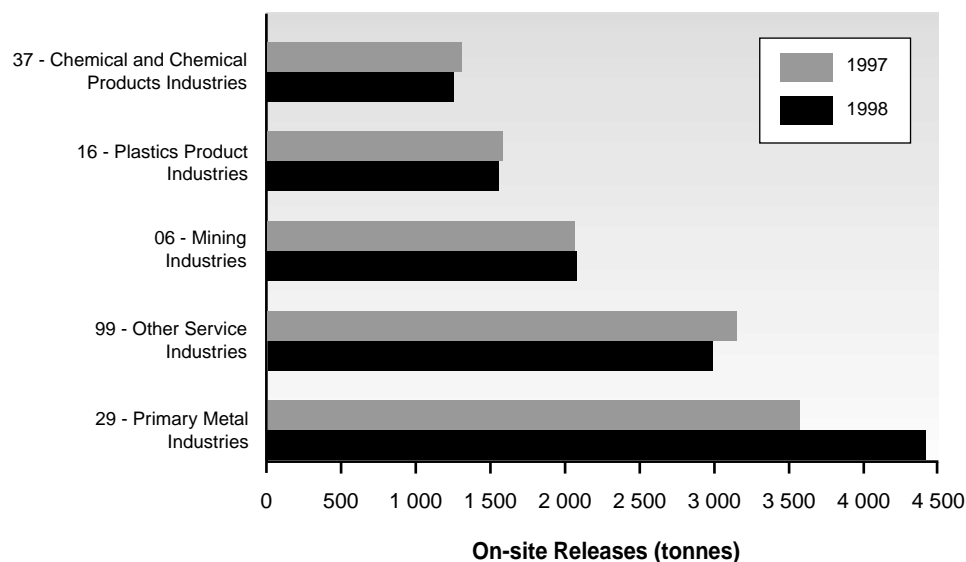
The following listing compares 1997 and 1998 releases reported by five major industrial sectors:

- SIC 29 – Primary Metal Industries:
  - total releases in 1997: 3 562 tonnes (56 facilities)
  - total releases in 1998: 4 407 tonnes (60 facilities)  
– an increase of 845 tonnes (+23.7%) from 1997
- SIC 99 – Other Service Industries:
  - total releases in 1997: 3 143 tonnes (5 facilities)
  - total releases in 1998: 2 977 tonnes (7 facilities)  
– a decrease of 166 tonnes (–5.3%) from 1997



- SIC 06 – Mining Industries:
  - total releases in 1997: 2 059 tonnes (29 facilities)
  - total releases in 1998: 2 070 tonnes (29 facilities)
    - an increase of 11 tonnes (+0.5%) from 1997
- SIC 16 – Plastic Products Industries:
  - total releases in 1997: 1 577 tonnes (23 facilities)
  - total releases in 1998: 1 548 tonnes (23 facilities)
    - a decrease of 29 tonnes (–0.9%) from 1997
- SIC 37 – Chemical and Chemical Products Industries:
  - total releases in 1997: 1 302 tonnes (104 facilities)
  - total releases in 1998: 1 246 tonnes (108 facilities)
    - a decrease of 56 tonnes (–4.3%) from 1997

As noted in section 2.5.1, one facility (Inco Limited, NPRI #0444) in the Primary Metals Industries increased its releases of chromium and its compounds by 896 tonnes in 1998. The Other Service Industries classification includes waste handling and treatment facilities, which accounts for its relatively high releases of these pollutants.



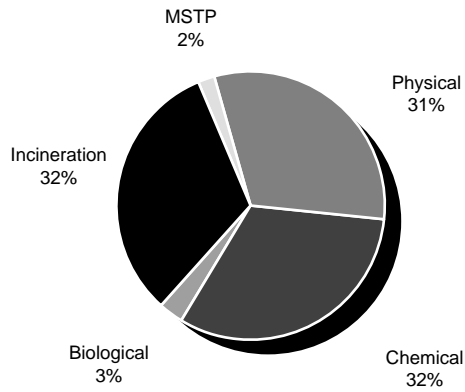
**Figure 10**  
Industrial Sectors Reporting the Largest On-site Releases of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1997 and 1998

### 2.5.3 Off-site Transfers for Disposal of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1998

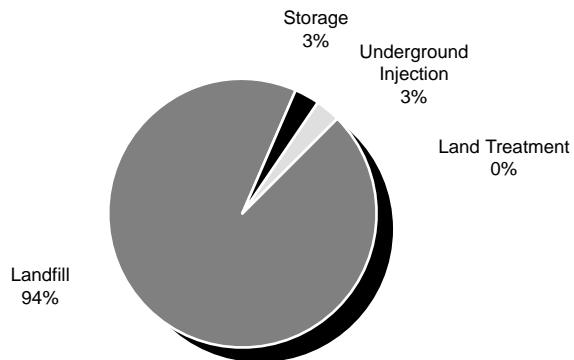
In 1998, off-site transfers for disposal of all NPRI pollutants totalled 88 489 tonnes; off-site transfers of NPRI-listed, CEPA-toxic and carcinogenic pollutants totalled 11 094 tonnes (12.5%). Table 11 shows that transfers off site for treatment prior

to final disposal contributed 1 986 tonnes (17.9% of total transfers for disposal of NPRI-listed, CEPA-toxic and carcinogenic pollutants) and off-site transfers for final disposal contributed 9 108 tonnes (82.1% of total transfers for disposal of NPRI-listed, CEPA-toxic and carcinogenic pollutants) in 1998.

Figures 11 and 12 provide an overview of transfers off site of NPRI-listed, CEPA-toxic and carcinogenic pollutants by treatment or disposal category for 1998.



**Figure 11**  
Off-site Transfers of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants for Treatment Prior to Final Disposal in 1998



**Figure 12**  
Off-site Transfers of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants for Final Disposal in 1998

Table 11 shows that NPRI-listed, CEPA-toxic and carcinogenic pollutants were transferred off site in 1998 for:

- treatment prior to final disposal: 1 986 tonnes (a decrease of 185 tonnes (-8.5%) since 1997)
- final disposal: 9 108 tonnes (a decrease of 182 tonnes (-2.0%) since 1997)

Overall, off-site transfers of NPRI-listed, CEPA-toxic and carcinogenic pollutants decreased by 367 tonnes (-3.2%) from 1997 to 1998.

Table 13 provides an overview of 19 NPRI-listed, CEPA-toxic and carcinogenic pollutants that were transferred off site from 1997 to 1998. The remaining five pollutants were not included in Table 13; there were no reported transfers off site in 1998.

**TABLE 13**  
**OFF-SITE TRANSFERS FOR DISPOSAL OF NPRI-LISTED, CEPA-TOXIC AND CARCINOGENIC POLLUTANTS (1997-1998) (TONNES)**

Pollutant	1997	1998	Change (1997-1998)	% Change (1997-1998)
Acrylamide	2.684	0.040	-2.644	-98.5
Arsenic (and its compounds)	150.665	205.912	55.247	36.7
Asbestos (friable form)	1 653.112	2 247.531	594.419	36.0
Benzene	219.488	197.912	-21.576	-9.8
Bis(2-ethylhexyl) phthalate	45.800	53.894	8.094	17.7
1,3-Butadiene	12.621	4.443	-8.178	-64.8
Cadmium (and its compounds)	183.063	192.172	9.109	5.0
Carbon tetrachloride	28.445	22.040	-6.405	-22.5
Chromium (and its compounds)	3 366.938	3 058.670	-308.268	-9.2
1,2-Dichloroethane	2.009	0.778	-1.231	-61.3
Dichloromethane	295.079	237.659	-57.420	-19.5
Epichlorohydrin	0.003	0.025	0.022	*
Formaldehyde	329.752	448.922	119.170	36.1
Lead (and its compounds)	4 108.796	3 327.183	-781.613	-19.0
Mercury (and its compounds)	123.240	318.942	195.702	158.8
Nickel (and its compounds)	812.350	638.374	-173.976	-21.4
Tetrachloroethylene	53.153	52.617	-0.536	-1.0
Trichloroethylene	73.185	86.296	13.111	17.9
Vinyl chloride	0.001	0.169	0.168	*
<b>Total</b>	<b>11 460.384</b>	<b>11 093.579</b>	<b>-366.805</b>	<b>-3.2</b>

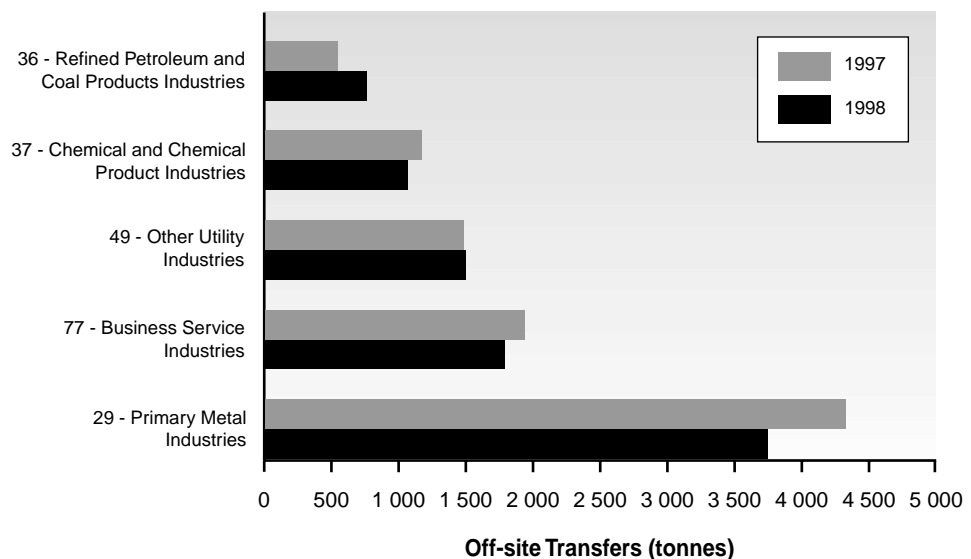
\* Changes greater than 500% are not shown.

#### 2.5.4 Off-site Transfers for Disposal of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants by Industrial Sector in 1998

Figure 13 illustrates the largest off-site transfers for disposal of NPRI-listed, CEPA-toxic and carcinogenic pollutants by industrial sector for 1998. These five sectors represent about 80% of total off-site transfers for disposal of these pollutants.

The following listing compares all 1997 and 1998 off-site transfers for disposal reported by these five industrial sectors:

- SIC 29 – Primary Metal Industries:
  - total off-site transfers for 1997: 4 318 tonnes (37 facilities)
  - total off-site transfers for 1998: 3 740 tonnes (42 facilities)
  - a decrease of 578 tonnes (–13.4%) from 1997
- SIC 77 – Business Service Industries:
  - total off-site transfers in 1997: 1 933 tonnes (6 facilities)
  - total off-site transfers in 1998: 1 782 tonnes (6 facilities)
  - a decrease of 151 tonnes (–7.8%) from 1997
- SIC 49 – Other Utility Industries:
  - total off-site transfers in 1997: 1 479 tonnes (8 facilities)
  - total off-site transfers in 1998: 1 490 tonnes (9 facilities)
  - an increase of 11 tonnes (+0.7%) from 1997
- SIC 37 – Chemical and Chemical Products Industries:
  - total off-site transfers in 1997: 1 167 tonnes (75 facilities)
  - total off-site transfers in 1998: 1 061 tonnes (87 facilities)
  - a decrease of 106 tonnes (–5.5%) from 1997
- SIC 36 – Refined Petroleum and Coal Products Industries:
  - total off-site transfers in 1997: 535 tonnes (16 facilities)
  - total off-site transfers in 1998: 755 tonnes (16 facilities)
  - an increase of 220 tonnes (+41.1%) from 1997



**Figure 13**  
**Industrial Sectors Reporting the Largest Off-site Transfers for Disposal of NPRI-listed, CEPA-toxic and Carcinogenic Pollutants in 1997 and 1998**

### 3. Pollution Prevention in 1998

#### 3.1 Reporting Requirements

Facilities that have taken measures to prevent the generation of NPRI pollutants and wastes were asked to indicate, from the list of pollution-prevention (P2) techniques and practices provided, what type of P2 activities they have implemented, on a substance-by-substance basis. Facilities were required to provide qualitative data only, but were encouraged to provide further details on the nature of their P2 activities if they so desired (including environmental and economic benefits).

Facilities were required to report on their P2 activities for NPRI-listed substances only. However, they were also encouraged to separately provide information on other P2 initiatives (e.g., P2 activities for non-NPRI substances, water and energy conservation initiatives, etc.).

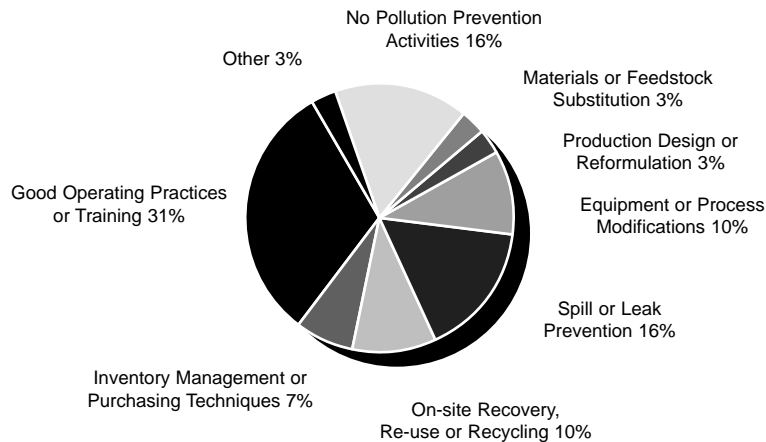
Qualitative reporting provides limited basic information on P2 activity in Canada. Qualitative data, such as the information that was provided by facilities for the 1998 reporting year, indicate if P2 activity has occurred in reporting facilities, but do not indicate the extent (frequency, comprehensiveness) of these activities or their effect on the generation of pollutants and wastes.

#### 3.2 Pollution-Prevention Activities Reported in 1998

This section of the National Overview presents the information reported by facilities on pollution prevention. It shows the P2 techniques and practices that are most commonly reported and pollution-prevention activity by industrial sector.

Based on the information reported by facilities, a large percentage (80.1%) of reporting facilities across Canada conducted P2 activities for many NPRI-listed substances, with good operating practices or training being the most frequently reported approach used (30.5%) (see Figure 14). Only a small percentage of facilities reported pollution prevention as a reason for changes in quantities of on-site releases and off-site transfers from the previous year (average 8.8% and 6.3% respectively).

Table 14 shows that participation in P2 activities varies across industry sectors. Some sectors reported limited P2 activity, while for others, all facilities reported some involvement in pollution prevention.



**Figure 14**  
**Relative Distribution of Pollution Prevention**  
**Activities Reported in Canada (1998)**

A total of 428 facilities (or 21.3%) provided some further details about their P2 initiatives in the form of comments. These comments help in further understanding the nature of P2 activities implemented; some examples follow.

- NHB Industries Ltd. (Crawford Facility) Peterborough, ON (NPRI #5631) reported that “In the last few months of 1998, we started to recycle our waste thinner. Our company has purchased two recycling units and is currently recycling in-house. Our recycling capacity is 20 litres per day. It is expected that in 1999, our purchases of thinner will be 31,200 litres less than in 1998. NHB is continuing its investigation into the possibility of increasing its recycling capacity in order to reduce the amount of thinner purchased by our facility.”
- Nalco Canada Inc. (Burlington Site) Burlington, ON (NPRI #1668) reported that “A process has been implemented to collect the residual polymer that comes back in the returnable totes from the customer. The polymer is vacuumed from the totes. This greatly minimizes the amount of polymer remaining in the totes when it goes to the tote cleaning station. The collected polymer is then mixed and added to the production batch. This process greatly minimizes the amount of polymer that entered the effluent system, and in addition minimizes the amount of polymer sent out as non hazardous waste.”
- Pine Falls Paper Company Limited, Pine Falls, MB (NPRI #0004) reported that “Pine Falls Paper Company is working toward a reduction in water consumption. This will lead to a reduction in substances being emitted to surface water. In addition, conversion of the existing pulping process to thermal mechanical pulping in the next two years will lead to a substantial reduction in air emissions.”
- Simplot Canada Limited, Brandon, MB (NPRI #2515) reported that “Simplot has just completed an upgrade to production which has doubled our level of production. This past year was a startup and troubleshooting year but now we are running very well. The upgrade allowed us to decrease our water usage and hydrochloric acid usage. We have reduced our nitrate releases through process changes as well as ammonia releases per tonne of production.”

**TABLE 14**  
**PERCENTAGE OF FACILITIES REPORTING SOME P2 ACTIVITY IN**  
**1998, BY INDUSTRIAL SECTOR (WHERE MORE THAN 10 REPORTS**  
**SUBMITTED)**

SIC Code	Industrial Sector (number of reports submitted)	% of Facilities Reporting some P2 Activity
02	Service Ind. Incidental to Agriculture (14 reports)	100.0
17	Leather and Allied Products Industries (11 reports)	100.0
59	Other Products and Industries, Wholesale (57 reports)	98.5
45	Transportation Industries (53 reports)	98.0
51	Petroleum Products Industries, Wholesale (47 reports)	96.6
18	Primary Textile Industries (16 reports)	96.2
41	Industrial and Heavy (Engineering) Construction Industries (71 reports)	94.6
56	Metals, Hardware, Plumbing, Heating, and Building Materials Industries, Wholesale (16 reports)	93.7
25	Wood Industries (209 reports)	93.5
16	Plastic Products Industries (253 reports)	91.6
10	Food Industries (160 reports)	90.4
33	Electrical and Electronic Products Ind. (157 reports)	89.4
28	Printing, Publishing, and Allied Ind. (51 reports)	89.1
31	Machinery Industries (Except Electrical Machinery) (30 reports)	89.1
29	Primary Metal Industries (637 reports)	87.7
32	Transportation Equipment Industries (600 reports)	86.6
11	Beverage Industries (43 reports)	85.7
30	Fabricated Metal Products Ind. (Except Machinery and Trans. Equipment Ind.) (466 reports)	84.4
06	Mining Industries (256 reports)	84.2
15	Rubber Products Industries (86 reports)	83.6
35	Non-metallic Mineral Products Industries (117 reports)	83.6
55	Motor Vehicle, Parts and Accessories Industries, Wholesale (55 reports)	83.6
37	Chemical and Chemical Products Ind. (1850 reports)	83.6
07	Crude Petroleum and Natural Gas Ind. (575 reports)	83.0
39	Other Manufacturing Industries (136 reports)	81.1
26	Furniture and Fixture Industries (77 reports)	80.6
36	Refined Petroleum and Coal Products Ind. (424 reports)	73.4
27	Paper and Allied Products Industries (457 reports)	72.2
99	Other Service Industries (122 reports)	70.9
19	Textile Products Industries (15 reports)	68.4
49	Other Utility Industries (281 reports)	67.4
83	Local Government Service Industries (14 reports)	65.0
77	Business Service Industries (77 reports)	16.7

- Ontario Power Generation Inc. (Darlington Nuclear Generating Station) Bowmanville, ON (NPRI #3163) reported that "Darlington Nuclear is implementing an ongoing program to reduce hydrazine emissions. Results are being obtained through better statistical control of process control data and through better maintenance of associated analytical equipment. These actions allow a more narrow band of control, closer to the concentration limit. Other technologies are currently being studied to reduce emissions further in coming years."

- Lakeside Feeders Ltd. (Lakeside Packers) Brooks, AB (NPRI #5232) reported that "Treated effluent from slaughter/processing activities are used as nutrients and irrigation waters for farming activities (reduced water consumption and need for chemical fertilizers). A lighting efficiency program was implemented to reduce electrical consumption. Dissolved air flotation is used to recover animal fat/grease from effluent streams (in order to recapture lost product and facilitate water treatment). Chill effluent waters are directed through hide plant raceways prior to discharge to treatment (in order to reduce water demands)."
- Glendale International Corporation (Graphico Precision) Scarborough, ON (NPRI #5750) reported that "We have almost eliminated all chelating agents by selective purchase of chemicals over the past 10 years. This has improved our sight batch waste treatment efficiency in reducing metals to drain. New copper etching process machinery has been purchased with counterflow flood rinses to hold copper containing process solutions back in the process chamber to form a 99.9% closed loop. We have changed our plating racks to copper PVC-protected tips from the old, open stainless steel type. This eliminates the use of nitric acid to clean the tips of plated-up material."
- NOVA Chemicals Ltd. (St. Clair River Site) Corunna, ON (NPRI #4700) reported that "A new \$13 million device, called the "A-Line Stripper", was installed and operated for part of 1998. This new stripper is the first of its kind in the world, and is part of the process in manufacturing polyethylene. This device captures cyclohexane (which was previously emitted to the atmosphere) and the cyclohexane is reused in the process. About 850 000 kg was not emitted to the air as a result of this new stripper. As we continue to learn how to operate this new device, we expect even more reductions in the amount of air emissions."
- Husky Injection Molding Systems Ltd. (Bolton Campus) Bolton, ON (NPRI #5756) reported that "In the last two years, Husky has eliminated the annual use of 246 025 litres of chlorinated solvents (trichloroethane) by converting metal parts cleaners to water-based washers; stopped using more than 4 000 litres of both toluene and naphtha annually, through responsible product substitution; eliminated the annual release of 8.4 tonnes of VOCs by converting our painting process to water-based coatings; and converted 60 000 m<sup>2</sup> of grass to a naturalized landscape, eliminating the need for 4.5 tonnes of chemical fertilizer and 300 kg of herbicides annually."
- Nortel Networks (Carrier Solutions) Belleville, ON (NPRI #1766) reported that "An R&D program was started over 7 years ago, to first of all eliminate freon as a cleaner in the wavesolder process and then to eliminate alcohol-based flux (VOC-type), has been successfully concluded. The final initiative involved the changeover to a water-based flux (VOC-free). Water-based fluxes only include 3% carboxylic acid as an active agent. This was done while maintaining quality of product produced."

These comments are good examples of pollution prevention at work. However, in a number of other cases, there still appears to be a misunderstanding of what is meant by pollution prevention, as the activities described related to pollution control or waste-management activities.



## 4. Comparison to Other Release Sources

### 4.1 Overview of Other Release Sources

The NPRI currently collects pollutant release and transfer information from a broad range of industrial and non-industrial sectors, including chemical distribution systems, government services facilities, industrial sectors, processing plants, and recovery and recycling operations. There are many other release sources which are not currently captured under the NPRI.

The intent of this section is to provide context for the NPRI information presented in this National Overview. Other sources of environmental data may include information collected by other programs within Environment Canada, as well as other estimated release sources.

This section provides pollutant-release information from fuel distribution and mobile sources, other emission inventories and initiatives such as criteria air contaminants and greenhouse gases, and the Accelerated Reduction/Elimination of Toxics (ARET) initiative.

### 4.2 Fuel Distribution and Mobile Sources

Environment Canada estimates total releases of NPRI pollutants from fuel-distribution centres, motor vehicles and mobile equipment sources. The mobile sources include aircraft, marine, off-road use of gasoline-powered engines, on-road motor vehicles, lawnmowers, railways, etc.

Estimates for 1997 were derived using methodology described in Appendix 12 of the *National Pollutant Release Inventory – Summary Report 1994*, updated with data from the *1995 Common Air Contaminants Inventory* (January 1999 version). These data were presented in Appendix 3 of the *National Pollutant Release Inventory – Summary Report 1997*, and so will not be repeated here.

### 4.3 Greenhouse Gases

The national inventory of greenhouse gases (GHG) was compiled to meet Canada's commitment to the United Nations' Framework Convention on Climate Change. Releases of greenhouse gases, in particular carbon dioxide, were estimated based on energy-use information provided by Statistics Canada. The Statistics Canada data were supplemented by additional information provided by the provinces, territories, industrial associations and individual companies. In addition, Environment Canada conducted field studies and gathered measurements for selected sources. GHG include:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Perfluorocarbons (PFCs): carbon tetrachloride (CF<sub>4</sub>), carbon hexafluoride (C<sub>2</sub>F<sub>6</sub>)
- Hydrofluorocarbons (HFCs): HFC-23, HFC-32, HFC-125, HFC-134a, HFC-143a, HFC-152a, HFC-227ea
- Sulphur hexafluoride (SF<sub>6</sub>)

The most recent version of this inventory (1997) is presented in Table 15. More information regarding the GHG program and inventory can be accessed through Environment Canada's Web site at <[www.ec.gc.ca/pdb/](http://www.ec.gc.ca/pdb/)>.

**TABLE 15**  
**GREENHOUSE GAS EMISSIONS IN CANADA IN 1997 (KILOTONNES)**

Sector	Carbon Dioxide*	Methane**	Nitrous Oxide**	HFCs, PFCs & SF <sub>6</sub> **
<b>Energy</b>				
Energy Industries <sup>1</sup>	175 000	39 000	1 000	
Transportation <sup>2</sup>	174 000	520	9 100	
Residential, Commercial & Institutional	74 300	5 400	1 100	
Manufacturing & Construction	53 900	32	470	
Agriculture & Forestry	2 920	1.1	17	
<b>Industrial Processes</b>				
Cement, Lime Production; Soda Ash, Limestone Use	8 280			
Ammonia Production	4 140			
Iron & Steel Production	8 110			
Aluminum Production	3 790			6 000
Undifferentiated Production <sup>3</sup>	14 000			
Nitric and Adipic Acid Production		11 000		
Magnesium Production			1 400	
<b>Solvents</b>			460	500
<b>Agriculture</b>				
Soils	1 000		30 000	
Enteric Fermentation	18 000			
Manure Management	4 200	4 600		
<b>Waste</b>				
Landfills		21 000		
Wastewater Handling	390	950		
Incineration	280	6.9	58	
<b>Land Use, Land Use Change &amp; Forestry</b>				
Prescribed Burns	900			
Carbon Cycle <sup>4</sup> [net removal]	[-20 000]			
<b>Total</b>	<b>520 000</b>	<b>90 000</b>	<b>64 000</b>	<b>7 800</b>

1 Energy Industries include: coal, oil & gas production, refining & transmission; electricity & steam production

2 Transportation includes: air, road, rail, marine, off-road & pipeline transport

3 Undifferentiated Production: non-energy use of fossil fuel products such as lubricants, asphalt and chemicals

4 Carbon dioxide from Land Use Change and Forestry is not included in totals.

\* kilotonnes of CO<sub>2</sub>

\*\* kilotonnes of CO<sub>2</sub> equivalent

#### 4.4 Criteria Air Contaminants

Environment Canada and the provincial and territorial Ministers of the Environment have updated the national emissions inventory of Criteria Air Contaminants (CAC). This inventory estimates emissions from more than 60 industrial and non-industrial activities for the following contaminants:

- Sulphur oxides (SO<sub>x</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Volatile organic compounds (VOCs)
- Total suspended particulates (TSP)
- Carbon monoxide (CO)
- Fine particulates (PM<sub>10</sub> and PM<sub>2.5</sub>)

The CAC inventory supports a number of national and international programs including the Ambient Air Quality Criteria, the Convention on Long-Range Transboundary Air Pollution, the NO<sub>x</sub>/VOC Management Plan and the Canada-U.S. Air Quality Agreement.

A summary of the 1995 CAC emissions inventory for point sources, area sources, natural sources, and biogenic sources in Canada was provided in Appendix 4 of *National Pollutant Release Inventory – Summary Report 1997*, and will not be reported here. Improved calculation methods were used in the 1995 emissions inventory; only the sulphur oxides emissions can be compared to earlier versions. More information and further updates are available through Environment Canada's Web site at <[www.ec.gc.ca/pdb/](http://www.ec.gc.ca/pdb/)>.

#### 4.5 Accelerated Reduction/Elimination of Toxics (ARET)

The ARET program is a voluntary, multi-stakeholder initiative, co-managed by the federal government and industry, in participation with 316 facilities from 169 companies. This program's latest annual report, *Environmental Leaders 3*, was released in April 1999. An update will be published in 2000. The report provides details on emission reductions, achieved through voluntary measures, of 117 toxic chemicals including chlorine dioxide, zinc, polycyclic aromatic hydrocarbons (PAHs), benzene, formaldehyde, lead and copper. Results are shown by substance, facility, company and sector.

The latest data, for the 1998 reporting year, show that participating organizations, from nine key industrial sectors and four federal departments, have reduced emissions of substances included in the ARET program by 26 360 tonnes (-67%) from base-year levels. Since 1997, reported emissions have decreased by 1 469 tonnes (-10%). Nearly one-half of the participating facilities have already met short-term targets for all substance categories for which they report. Year 2000 targets have been met or exceeded for 62% of ARET substances being reported.

*Environmental Leaders 3* and its update are available from Environment Canada's Inquiry Center at 1-800-668-6767 or through Environment Canada's Web site at <[www.ec.gc.ca/aret/reports](http://www.ec.gc.ca/aret/reports)>.



## 5. Supplementary Tables and Analyses

Readers should refer to the companion document *About the National Pollutant Release Inventory* for a description of the program as well as contextual and background information for this report. It can be obtained from the NPRI offices listed on the inside front cover, or on Environment Canada's NPRI Web site at [www.ec.gc.ca/pdb/npri](http://www.ec.gc.ca/pdb/npri).

Supplementary Tables that complement this National Overview are also available on the NPRI Web site. They include:

### **Supplementary Table 1: List of Facilities Reporting to the NPRI in 1998**

This table provides a complete, alphabetical listing of all Canadian facilities that reported to the NPRI in 1998. Included are the facilities' NPRI identification number, two-digit Standard Industrial Classification (SIC) code, company name, facility name and location.

### **Supplementary Table 2: On-site Releases in Canada in 1998**

This table provides a summary of reported on-site releases of pollutants. For each pollutant, total releases to air, water, land and underground injection are presented. The listing is sorted alphabetically, by pollutant.

### **Supplementary Table 3: Off-site Transfers for Disposal in Canada in 1998**

This table provides an analysis of the total quantity of pollutants transferred off site for disposal in 1998. The total quantities for each category of disposal (final disposal or treatment prior to final disposal) are highlighted. The listing is sorted alphabetically, by pollutant.

### **Supplementary Table 4: Off-site Transfers for Recycling in Canada in 1998**

This table provides information of the off-site transfers of substances for recycling. The listing is sorted alphabetically, by pollutant.

### **Supplementary Table 5: Unreported NPRI Pollutants in 1998**

This table provides information on the pollutants for which no reports were submitted in 1997 and 1998.

This National Overview is focused on the national picture and on changes from 1997 to 1998. Reports and fact sheets to be released later in 2000 will provide more in-depth trend analysis and overviews of pollutant releases and transfers by province, territory or region. Supplementary tables will complement these additional reports and analyses. All reports and tables will be available electronically on the NPRI Web site as they are published.

## Bibliography

Canada, Parliament. *Canadian Environmental Protection Act*. R.S., 1985, C. 16 (4<sup>th</sup> Supp.). Ottawa: Minister of Supply and Services Canada, 1989.

Canada, Environment Canada. *Canadian Environmental Protection Act – Enforcement and Compliance Policy*. Ottawa: Minister of Supply and Services Canada, 1988.

———. *Guide for Reporting to the National Pollutant Release Inventory – 1998*. Ottawa: Minister of Public Works and Government Services Canada, 1998.

———. *National Pollutant Release Inventory – Summary Report 1997*. Ottawa: Minister of Public Works and Government Services Canada, 1999.

———. “Notice with Respect to Substances in the National Pollutant Release Inventory”, extract from the *Canada Gazette*, Part I. Ottawa: Minister of Supply and Services Canada, April 5, 1997, pp. 1064-1072.

———. “Notice with Respect to Substances in the National Pollutant Release Inventory”, extract from the *Canada Gazette*, Part I. Ottawa: Minister of Supply and Services Canada, May 30, 1998, pp. 1205-1213.

Deslauriers, M. *Canadian Emissions Inventory of Criteria Air Contaminants*. Pollution Data Branch, Environment Canada, Report EPS 5/AP/TE, 1996.

Neitzert, F., K. Olsen and P. Collas. *Greenhouse Gas Inventory: 1997 Emissions and Removals with Trends*, Pollution Data Branch. Environment Canada, 1999.

International Agency for Research on Cancer (IARC). *Monographs on the Evaluation of Carcinogenic Risks to Humans*. From the IARC Web site: <[www.iarc.fr/](http://www.iarc.fr/)>, 2000.

## Additional References

### *Health Canada*

Publishing Coordinator  
Environmental Health Centre  
Tunney's Pasture 0801B3  
Ottawa, ON  
K1A 0L2

Tel.: (613) 957-3143  
Fax: (613) 941-8632  
Web site: [www.hc-sc.gc.ca/ehd/catalogue/index.htm](http://www.hc-sc.gc.ca/ehd/catalogue/index.htm)

### *Canadian Centre for Occupational Health and Safety*

Chemical Evaluation Search and Retrieval System (CESARS)  
250 Main Street East  
Hamilton, ON  
L8N 1H6

Tel.: (905) 570-8094  
Fax: (905) 572-2206  
Web site: [www.ccohs.ca/products/databases/cesars.html](http://www.ccohs.ca/products/databases/cesars.html)

### *Commission For Environmental Cooperation (CEC)*

393 St. Jacques Street West  
Suite 200  
Montreal, QC  
H2Y 1N9

Tel.: (514) 350-4300  
Fax: (514) 350-4314  
Web site: [www.cec.org](http://www.cec.org)

### *International Agency for Research on Cancer (IARC)*

150 cours Albert Thomas  
F-69372 Lyon cedex 08  
France

Tel.: +33 (0)4 72 73 84 85  
Fax: +33 (0)4 72 73 85 75  
Web site: [www.iarc.fr/](http://www.iarc.fr/)

### *Agency for Toxic Substances and Disease Registry*

1600 Clifton Road (E29)  
Atlanta, GA 30333  
U.S.A.

Tel.: (404) 639-6300  
Fax: (404) 639-6315  
Web site: [www.atsdr.cdc.gov/](http://www.atsdr.cdc.gov/)

### *National Library of Medicine (TOXNET)*

8600 Rockville Park-Bldg. 38A  
Bethesda, MD 20894  
U.S.A.

Tel.: (301) 496-6531  
Fax: (301) 480-3537  
Web site: [www.nlm.nih.gov/hinfo.html](http://www.nlm.nih.gov/hinfo.html)





## Appendix 1 - Alphabetical Listings of the 1998 NPRI Substances

NAME	CAS No.	NAME	CAS No.
Acetaldehyde	75-07-0	Chloromethane	74-87-3
Acetone	67-64-1	Chromium <sup>5</sup>	*
Acetonitrile	75-05-8	Cobalt <sup>5</sup>	*
Acrylamide	79-06-1	Copper <sup>5</sup>	*
Acrylic acid <sup>1</sup>	79-10-7	Cresol <sup>1,7</sup>	1319-77-3
Acrylonitrile	107-13-1	<i>m</i> -Cresol <sup>1</sup>	108-39-4
Allyl alcohol	107-18-6	<i>o</i> -Cresol <sup>1</sup>	95-48-7
Allyl chloride	107-05-1	<i>p</i> -Cresol <sup>1</sup>	106-44-5
Aluminum <sup>2</sup>	7429-90-5	Cumene	98-82-8
Aluminum oxide <sup>3</sup>	1344-28-1	Cumene hydroperoxide	80-15-9
Ammonia - total <sup>4</sup>	*	Cyanides <sup>8</sup>	*
Aniline <sup>1</sup>	62-53-3	Cyclohexane	110-82-7
Anthracene	120-12-7	Decabromodiphenyl oxide	1163-19-5
Antimony <sup>5</sup>	*	2,4-Diaminotoluene <sup>1</sup>	95-80-7
Arsenic <sup>5</sup>	*	Dibutyl phthalate	84-74-2
Asbestos <sup>6</sup>	1332-21-4	<i>o</i> -Dichlorobenzene	95-50-1
Benzene	71-43-2	<i>p</i> -Dichlorobenzene	106-46-7
Benzoyl chloride	98-88-4	1,2-Dichloroethane	107-06-2
Benzoyl peroxide	94-36-0	Dichloromethane	75-09-2
Benzyl chloride	100-44-7	2,4-Dichlorophenol <sup>1</sup>	120-83-2
Biphenyl	92-52-4	1,2-Dichloropropane	78-87-5
<i>Bis</i> (2-ethylhexyl) adipate	103-23-1	Diethanolamine <sup>1</sup>	111-42-2
<i>Bis</i> (2-ethylhexyl) phthalate	117-81-7	Diethyl phthalate	84-66-2
Bromomethane	74-83-9	Diethyl sulphate	64-67-5
1,3-Butadiene	106-99-0	<i>N,N</i> -Dimethylaniline <sup>1</sup>	121-69-7
Butyl acrylate	141-32-2	Dimethyl phthalate	131-11-3
<i>i</i> -Butyl alcohol	78-83-1	Dimethyl sulphate	77-78-1
<i>n</i> -Butyl alcohol	71-36-3	4,6-Dinitro- <i>o</i> -cresol <sup>1</sup>	534-52-1
<i>sec</i> -Butyl alcohol	78-92-2	2,4-Dinitrotoluene	121-14-2
<i>tert</i> -Butyl alcohol	75-65-0	2,6-Dinitrotoluene	606-20-2
Butyl benzyl phthalate	85-68-7	Dinitrotoluene <sup>7</sup>	25321-14-6
1,2-Butylene oxide	106-88-7	Di- <i>n</i> -octyl phthalate	117-84-0
Butyraldehyde	123-72-8	1,4-Dioxane	123-91-1
C.I. Acid Green 3	4680-78-8	Epichlorohydrin	106-89-8
C.I. Basic Green 4	569-64-2	2-Ethoxyethanol	110-80-5
C.I. Basic Red 1	989-38-8	2-Ethoxyethyl acetate	111-15-9
C.I. Disperse Yellow 3	2832-40-8	Ethyl acrylate	140-88-5
C.I. Food Red 15	81-88-9	Ethylbenzene	100-41-4
C.I. Solvent Orange 7	3118-97-6	Ethyl chloroformate	541-41-3
C.I. Solvent Yellow 14	842-07-9	Ethylene	74-85-1
Cadmium <sup>5</sup>	*	Ethylene glycol	107-21-1
Calcium cyanamide	156-62-7	Ethylene oxide	75-21-8
Carbon disulphide	75-15-0	Ethylene thiourea	96-45-7
Carbon tetrachloride	56-23-5	Formaldehyde	50-00-0
Catechol	120-80-9	Hexachlorocyclopentadiene	77-47-4
Chlorine	7782-50-5	Hexachloroethane	67-72-1
Chlorine dioxide	10049-04-4	Hydrazine <sup>1</sup>	302-01-2
Chloroacetic acid <sup>1</sup>	79-11-8	Hydrochloric acid	7647-01-0
Chlorobenzene	108-90-7	Hydrogen cyanide	74-90-8
Chloroethane	75-00-3	Hydrogen fluoride	7664-39-3
Chloroform	67-66-3	Hydroquinone <sup>1</sup>	123-31-9

<b>NAME</b>	<b>CAS No.</b>	<b>NAME</b>	<b>CAS No.</b>
Isobutyraldehyde	78-84-2	Phosphoric acid	7664-38-2
Isopropyl alcohol	67-63-0	Phosphorus <sup>10</sup>	7723-14-0
<i>p,p'</i> -Isopropylidenediphenol	80-05-7	Phthalic anhydride	85-44-9
Isosafrole	120-58-1	Propionaldehyde	123-38-6
Lead <sup>5</sup>	*	Propylene	115-07-1
Maleic anhydride	108-31-6	Propylene oxide	75-56-9
Manganese <sup>5</sup>	*	Pyridine <sup>1</sup>	110-86-1
Mercury <sup>5</sup>	*	Quinoline <sup>1</sup>	91-22-5
Methanol	67-56-1	<i>p</i> -Quinone	106-51-4
2-Methoxyethanol	109-86-4	Safrole	94-59-7
2-Methoxyethyl acetate	110-49-6	Selenium <sup>5</sup>	*
Methyl acrylate	96-33-3	Silver <sup>5</sup>	*
Methyl <i>tert</i> -butyl ether	1634-04-4	Styrene	100-42-5
<i>p,p'</i> -Methylenebis(2-chloroaniline)	101-14-4	Styrene oxide	96-09-3
Methylenebis(phenylisocyanate)	101-68-8	Sulphuric acid	7664-93-9
<i>p,p'</i> -Methylenedianiline	101-77-9	1,1,2,2-Tetrachloroethane	79-34-5
Methyl ethyl ketone	78-93-3	Tetrachloroethylene	127-18-4
Methyl iodide	74-88-4	Thiourea	62-56-6
Methyl isobutyl ketone	108-10-1	Thorium dioxide	1314-20-1
Methyl methacrylate	80-62-6	Titanium tetrachloride	7550-45-0
Michler's ketone <sup>1</sup>	90-94-8	Toluene	108-88-3
Molybdenum trioxide	1313-27-5	Toluene-2,4-diisocyanate	584-84-9
Naphthalene	91-20-3	Toluene-2,6-diisocyanate	91-08-7
Nickel <sup>5</sup>	*	Toluenediisocyanate <sup>7</sup>	26471-62-5
Nitrate ion <sup>9</sup>	*	1,2,4-Trichlorobenzene	120-82-1
Nitric acid	7697-37-2	1,1,2-Trichloroethane	79-00-5
Nitrilotriacetic acid <sup>1</sup>	139-13-9	Trichloroethylene	79-01-6
Nitrobenzene	98-95-3	1,2,4-Trimethylbenzene	95-63-6
Nitroglycerin	55-63-0	Vanadium <sup>2</sup>	7440-62-2
<i>p</i> -Nitrophenol <sup>1</sup>	100-02-7	Vinyl acetate	108-05-4
2-Nitropropane	79-46-9	Vinyl chloride	75-01-4
N-Nitrosodiphenylamine	86-30-6	Vinylidene chloride	75-35-4
Peracetic acid <sup>1</sup>	79-21-0	Xylene <sup>7</sup>	1330-20-7
Phenol <sup>1</sup>	108-95-2	<i>m</i> -Xylene	108-38-3
<i>p</i> -Phenylenediamine <sup>1</sup>	106-50-3	<i>o</i> -Xylene	95-47-6
<i>o</i> -Phenylphenol <sup>1</sup>	90-43-7	<i>p</i> -Xylene	106-42-3
Phosgene	75-44-5	Zinc <sup>5</sup>	*

1 "and its salts" - The CAS number corresponds to the weak acid or base. However, the NPRI listing includes the salts of these weak acids and bases. When calculating the weight of these substances and their salts, use the molecular weight of the acid or base, not the total weight of the salt.

2 "fume or dust"

3 "fibrous forms"

4 "Ammonia - total" means the total of both of ammonia (NH<sub>3</sub> - CAS number 7664-41-7) and the ammonium ion (NH<sub>4</sub><sup>+</sup>) in solution.

5 "and its compounds"

6 "friable form"

7 "mixed isomers"

8 "ionic"

9 "in solution at a pH of 6.0 or greater"

10 "yellow or white"

\* No single CAS number applies to this NPRI listing.

## APPENDIX 2 - FACILITIES REPORTING THE LARGEST ON-SITE RELEASES IN 1998, BY POLLUTANT (TONNES)

Note: A maximum of 10 facilities are listed for each pollutant. Facilities reporting 1998 releases of less than 0.5 tonnes are not listed. Facilities reporting total releases of a pollutant to all media of less than one tonne had the option of reporting their releases by environmental medium or reporting only the total release to all media. "Total # of Reports" includes all pollutant reports, even those indicating zero releases.

Acetaldehyde										CAS #: 75-07-0				Total # of Reports: 17				Total Releases (tonnes): 193.265			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	39.510	0.000	0.000	0.000	39.510	3793	Celanese Canada Inc.	Millhaven Facility	Ernestown	ON	24.170	0.000	0.000	0.000	24.170		
0928	Weyerhaeuser Canada Ltd.	Weyerhaeuser Dryden Mill Operations	Dryden	ON	22.884	0.000	0.000	0.000	22.884	4932	Aliments Burns Philp Limite	Levure Fleischmann	Lasalle	QC	19.580	0.000	0.000	0.000	19.580		
3013	Norampac Inc.	Red Rock Div. Mill	Red Rock	ON	17.636	0.000	0.000	0.000	17.636	0930	Bowater Pulp and Paper Canada Inc.	Thunder Bay Operations	Thunder Bay	ON	15.840	0.000	0.000	0.000	15.840		
3140	Cartons St-Laurent Inc.	Cartons St-Laurent Inc. LaTuque	LaTuque	QC	11.808	0.000	0.000	0.000	11.808	4867	Burns Philp Food Limited	Fleischmann's Yeast - Calgary Plant	Calgary	AB	11.800	0.000	0.000	0.000	11.800		
2636	Abitibi-Consolidated Inc.	Division Port-Alfred	La Baie	QC	10.987	0.000	0.000	0.000	10.987	0705	Lallemand Inc.	Usine Montréal	Montréal	QC	10.500	0.000	0.000	0.000	10.500		
Acetone										CAS #: 67-64-1				Total # of Reports: 165				Total Releases (tonnes): 3 512.931			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	621.510	110.000	0.000	0.000	731.510	1168	Celanese Canada Inc.	Drummondville Facility	Drummondville	QC	384.000	0.000	0.000	0.000	384.000		
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	212.027	0.000	0.000	0.000	212.027	5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	155.170	0.000	0.000	0.000	155.170		
0322	Produits Chimiques Expro Inc.		Valleyfield	QC	87.100	0.000	27.400	0.000	114.500	4210	Velcro Canada Inc.		Brampton	ON	94.552	0.000	0.000	0.000	94.552		
5610	Global Upholstery Inc.	Global Upholstery	Downsview	ON	74.200	0.000	0.000	0.000	74.200	0733	Paintplas Inc.	650 Finley Ave.	Ajax	ON	74.100	0.000	0.000	0.000	74.100		
4470	Alfit Manufacturing		Weston	ON	72.000	0.000	0.000	0.000	72.000	3870	General Motors of Canada Limited	Oshawa Truck Assembly Centre	Oshawa	ON	59.604	0.000	0.000	0.000	59.604		

<b>Acetonitrile</b>									
<b>CAS #: 75-05-8</b>			<b>Total # of Reports: 1</b>			<b>Total Releases (tonnes): 8.167</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	8.167	0.000	0.000	0.000	8.167
<b>Acrylonitrile</b>									
<b>CAS #: 107-13-1</b>			<b>Total # of Reports: 8</b>			<b>Total Releases (tonnes): 6.205</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	4.950	0.000	0.000	0.000	4.950
4934	ATC Chimiques/Chemicals Inc.	Drummondville	Drummondville	QC	0.000	0.000	0.000	0.000	0.900
<b>Aluminum (fume or dust)</b>									
<b>CAS #: 7429-90-5</b>			<b>Total # of Reports: 46</b>			<b>Total Releases (tonnes): 738.783</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
2799	Recyclage d'aluminium	Lieu Bécancour	Bécancour	QC	0.000	0.000	0.000	500.000	500.000
2801	Recyclage d'Aluminium Québec Inc.	Lieu Ragueneau	Baie-Comeau	QC	0.000	0.000	0.000	190.000	190.000
4204	Sydney Steel Corporation	Sydney Steel	Sydney	NS	0.000	0.000	0.000	15.200	15.200
5732	Wabash Alloys	Wabash Alloys Ontario	Mississauga	ON	9.682	0.000	0.000	0.000	9.682
3097	Burlington Technologies Inc.	Alumetco Division	Branford	ON	4.830	0.000	0.000	0.000	4.830
3907	Cominco Ltd.	Cominco Ltd. Sullivan Concentrator	Kimberley	BC	0.000	0.000	3.185	0.002	3.187
1067	Philip Services Corp.	Philip Enterprises Inc.	Guelph	ON	2.903	0.000	0.000	0.000	2.903
3096	Burlington Technologies Inc.	Burlington Division	Burlington	ON	2.652	0.000	0.000	0.000	2.652
4752	Knoll North America Corp.	Metals Plant	Woodbridge	ON	2.204	0.000	0.000	0.000	2.204
1480	Indalloy, Division of Caradon		Toronto	ON	2.020	0.000	0.000	0.000	2.020
<b>Aluminum oxide (fibrous forms)</b>									
<b>CAS #: 1344-28-1</b>			<b>Total # of Reports: 10</b>			<b>Total Releases (tonnes): 294.401</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
3158	Atlas Steels Inc.	Atlas Specialty Steels	Welland	ON	0.000	0.000	0.000	281.514	281.514
2537	Safety-Kleen	Lambton Facility	Corunna	ON	0.000	0.000	0.000	12.786	12.786

<b>Ammonia (total)</b>										<b>CAS #: N/A</b>				<b>Total # of Reports: 309</b>				<b>Total Releases (tonnes): 33 944.259</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
2134	Agrium Products Inc.	Redwater Fertilizer Operations	Redwater/Municipal District of Sturgeon	AB	2 776.410	1 399.970	13.070	9.510	4 198.960	2960	Shell Canada Products Limited	Shell Scotford Refinery	Fort Saskatchewan	AB	0.000	2 700.000	0.170	0.000	2 700.170		
3821	Canadian Fertilizers Limited		Medicine Hat	AB	2 471.675	0.000	25.999	0.000	2 497.674	0770	Regional Municipality of Ottawa-Carleton	Robert O. Pickard Environmental Centre	Gloucester	ON	0.000	0.000	2 415.000	0.000	2 415.000		
3269	Agrium Products Inc.		Carseland	AB	1 959.700	0.000	0.000	1.700	1 961.400	1290	General Chemical Canada Limited	Carseland Nitrogen Operations	Carseland	AB	1 636.100	0.000	130.500	0.000	1 766.600		
2515	Simplot Canada Limited		Brandon	MB	1 709.320	0.000	7.500	16.900	1 733.720	2274	Synchrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	1 619.026	0.000	0.000	0.000	1 619.026		
3807	Hydro Agri Canada L.P.		Maitland	ON	1 603.420	0.000	10.800	0.000	1 614.220	3903	Petro-Canada	Edmonton Refinery	Edmonton	AB	0.000	1 545.987	0.694	0.000	1 546.681		
<b>Anthracene</b>										<b>CAS #: 120-12-7</b>				<b>Total # of Reports: 12</b>				<b>Total Releases (tonnes): 2.092</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
3713	Dofasco Inc.		Hamilton	ON	0.610	0.000	0.000	0.000	0.610	3903	Petro-Canada	Edmonton Refinery	Edmonton	AB	0.575	0.000	0.000	0.000	0.575		
<b>Antimony (and its compounds)</b>										<b>CAS #: N/A</b>				<b>Total # of Reports: 34</b>				<b>Total Releases (tonnes): 26.572</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
4000	Nova Scotia Power Inc.		Point Aconi	NS	0.000	0.000	0.000	11.200	11.200	3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	8.200	0.000	0.678	0.000	8.878		
3802	Cominco Ltd.		Trail	BC	0.730	0.000	4.340	0.000	5.070	4914	Vytec Corporation	London Vinyl Siding Manufacturing Plant	London	ON	0.000	0.000	0.000	0.000	0.501		

Arsenic (and its compounds)		CAS #: N/A	Total # of Reports: 73			Total Releases (tonnes): 2 081.749			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
4221	Royal Oak Mines Inc.	Giant Mine	Yellowknife	NT	4.826	1 719.839	0.481	0.000	1 725.146
3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	79.140	0.000	0.530	0.000	79.670
3992	Nova Scotia Power Inc.	Lingan Generating Station	New Waterford	NS	0.500	0.000	0.000	57.100	57.600
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	50.111	0.000	0.000	0.000	50.111
2537	Safety-Kleen	Lambton Facility	Corunna	ON	0.000	0.000	0.000	46.373	46.373
4000	Nova Scotia Power Inc.	Point Aconi Generating Station	Point Aconi	NS	0.000	0.000	0.000	21.500	21.500
1708	New Brunswick Power	Grand Lake Generation Station	Minto	NB	0.024	0.000	1.582	17.966	19.572
1809	Ontario Power Generation Inc.	Lambton Generating Station	Courtright	ON	0.030	0.000	0.010	16.690	16.730
3414	Hudson Bay Mining and Smelting Company Ltd.	HBM&S Co., Ltd. - Metallurgical Complex	Flin Flon	MB	13.200	0.000	0.084	0.000	13.284
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	0.130	0.000	0.060	12.650	12.840

Asbestos (friable form)		CAS #: 1332-21-4	Total # of Reports: 51			Total Releases (tonnes): 3 022.159			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
5200	Browning Ferris Industries	BFI Calgary Landfill District #236	Calgary	AB	0.000	0.000	0.000	2 802.160	2 802.160
3146	Dow Chemical Canada Inc.	Dow Chemical Canada Inc. - Sarnia	Sarnia	ON	0.000	0.000	0.000	143.122	143.122
4871	Safety-Kleen (Ryley) Ltd.	Ryley Facility	Ryley	AB	0.000	0.000	0.000	64.510	64.510
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	0.000	0.000	0.000	6.800	6.800
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	0.000	0.000	0.000	4.430	4.430
1207	DuPont Canada Inc.	Maitland Site	Maitland	ON	0.000	0.000	0.000	0.508	0.508

<b>CAS #: 71-43-2</b>										<b>Total # of Reports: 113</b>			<b>Total Releases (tonnes): 1 585.782</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>						
3713	Dofasco Inc.		Hamilton	ON	290.690	0.000	0.003	0.000	290.693						
2984	Stelco Inc.	Hilton Works	Hamilton	ON	178.500	0.000	0.120	0.000	178.620						
1070	Algoma Steel Inc	Algoma Steel Main Works	Sault Ste. Marie	ON	163.783	0.000	0.042	0.000	163.825						
3855	Lake Erie Steel Company Ltd.		Nanticoke	ON	92.752	0.000	0.000	0.000	92.752						
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	65.193	0.000	0.000	0.000	65.193						
1197	Domtar Papers	Cornwall Business Unit	Cornwall	ON	43.557	0.000	0.004	0.000	43.561						
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	42.779	0.000	0.000	0.000	42.779						
2128	Shell Canada Ltd.	Peace River Complex	Peace River	AB	0.661	39.593	0.004	0.026	40.284						
0424	Imperial Oil Resources Limited	Bonnie Glen Gas Plant	Thorsby	AB	38.060	0.000	0.000	0.000	38.060						
3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	36.503	0.000	0.012	0.009	36.524						
<b>CAS #: 92-52-4</b>										<b>Total # of Reports: 13</b>			<b>Total Releases (tonnes): 11.983</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>						
3422	DuPont Canada Inc.	Kingston Site	Kingston	ON	4.600	0.000	0.000	0.000	4.600						
4700	NOVA Chemicals Ltd.	St. Clair River Site	Corunna	ON	3.950	0.000	0.000	0.000	3.950						
3793	Celanese Canada Inc.	Mililhaven Facility	Ernestown	ON	2.000	0.000	0.000	0.000	2.000						
3897	Petro-Canada	Raffinerie de Montréal	Montréal	QC	0.613	0.000	0.000	0.000	0.613						
<b>CAS #: 103-23-1</b>										<b>Total # of Reports: 16</b>			<b>Total Releases (tonnes): 11.104</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>						
1269	Ford Motor Company	Essex Aluminum Plant	Windsor	ON	11.057	0.000	0.000	0.000	11.057						

<b>Bis(2-ethylhexyl) phthalate</b>		<b>CAS #: 117-81-7</b>		<b>Total # of Reports: 36</b>		<b>Total Releases (tonnes): 8.593</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
1083	Produits American Blitrite Ltée		Sherbrooke	QC	4.400	0.000	0.000	0.000	4.400
4544	RCR International Inc.		Mississauga	ON	1.730	0.000	0.000	0.000	1.730
4935	Armstrong World Industries Canada Ltd.	Montréal Plant	Montréal	QC	0.980	0.000	0.000	0.000	0.980
3799	Crown Cork & Seal Canada Inc.	Crown Cork & Seal Canada Inc. - Plt.234	Montréal	QC	0.740	0.000	0.000	0.000	0.740
<b>Bromomethane</b>		<b>CAS #: 74-83-9</b>		<b>Total # of Reports: 1</b>		<b>Total Releases (tonnes): 6.304</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
4722	Les Aliments Borden Canada	Usine Notre-Dame	Montréal	QC	6.304	0.000	0.000	0.000	6.304
<b>1,3-Butadiene</b>		<b>CAS #: 106-99-0</b>		<b>Total # of Reports: 13</b>		<b>Total Releases (tonnes): 106.032</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	64.770	0.000	0.000	0.000	64.770
1776	NOVA Chemicals (Canada) Ltd.	NOVA Chemicals (Canada) Ltd. - Corunna Site	Corunna	ON	17.220	0.000	0.000	0.000	17.220
3634	Pétromont, société en commandite	Usine de Varennes	Varennes	QC	8.537	0.000	0.000	0.000	8.537
1779	NOVA Chemicals Corporation	Joffre Site	Red Deer	AB	6.186	0.000	0.000	0.000	6.186
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	4.034	0.000	0.000	0.000	4.034
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	1.934	0.000	0.000	0.000	1.934
0281	Dow Chemical Canada Inc.	Complexe de Varennes	Varennes	QC	1.907	0.000	0.000	0.000	1.907
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	0.884	0.000	0.000	0.000	0.884



<b>i-Butyl alcohol</b>										<b>CAS #: 78-83-1</b>			<b>Total # of Reports: 38</b>			<b>Total Releases (tonnes): 163.604</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>										
1866	Palliser Furniture Ltd.	DeFehr Division	Winnipeg	MB	33.456	0.000	0.000	0.000	33.456										
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	32.165	0.000	0.000	0.000	32.165										
3478	DaimlerChrysler	Pillette Road Truck Assembly Plant	Windsor	ON	27.274	0.000	0.000	0.000	27.274										
5753	Inscap	Holland Landing	Holland Landing	ON	16.645	0.000	0.000	0.000	16.645										
0476	Kitchcraft of Canada Ltd.	Manufacturing Plant	Winnipeg	MB	11.000	0.000	0.000	0.000	11.000										
3019	Rollstamp		Concord	ON	10.277	0.000	0.000	0.000	10.277										
1215	Ford Motor Company	Ontario Truck	Oakville	ON	9.849	0.000	0.000	0.000	9.849										
3419	Ford Motor Company	Oakville Assembly Plant	Oakville	ON	9.548	0.000	0.000	0.000	9.548										
2521	PolyCon Industries		Guelph	ON	3.622	0.000	0.000	0.000	3.622										
5619	Chemcraft International Inc.	Port Hope	Port Hope	ON	2.466	0.000	0.000	0.000	2.466										
<b>n-Butyl alcohol</b>										<b>CAS #: 71-36-3</b>			<b>Total # of Reports: 84</b>			<b>Total Releases (tonnes): 1 130.495</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>										
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	145.070	0.000	0.000	0.000	145.070										
0538	Crown Cork & Seal Canada Inc.	Crown Cork & Seal Canada Inc. - Plt.245	Weston	ON	112.031	0.000	0.000	0.000	112.031										
3116	Ball Packaging Products Canada, Inc.	Ball Packaging Products Canada, Inc.	Whitby	ON	103.305	0.000	0.000	0.000	103.305										
1105	AT Plastics Inc.	AT Plastics Inc. Packaging	Brampton	ON	97.300	0.000	0.000	0.000	97.300										
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	82.250	0.000	0.000	0.000	82.250										
3419	Ford Motor Company	Oakville Assembly Plant	Oakville	ON	72.360	0.000	0.000	0.000	72.360										
3216	Crown Cork & Seal Canada Inc.	Crown Cork & Seal Canada Inc. - Plt.244	Concord	ON	66.643	0.000	0.000	0.000	66.643										
0557	Crown Cork & Seal Canada Inc.	Crown Cork & Seal Canada Inc. - Plt.235	Calgary	AB	66.046	0.000	0.000	0.000	66.046										
3870	General Motors of Canada Limited	Oshawa Truck Assembly Centre	Oshawa	ON	49.947	0.000	0.000	0.000	49.947										
3764	Peregrine Oshawa Inc.	Oshawa Plant	Oshawa	ON	40.929	0.000	0.000	0.000	40.929										

<b>tert-Butyl alcohol</b>										<b>CAS #: 75-65-0</b>			<b>Total # of Reports: 3</b>			<b>Total Releases (tonnes): 172.126</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	5.443	150.000	0.000	0.003	155.446											
3198	3M Canada Company (London)	London, Ontario	London	ON	12.260	0.000	0.000	0.000	12.260											
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	4.420	0.000	0.000	0.000	4.420											
<b>Butyl benzyl phthalate</b>										<b>CAS #: 85-68-7</b>			<b>Total # of Reports: 13</b>			<b>Total Releases (tonnes): 6.423</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
4708	Bay Mills Limited	Bayex Division	St. Catharines	ON	4.750	0.000	0.000	0.000	4.750											
2420	Domco Inc.	Domco Inc.	Farnham	OC	1.163	0.000	0.000	0.000	1.163											
<b>Cadmium (and its compounds)</b>										<b>CAS #: N/A</b>			<b>Total # of Reports: 24</b>			<b>Total Releases (tonnes): 47.002</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
3414	Hudson Bay Mining and Smelting Company Ltd.	HBM&S Co., Ltd. - Metallurgical Complex	Flin Flon	MB	26.777	0.000	0.156	0.000	26.933											
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	7.009	0.000	0.000	0.000	7.009											
4024	Noranda Inc.	Brunswick Smelter	Belledune	NB	2.930	0.000	0.266	0.000	3.196											
3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	OC	2.550	0.000	0.130	0.000	2.680											
2537	Safety-Kleen	Lambton Facility	Corunna	ON	0.000	0.000	0.000	2.622	2.622											
2938	Noranda Inc. CEZinc	Usine d'extraction de zinc	Salaberry-de-Valleyfield	OC	1.723	0.000	0.025	0.000	1.748											
3802	Cominco Ltd.	Trail Operations	Trail	BC	0.345	0.000	0.530	0.000	0.875											
4204	Sydney Steel Corporation	Sydney Steel	Sydney	NS	0.000	0.000	0.000	0.000	0.750											
2815	Falconbridge Limited - Kidd Metallurgical Div.	Kidd Metallurgical Site	District of Cochrane	ON	0.571	0.000	0.054	0.000	0.625											

<b>Carbon disulphide</b>		<b>CAS #: 75-15-0</b>			<b>Total # of Reports: 29</b>			<b>Total Releases (tonnes): 2 196.079</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
3758	Petro-Canada	Hanlan-Robb Gas Plant	Edson	AB	365.000	0.000	0.000	0.000	365.000	
2781	Shell Canada Limited	Shell Burnt Timber Complex	Didsbury	AB	272.900	0.000	0.000	0.000	272.900	
2119	Shell Canada Limited	Jumping Pound Complex	Calgary	AB	258.000	0.000	0.000	0.000	258.000	
0683	Chevron Canada Resources	Kaybob South #3 Gas Plant	Fox Creek	AB	221.000	0.000	0.000	0.000	221.000	
1902	Wascana Energy Inc. (Subsidiary of Canadian Occidental)	Balzac Gas Plant	Balzac	AB	206.628	0.000	0.000	0.000	206.628	
4140	Amoco Canada Petroleum Company	East Crossfield Gas Plant	Grossfield	AB	166.779	0.000	0.000	0.000	166.779	
0407	Husky Oil Operations Limited	Ram River Gas Plant	Rocky Mountain House	AB	148.920	0.000	0.000	0.000	148.920	
4138	Amoco Canada Petroleum Company	West Whitecourt Plant	N/A	AB	91.700	0.000	0.000	0.000	91.700	
4150	Amoco Canada Petroleum Company	Kaybob South Sour Gas Plant	Fox Creek	AB	75.505	0.000	0.000	0.000	75.505	
4157	Amoco Canada Petroleum Company	Steelman Gas Plant	N/A	SK	67.600	0.000	0.000	0.000	67.600	
<b>Chlorine</b>		<b>CAS #: 7782-50-5</b>			<b>Total # of Reports: 180</b>			<b>Total Releases (tonnes): 505.806</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
1221	Fraser Papers Inc. (Canada)	Edmundston Operations	Edmundston	NB	96.000	0.000	0.000	0.000	96.000	
1617	Repap New Brunswick Inc.	Kraft Pulp and Paper Division	Miramichi	NB	84.000	0.000	0.000	0.000	84.000	
0930	Bowater Pulp and Paper Canada Inc.	Thunder Bay Operations	Thunder Bay	ON	52.350	0.000	0.000	0.000	52.350	
3406	Société d'électrolyse et de chimie Alcan	Usine Arvida	Jonquiere	QC	27.180	0.000	0.000	0.000	27.180	
0279	Norkraft Quévillon Inc.	Usine de Lebel-sur-Quévillon	Lebel-sur-Quévillon	QC	18.300	0.000	0.000	0.000	18.300	
1473	Inco Limited	Manitoba Division	Thompson	MB	15.162	0.000	0.000	0.000	15.162	
0815	Kimberly-Clark Inc.	Kimberly Clark Nova Scotia	New Glasgow	NS	14.905	0.000	0.000	0.000	14.905	
0683	Chevron Canada Resources	Kaybob South #3 Gas Plant	Fox Creek	AB	0.145	14.365	0.000	0.000	14.510	
2074	Sterling Pulp Chemicals Ltd.	Sterling Pulp Chemicals (Sask) Ltd.	Saskatoon	SK	14.461	0.000	0.039	0.000	14.500	
4771	Regional Municipality of Halton	Skyway Waste Water Treatment Plant	Burlington	ON	0.000	0.000	12.093	0.000	12.093	

<b>Chlorine dioxide</b>									
<b>CAS #: 10049-04-4</b>				<b>Total # of Reports: 51</b>			<b>Total Releases (tonnes): 916.619</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
1197	Domtar Papers	Cornwall Business Unit	Cornwall	ON	98.645	0.000	0.000	0.000	98.645
2181	St. Anne-Nackawic Pulp Company Ltd.		Nackawic	NB	78.500	0.000	0.000	0.000	78.500
2604	Irving Pulp & Paper, Ltd./Irving Tissue Company	Irving Pulp & Paper and Irving Tissue Company	Saint John	NB	74.931	0.000	0.000	0.000	74.931
1596	Tembec Industries Inc.	Pulp Group, Smooth Rock Falls Division	Smooth Rock Falls	ON	74.500	0.000	0.000	0.000	74.500
1617	Repap New Brunswick Inc.	Kraft Pulp and Paper Division	Miramichi	NB	64.300	0.000	0.000	0.000	64.300
0930	Bowater Pulp and Paper Canada Inc.	Thunder Bay Operations	Thunder Bay	ON	49.850	0.000	0.000	0.000	49.850
0723	Pacifica Papers Inc.	Powell River Division	Powell River	BC	43.000	0.000	0.000	0.000	43.000
2991	Weidwood of Canada Ltd.	Hinton Division	Hinton	AB	39.980	0.000	0.000	0.000	39.980
1797	Northwood Inc.	Northwood Pulp Mill	Prince George	BC	35.600	0.000	0.000	0.000	35.600
2924	Weyerhaeuser Canada Ltd.	Kamloops Pulp Division	Kamloops	BC	32.000	0.000	0.000	0.000	32.000
<b>Chloroethane</b>									
<b>CAS #: 75-00-3</b>				<b>Total # of Reports: 3</b>			<b>Total Releases (tonnes): 185.354</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
0281	Dow Chemical Canada Inc.	Complexe de Varennes	Varennes	QC	76.563	0.000	0.000	0.000	76.563
0282	Dow Chemical Canada Inc.	Dow Chemical Canada Inc. - Weston	Weston	ON	58.049	0.000	0.000	0.000	58.049
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	50.742	0.000	0.000	0.000	50.742

<b>Chloroform</b>										
<b>CAS #: 67-66-3</b>										
<b>Total # of Reports: 17</b>										
<b>Total Releases (tonnes): 204.027</b>										
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
0223	Daishowa-Marubeni Int'l	Peace River Pulp Division	Peace River	AB	91.300	0.000	1.770	0.000	93.070	
1797	Northwood Inc.	Northwood Pulp Mill	Prince George	BC	35.700	0.000	0.000	0.000	35.700	
3140	Cartons St-Laurent Inc.	Cartons St-Laurent Inc. LaTuque	LaTuque	QC	13.911	0.000	1.729	0.000	15.640	
0279	Norkraft Quévillon Inc.	Usine de Lebel-sur-Quévillon	Lebel-sur-Quévillon	QC	14.817	0.000	0.513	0.000	15.330	
0930	Bowater Pulp and Paper Canada Inc.	Thunder Bay Operations	Thunder Bay	ON	13.920	0.000	0.881	0.000	14.801	
3185	E.B. Eddy Forest Products Ltd.	Espanola Division	Espanola	ON	12.815	0.000	0.120	0.000	12.935	
2607	Kimberly-Clark Corporation	Kimberly-Clark Forest Products, Inc.	Terrace Bay	ON	8.150	0.000	0.036	0.000	8.186	
1221	Fraser Papers Inc. (Canada)	Edmundston Operations	Edmundston	NB	7.510	0.000	0.000	0.000	7.510	
2963	Shell Chemicals Canada Ltd.	Scottford Chemical Plant	Fort Saskatchewan	AB	0.000	0.000	0.000	0.000	0.718	
<b>Chloromethane</b>										
<b>CAS #: 74-87-3</b>										
<b>Total # of Reports: 1</b>										
<b>Total Releases (tonnes): 385.142</b>										
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	385.128	0.000	0.014	0.000	385.142	
<b>Chromium (and its compounds)</b>										
<b>CAS #: N/A</b>										
<b>Total # of Reports: 279</b>										
<b>Total Releases (tonnes): 1 959.896</b>										
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	0.000	0.000	0.000	1 545.000	1 545.000	
1467	Inco Limited	Copper Cliff Nickel Refinery	Copper Cliff	ON	0.165	0.000	0.000	56.000	56.165	
5219	TVX Gold Inc./High River Gold Mines Ltd. New Britannia Mine		Snow Lake	MB	0.000	0.000	0.000	48.000	48.000	
1809	Ontario Power Generation Inc.	Lambton Generating Station	Courtright	ON	0.130	0.000	0.020	37.710	37.860	
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	1.040	0.000	0.060	36.410	37.510	
2284	TransAlta Utilities Corporation	Sundance Thermal Generating Plant	Duffield	AB	0.310	0.000	0.000	36.000	36.310	
5663	Bombardier Transportation	Mass Transit - North America	Millhaven	ON	25.580	0.000	0.000	0.000	25.580	
3649	Ispat Sidbec Inc.	Acierie	Contrecoeur	QC	0.660	0.000	0.083	18.250	18.993	
2286	TransAlta Utilities Corporation	Kepphills Thermal Generating Plant	Duffield	AB	0.080	0.000	0.000	17.500	17.580	
1106	AltaSteel Ltd.	AltaSteel Ltd.	Edmonton	AB	2.105	0.000	0.001	11.243	13.349	

Cobalt (and its compounds)			CAS #: N/A	Total # of Reports: 32	Total Releases (tonnes): 72.164				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
2284	TransAlta Utilities Corporation	Sundance Thermal Generating Plant	Duffield	AB	0.270	0.000	0.000	16.600	16.870
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	0.080	0.000	0.010	14.810	14.900
1471	Inco Limited	Inco Limited Port Colborne Refinery	Port Colborne	ON	0.202	0.000	0.156	13.360	13.718
1809	Ontario Power Generation Inc.	Lambton Generating Station	Courtright	ON	0.020	0.000	0.010	11.130	11.160
1467	Inco Limited	Copper Cliff Nickel Refinery	Copper Cliff	ON	5.798	0.000	0.000	0.000	5.798
1207	DuPont Canada Inc.	Maitland Site	Maitland	ON	4.930	0.000	0.120	0.000	5.050
1473	Inco Limited	Manitoba Division	Thompson	MB	1.560	0.000	0.192	0.000	1.752
1236	Falconbridge Limited	Smelter Complex	Falconbridge	ON	1.464	0.000	0.223	0.003	1.690
0394	Homestake Canada Inc.	Nickel Plate Mine	Above Hedley	BC	0.000	0.000	0.536	0.000	0.536
Copper (and its compounds)			CAS #: N/A	Total # of Reports: 339	Total Releases (tonnes): 1 245.556				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
5759	Siemens-Westinghouse	Coil Manufacturing Company	Mississauga	ON	0.000	0.000	0.000	153.987	153.987
5246	Gerdau MRM Steel Inc.	Mandak Metal Processors	Selkirk	MB	0.000	0.000	0.000	138.080	138.080
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	97.264	0.000	0.000	0.000	97.264
3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	85.690	0.000	2.185	0.000	87.875
3414	Hudson Bay Mining and Smelting Company Ltd.	HBM&S Co., Ltd. - Metallurgical Complex	Flin Flon	MB	78.542	0.000	0.143	0.000	78.685
2815	Falconbridge Limited - Kidd Metallurgical Div.	Kidd Metallurgical Site	District of Cochrane	ON	65.699	0.000	0.553	0.000	66.252
1469	Inco Limited	Copper Refinery	Copper Cliff	ON	63.360	0.000	0.000	0.000	63.360
3655	Ispat Sidbec Inc.	Sidbec-Feruni (Ispat) Inc. Contrecoeur	Contrecoeur	QC	0.000	0.000	0.002	62.500	62.502
3824	Co-Steel Lasco		Whitby	ON	0.133	0.000	0.030	54.370	54.533
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	2.670	0.000	5.500	37.650	45.820

<b>Cresol (mixed isomers and their salts) CAS #: 1319-77-3 Total # of Reports: 6 Total Releases (tonnes): 1.803</b>									
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
0953	Alcatel Canada Wire	Simcoe Plant	Simcoe	ON	1.530	0.000	0.000	0.000	1.530
<b>m-Cresol (and its salts) CAS #: 108-39-4 Total # of Reports: 3 Total Releases (tonnes): 2.001</b>									
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
0953	Alcatel Canada Wire	Simcoe Plant	Simcoe	ON	2.001	0.000	0.000	0.000	2.001
<b>p-Cresol (and its salts) CAS #: 106-44-5 Total # of Reports: 2 Total Releases (tonnes): 1.147</b>									
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
0953	Alcatel Canada Wire	Simcoe Plant	Simcoe	ON	1.147	0.000	0.000	0.000	1.147
<b>Cumene CAS #: 98-82-8 Total # of Reports: 20 Total Releases (tonnes): 45.065</b>									
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
4907	Budd Canada Inc.	Budd Canada Kitchener	Kitchener	ON	16.797	0.000	0.000	0.000	16.797
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	14.841	0.000	0.000	0.000	14.841
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	3.035	0.000	0.052	0.000	3.087
3897	Petro-Canada	Raffinerie de Montréal	Montréal	QC	2.061	0.000	0.000	0.000	2.061
2963	Shell Chemicals Canada Ltd.	Scottford Chemical Plant	Fort Saskatchewan	AB	1.552	0.000	0.000	0.000	1.552
3701	Imperial Oil	IOL Nanticoke Refinery	Nanticoke	ON	1.324	0.000	0.012	0.000	1.336
4048	Consumers' Co-operative Refineries Ltd./ NewGrade Energy Inc.	Refinery/Upgrader Complex	Regina	SK	0.964	0.000	0.000	0.000	0.964
3698	Imperial Oil	IOL Dartmouth Refinery	Dartmouth	NS	0.907	0.000	0.026	0.015	0.948
3071	Sunoco Inc.	Sarnia Refinery	Sarnia	ON	0.825	0.000	0.000	0.000	0.825
1492	Elf Atochem Canada		Bécancour	QC	0.808	0.000	0.000	0.000	0.808

Cyanides (ionic)										
CAS #: N/A			Total # of Reports: 34			Total Releases (tonnes): 5.247				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
1941	Placer Dome North America	Dome Mine	South Porcupine	ON	0.000	0.000	0.923	0.000	0.923	0.923
0577	Dextran Products Limited		Toronto	ON	0.900	0.000	0.000	0.000	0.900	0.900
5656	Placer Dome North America	Musselwhite Mine	Thunder Bay	ON	0.834	0.000	0.032	0.000	0.866	0.866
1935	Placer Dome North America	Campbell Mine	Balmertown	ON	0.000	0.000	0.500	0.000	0.500	0.500
Cyclohexane										
CAS #: 110-82-7			Total # of Reports: 90			Total Releases (tonnes): 1 999.143				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
4700	NOVA Chemicals Ltd.	St. Clair River Site	Corunna	ON	1 057.000	0.000	0.800	0.000	1 057.800	1 057.800
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	549.682	0.000	0.000	0.000	549.682	549.682
1207	DuPont Canada Inc.	Maitland Site	Maitland	ON	116.700	0.000	0.000	0.000	116.700	116.700
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	50.300	0.000	0.000	0.000	50.300	50.300
4048	Consumers' Co-operative Refineries Ltd./ NewGrade Energy Inc.	Refinery/Upgrader Complex	Regina	SK	36.292	0.000	0.000	0.000	36.292	36.292
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	14.343	0.000	0.000	0.000	14.343	14.343
4316	North Atlantic Refining Ltd.	North Atlantic Refinery	Come by Chance	NF	13.307	0.000	0.077	0.000	13.384	13.384
0397	Honda of Canada Mfg., a Div. of Honda Canada Inc.	Alliston Plant 1	Alliston	ON	12.500	0.000	0.000	0.000	12.500	12.500
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	11.875	0.000	0.159	0.000	12.034	12.034
3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	10.356	0.000	0.000	0.000	10.356	10.356
p-Dichlorobenzene										
CAS #: 106-46-7			Total # of Reports: 4			Total Releases (tonnes): 9.140				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
0787	Napierville Refineries Inc.	Napierville	Napierville	QC	9.040	0.000	0.000	0.000	9.040	9.040



<b>1,2-Dichloroethane</b>										<b>CAS #: 107-06-2</b>			<b>Total # of Reports: 6</b>			<b>Total Releases (tonnes): 26.360</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>									
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	23.578	0.000	0.000	0.352	23.930									
4646	Dow Chemical Canada Inc.	West Coast Distribution Centre	North Vancouver	BC	2.254	0.000	0.140	0.000	2.394									
<b>Dichloromethane</b>										<b>CAS #: 75-09-2</b>			<b>Total # of Reports: 62</b>			<b>Total Releases (tonnes): 2 215.110</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>									
2567	Carpenter Canada Limited		Woodbridge	ON	374.490	0.000	0.000	0.000	374.490									
2469	Novopharm Limited		Toronto	ON	274.196	0.000	0.000	0.000	274.196									
2601	Domfoam International Inc.	Domfoam	Saint-Léonard	QC	260.000	0.000	0.000	0.000	260.000									
4552	Vitafoam Products Canada Ltd.	Vita - Toronto	Downsview	ON	218.770	0.000	0.000	0.000	218.770									
4428	Valle Foam Industries Inc.	Valle 1	Brampton	ON	196.900	0.000	0.000	0.000	196.900									
2472	Novopharm Limited		Markham	ON	168.505	0.000	0.000	0.000	168.505									
2422	Foamex Canada Inc.	Foamex Toronto	Toronto	ON	153.582	0.000	0.000	0.000	153.582									
0152	Carpenter Canada Ltd.	Calgary Division	Calgary	AB	95.080	0.000	0.000	0.000	95.080									
2149	Duo-fast Industries Canada Inc.	Manufacture de clous et agraffes	Montréal	QC	94.740	0.000	0.000	0.000	94.740									
4429	Valle Foam Industries Inc.	Valle 2	Brampton	ON	56.500	0.000	0.000	0.000	56.500									

<b>Diethanolamine (and its salts)</b>		<b>CAS #: 111-42-2</b>		<b>Total # of Reports: 66</b>			<b>Total Releases (tonnes): 974.627</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
0407	Husky Oil Operations Limited	Ram River Gas Plant	Rocky Mountain House	AB	0.000	236.110	0.000	0.800	236.910
0409	Husky Oil Operations Limited	Husky Oil Lloydminster Upgrader	Lloydminster	SK	0.000	200.000	0.000	0.000	200.000
4138	Amoco Canada Petroleum Company	West Whitecourt Plant	N/A	AB	0.000	179.400	0.000	0.000	179.400
0683	Chevron Canada Resources	Kaybob South #3 Gas Plant	Fox Creek	AB	0.000	176.500	0.000	0.000	176.500
4304	Westcoast Energy Inc.	Fort Nelson Gas Plant	Fort Nelson	BC	56.360	0.000	0.000	0.000	56.360
2134	Agrium Products Inc.	Redwater Fertilizer Operations	Redwater/Municipal District of Sturgeon	AB	17.170	12.530	0.000	0.000	29.700
1902	Wascana Energy Inc. (Subsidiary of Canadian Occidental)	Balzac Gas Plant	Balzac	AB	0.325	21.220	0.000	0.250	21.795
0686	Chevron Canada Resources	Acheson Sour Gas Plant	Spruce Grove	AB	0.000	15.863	0.000	0.000	15.863
1374	Gulf Midstream Services Ltd.	Strachan Gas Plant	Rocky Mountain House	AB	0.000	10.890	0.000	0.000	10.890
3931	Ulster Petroleum Limited	Wimborne Gas Plant	Wimborne	AB	0.000	9.310	0.000	0.345	9.655
<b>Dimethyl phthalate</b>		<b>CAS #: 131-11-3</b>		<b>Total # of Reports: 3</b>			<b>Total Releases (tonnes): 3.200</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
2561	Camoplast Inc.	Division Roxton Falls	Roxton Falls	QC	2.200	0.000	0.000	0.000	2.200
2564	Camoplast Inc.	Division Princeville	Princeville	QC	1.000	0.000	0.000	0.000	1.000
<b>1,4-Dioxane</b>		<b>CAS #: 123-91-1</b>		<b>Total # of Reports: 4</b>			<b>Total Releases (tonnes): 3.036</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
3793	Celanese Canada Inc.	Millhaven Facility	Ernestown	ON	0.230	0.000	1.100	0.000	1.330
1436	Huntsman Corporation Canada Inc.	Guelph Plant	Guelph	ON	1.300	0.000	0.000	0.000	1.300
<b>2-Ethoxyethanol</b>		<b>CAS #: 110-80-5</b>		<b>Total # of Reports: 3</b>			<b>Total Releases (tonnes): 16.820</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	16.720	0.000	0.000	0.000	16.720

<b>2-Ethoxyethyl acetate</b>		<b>CAS #: 111-15-9</b>		<b>Total # of Reports: 5</b>		<b>Total Releases (tonnes): 4.442</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	4.242	0.000	4.242
<b>Ethyl benzene</b>		<b>CAS #: 100-41-4</b>		<b>Total # of Reports: 121</b>		<b>Total Releases (tonnes): 768.328</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	69.150	0.000	69.150
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	67.397	0.000	67.397
0397	Honda of Canada Mfg., a Div. of Honda Canada Inc.	Alliston Plant 1	Alliston	ON	52.900	0.000	52.900
1215	Ford Motor Company	Ontario Truck	Oakville	ON	43.217	0.000	43.217
1785	NOVA Chemicals (Canada) Ltd.	NOVA Chemicals (Canada) Ltd. - Sarnia Site	Sarnia	ON	41.107	0.000	41.110
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	39.654	0.000	39.654
0733	Paintplas Inc.	650 Finley Ave.	Ajax	ON	39.600	0.000	39.600
3478	DaimlerChrysler	Pillette Road Truck Assembly Plant	Windsor	ON	34.662	0.000	34.662
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	33.918	0.000	33.918
2656	Ventra Plastics	Peterborough Plant	Peterborough	ON	30.740	0.000	30.740

<b>Ethylene</b>		<b>CAS #: 74-85-1</b>			<b>Total # of Reports: 44</b>			<b>Total Releases (tonnes): 2 564.388</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	678.800	0.000	0.000	0.000	678.800	
1788	NOVA Chemicals Ltd.	Moore Site	Sarnia	ON	285.600	0.000	0.000	0.000	285.600	
0126	AT Plastics Inc.	Edmonton Site	Edmonton	AB	259.000	0.000	0.000	0.000	259.000	
2316	Union Carbide Canada Inc.	Prentiss Chemical Manufacturing Plant	Lacombe County	AB	191.830	0.000	0.000	0.000	191.830	
3634	Pétromont, société en commandite	Usine de Varennes	Varennes	QC	176.262	0.000	0.000	0.000	176.262	
3146	Dow Chemical Canada Inc.	Dow Chemical Canada Inc. - Sarnia	Sarnia	ON	129.737	0.000	0.000	0.000	129.737	
1779	NOVA Chemicals Corporation	Joffre Site	Red Deer	AB	126.335	0.000	0.000	0.000	126.335	
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	112.065	0.000	0.000	0.000	112.065	
1776	NOVA Chemicals (Canada) Ltd.	NOVA Chemicals (Canada) Ltd. - Corunna Site	Corunna	ON	70.000	0.000	0.000	0.000	70.000	
3635	Pétromont, société en commandite	Usine de Montréal Est	Montréal Est	QC	69.752	0.000	0.000	0.000	69.752	

<b>Ethylene glycol</b>		<b>CAS #: 107-21-1</b>			<b>Total # of Reports: 282</b>			<b>Total Releases (tonnes): 3 530.395</b>		
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
4451	Canadian Airlines	Pearson Airport Terminal 3	Mississauga	ON	0.000	0.000	0.000	385.500	385.500	
1026	Air Canada - Toronto	Toronto International Airport	Toronto	ON	0.000	0.000	0.000	313.451	313.451	
2316	Union Carbide Canada Inc.	Prentiss Chemical Manufacturing Plant	Lacombe County	AB	150.284	0.000	0.000	71.480	221.764	
4457	Canadian Airlines	Calgary International Airport	Calgary	AB	0.000	0.000	0.000	193.360	193.360	
4138	Amoco Canada Petroleum Company	West Whitecourt Plant	N/A	AB	0.000	182.200	0.000	0.000	182.200	
4455	Canadian Airlines	Edmonton International Airport	Edmonton	AB	0.000	0.000	0.000	166.120	166.120	
1006	Air Canada - Ottawa	Ottawa International Airport	Ottawa	ON	0.000	0.000	0.000	155.046	155.046	
1426	Hudson General Aviation Services Inc.	Gloucester	Gloucester	ON	0.000	0.000	0.000	144.173	144.173	
1427	Hudson General Aviation Services Inc.	Mississauga	Mississauga	ON	0.000	0.000	0.000	129.032	129.032	
3838	Air Canada - St. John's	St. John's International Airport	St. John's	NF	0.000	0.000	0.000	113.802	113.802	

<b>Ethylene oxide</b>									
<b>CAS #: 75-21-8</b>					<b>Total # of Reports: 8</b>			<b>Total Releases (tonnes): 19,799</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	4.868	0.325	0.000	0.000	5.193
0494	Chinook Group	Sombra Operations	Sombra	ON	4.290	0.000	0.000	0.000	4.290
2316	Union Carbide Canada Inc.	Prentiss Chemical Manufacturing Plant	Lacombe County	AB	4.037	0.000	0.000	0.000	4.037
1436	Huntsman Corporation Canada Inc.	Guelph Plant	Guelph	ON	2.400	0.000	0.000	0.000	2.400
5644	Griffith Micro Science, Inc.	Toronto Plant	Scarborough	ON	2.270	0.000	0.000	0.000	2.270
3146	Dow Chemical Canada Inc.	Dow Chemical Canada Inc. - Sarnia7	Sarnia	ON	0.000	0.000	0.000	0.000	0.93
0800	Rhodia Canada Inc.	Cooksville Plant	Mississauga	ON	0.652	0.000	0.000	0.000	0.652
<b>Formaldehyde</b>									
<b>CAS #: 50-00-0</b>					<b>Total # of Reports: 92</b>			<b>Total Releases (tonnes): 1 448,108</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
2636	Abitibi-Consolidated Inc.	Division Port-Alfred	La Baie	QC	0.700	0.000	157.000	0.000	157.700
2760	Weyerhaeuser Canada Ltd.	Drayton Valley O.S.B. Mill	Drayton Valley	AB	157.700	0.000	0.000	0.000	157.700
2762	Weyerhaeuser Canada Ltd.	Edson O.S.B. Mill	Edson	AB	93.120	0.000	0.000	0.000	93.120
2764	Weyerhaeuser Canada Ltd.	Slave Lake O.S.B. Mill	Slave Lake	AB	92.700	0.000	0.000	0.000	92.700
0758	Uniboard Canada Inc.	Division Mont-Laurier	Mont-Laurier	QC	82.800	0.000	0.000	0.000	82.800
4386	Malette Québec Inc.	Panneaux Malette OSB	Saint-Georges de Champlain	QC	71.908	0.000	0.000	0.000	71.908
4060	Uniboard Canada Inc.	Division Val-d'Or	Val-d'Or	QC	71.200	0.000	0.000	0.000	71.200
5442	Uniboard Canada Inc.	MDF La Baie Inc.	La Baie	QC	69.200	0.000	0.000	0.000	69.200
2989	Uniboard Canada Inc.	Division Sayabec	Sayabec	QC	67.884	0.000	0.000	0.000	67.884
4830	Ranger Board Ltd.		Blue Ridge	AB	60.233	0.000	0.000	0.000	60.233

**Hydrazine (and its salts) CAS #: 302-01-2 Total # of Reports: 6 Total Releases (tonnes): 1.985**

NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3808	Ontario Power Generation Inc.	Bruce Nuclear Power Development	Kincardine-Bruce-Tiverton	ON	0.047	0.000	0.771	0.000	0.818
3161	Ontario Power Generation Inc.	Pickering Nuclear	Pickering	ON	0.006	0.000	0.594	0.000	0.600
3163	Ontario Power Generation Inc.	Darlington Nuclear Generating Station	Bowmanville	ON	0.038	0.000	0.466	0.000	0.504

**Hydrochloric acid CAS #: 7647-01-0 Total # of Reports: 287 Total Releases (tonnes): 11 630.944**

NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	4 233.630	0.000	0.000	0.000	4 233.630
3992	Nova Scotia Power Inc.	Lingan Generating Station	New Waterford	NS	1 657.000	0.000	0.000	0.000	1 657.000
1809	Ontario Power Generation Inc.	Lambton Generating Station	Courtright	ON	1 352.480	0.000	0.000	0.000	1 352.480
2844	Ontario Power Generation Inc.	Lakeview GS	Mississauga	ON	1 106.320	0.000	0.000	0.000	1 106.320
4000	Nova Scotia Power Inc.	Point Aconi Generating Station	Point Aconi	NS	592.000	0.000	0.000	0.000	592.000
2978	Sécal	Usine Vaudreuil	Jonquière	QC	291.300	0.000	0.000	0.000	291.300
0823	Manitoba Hydro	Selkirk Generating Station	St. Clements	MB	277.400	0.000	0.000	0.000	277.400
0821	Manitoba Hydro	Brandon Generating Station	Brandon	MB	211.800	0.000	0.000	0.000	211.800
1944	Bayer Inc.	Bayer Inc. Sarnia Site	Sarnia	ON	189.100	0.000	0.000	0.000	189.100
5728	Royal Polymers Limited	Sarnia PVC Plant	Sarnia	ON	145.602	0.000	0.000	0.000	145.602

**Hydrogen cyanide CAS #: 74-90-8 Total # of Reports: 2 Total Releases (tonnes): 2.300**

NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
2548	Miramar Con Mine Ltd.		Yellowknife	NT	2.300	0.000	0.000	0.000	2.300

<b>Hydrogen fluoride</b>										<b>CAS #: 7664-39-3</b>			<b>Total # of Reports: 53</b>			<b>Total Releases (tonnes): 3 405.246</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
2788	Alcan Smelters and Chemicals Ltd.	Kitimat Works	Kitimat	BC	572.000	0.000	0.000	0.000	572.000	2284	TransAlta Utilities Corporation	Sundance Thermal Generating Plant	Duffield	AB	380.500	0.000	0.000	0.000	380.500
3406	Société d'électrolyse et de chimie Alcan	Usine Arvida	Jonquiere	QC	310.750	0.000	0.000	0.000	310.750	2038	Société Canadienne de Métaux Reynolds Ltée	Aluminerie de Baie-Comeau	Baie-Comeau	QC	309.639	0.000	0.000	0.000	309.639
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	205.600	0.000	0.000	0.000	205.600	2282	TransAlta Utilities Corporation	Wabamun Thermal Generating Plant	Wabamun	AB	191.300	0.000	0.000	0.000	191.300
1071	Aluminerie de Bécancour Inc.		Ville de Bécancour	QC	174.800	0.000	0.000	0.000	174.800	2286	TransAlta Utilities Corporation	Keephills Thermal Generating Plant	Duffield	AB	137.100	0.000	0.000	0.000	137.100
1036	Sheerness Generating Station		Hanna	AB	113.299	0.000	0.000	0.000	113.299	4778	Aluminerie Alouette Inc.	Usine de Sept-Îles	Sept-Îles	QC	106.760	0.000	0.000	0.000	106.760
<b>Isopropyl alcohol</b>										<b>CAS #: 67-63-0</b>			<b>Total # of Reports: 199</b>			<b>Total Releases (tonnes): 2 055.502</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	155.533	0.000	0.000	0.000	155.533	0358	Glopak Inc.	Usine	Montréal	QC	128.900	0.000	0.000	0.000	128.900
1516	Intertape Polymer Group	Woven Products Truro Plant	Truro	NS	121.000	0.000	0.000	0.000	121.000	3609	North American Decorative Products Inc.	Canadian Plant	Brampton	ON	105.276	0.000	0.000	0.000	105.276
1863	Packall Packaging Inc.	Maple Roll Leaf - Windsor	Windsor	ON	51.996	0.000	0.000	0.000	51.996	4734	Consoltex Inc.	St. Thomas Assembly Plant	St. Thomas	ON	42.054	0.000	0.000	0.000	42.054
4734	Consoltex Inc.	Maple Roll Leaf - Windsor	Windsor	ON	51.996	0.000	0.000	0.000	51.996	2125	Shell Chemicals Canada Ltd.	Sarnia IPA Plant	Corunna	ON	42.000	0.000	0.000	0.000	42.000
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	42.054	0.000	0.000	0.000	42.054	5435	Polypack Corporation Ltd.		Anjou	QC	40.900	0.000	0.000	0.000	40.900

<b>p,p'-Isopropylidenediphenol</b>		<b>CAS #: 80-05-7</b>		<b>Total # of Reports: 3</b>		<b>Total Releases (tonnes): 1.167</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
2331	Valspar, Incorporated		West Hill	ON	1.167	0.000	1.167
<b>Lead (and its compounds)</b>		<b>CAS #: N/A</b>		<b>Total # of Reports: 193</b>		<b>Total Releases (tonnes): 1 628.024</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
3649	Ispat Sidbec Inc.	Aclerie	Contrecoeur	QC	0.840	0.000	295.417
3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	153.230	0.000	153.830
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	145.706	0.000	145.706
5246	Gerdau MRM Steel Inc.	Mandak Metal Processors	Selkirk	MB	0.000	0.000	131.630
3655	Ispat Sidbec Inc.	Sidbec-Feruni (Ispat) Inc. Contrecoeur	Contrecoeur	QC	0.000	0.006	106.326
3414	Hudson Bay Mining and Smelting Company Ltd.	HBM&S Co., Ltd. - Metallurgical Complex	Flin Flon	MB	95.985	0.000	96.497
1651	Gerdau MRM Steel Inc.	MRM Steel	Selkirk	MB	0.895	0.000	94.369
3824	Co-Steel Lasco		Whitby	ON	1.073	0.000	83.914
2815	Falconbridge Limited - Kidd Metallurgical Div.	Kidd Metallurgical Site	District of Cochrane	ON	75.585	0.000	75.678
1106	AltaSteel Ltd.	AltaSteel Ltd.	Edmonton	AB	0.625	0.000	72.764



Manganese (and its compounds)			CAS #: N/A	Total # of Reports: 316			Total Releases (tonnes): 2 635.424		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
2284	TransAlta Utilities Corporation	Sundance Thermal Generating Plant	Duffield	AB	3.600	0.000	0.000	293.900	297.500
3649	Ispat Sidbec Inc.	Acierie	Contrecoeur	QC	0.000	0.000	0.000	277.930	277.930
3242	Produits forestiers Donohue Inc.	Usine de pâte Kraft, Saint-Félicien	Saint-Félicien	QC	0.000	0.000	70.000	125.000	195.000
1106	AltaSteel Ltd.	AltaSteel Ltd.	Edmonton	AB	3.344	0.000	0.021	189.091	192.456
3824	Co-Steel Lasco		Whitby	ON	0.944	0.000	0.111	180.300	181.355
4000	Nova Scotia Power Inc.	Point Aconi Generating Station	Point Aconi	NS	0.000	0.000	0.000	133.700	133.700
2286	TransAlta Utilities Corporation	Keephills Thermal Generating Plant	Duffield	AB	1.190	0.000	0.000	125.100	126.290
1651	Gerdau MRM Steel Inc.	MRM Steel	Selkirk	MB	3.025	0.000	0.017	113.430	116.472
0606	Esco Limited		Port Coquitlam	BC	0.870	0.000	0.000	96.270	97.140
3855	Lake Erie Steel Company Ltd.		Nanticoke	ON	6.338	0.000	0.552	85.000	91.890
Mercury (and its compounds)			CAS #: N/A	Total # of Reports: 10			Total Releases (tonnes): 1.017		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3385	Noranda Inc.	Mines Gaspé	Murdochville	QC	0.500	0.000	0.003	0.000	0.503

<b>Methanol</b>										<b>CAS #: 67-56-1</b>			<b>Total # of Reports: 354</b>			<b>Total Releases (tonnes): 19 798.231</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	75.200	2 500.000	0.000	0.000	2 575.200	2604	Irving Pulp & Paper, Ltd.\ Irving Tissue Company	Irving Pulp & Paper and Irving Tissue Company	Saint John	NB	182.375	0.000	745.610	0.000	927.985
0223	Daishowa-Marubeni Int'l	Peace River Pulp Division	Peace River	AB	726.700	0.000	0.000	0.000	726.700	0930	Bowater Pulp and Paper Canada Inc.	Thunder Bay Operations	Thunder Bay	ON	655.320	0.000	0.000	0.000	655.320
1195	Papiers Domtar - Centre d'affaires Windsor		Windsor	QC	502.400	0.000	61.900	0.000	564.300	0333	Fletcher Challenge Canada	Elk Falls Mill	Campbell River	BC	526.000	0.000	0.000	0.000	526.000
3821	Canadian Fertilizers Limited		Medicine Hat	AB	516.668	0.000	0.000	0.000	516.668	3553	Witco Canada Inc.	West Hill Plant	Scarborough	ON	423.000	0.000	0.000	0.000	423.000
1197	Domtar Papers		Cornwall	ON	378.400	0.000	41.410	0.000	419.810	2119	Shell Canada Limited	Jumping Pound Complex	Calgary	AB	0.000	411.000	0.000	0.000	411.000
<b>2-Methoxyethanol</b>										<b>CAS #: 109-86-4</b>			<b>Total # of Reports: 2</b>			<b>Total Releases (tonnes): 16.924</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	4751	Knoll North America Corp.	Main Plant	Toronto	ON	16.924	0.000	0.000	0.000	16.924
<b>Methyl tert-butyl ether</b>										<b>CAS #: 1634-04-4</b>			<b>Total # of Reports: 6</b>			<b>Total Releases (tonnes): 115.046</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	4316	North Atlantic Refining Ltd.	North Atlantic Refinery	Come by Chance	NF	61.549	0.000	0.000	0.000	61.549
2776	Chevron Canada Limited		Burnaby	BC	25.520	0.000	0.000	0.000	25.520	3974	Alberta Envirofuels Inc.		Edmonton	AB	14.936	0.000	0.000	0.003	14.939
4101	Irving Oil Limited		Saint John	NB	9.144	0.000	0.000	0.000	9.144	3698	Imperial Oil	IOL Dartmouth Refinery	Dartmouth	NS	3.713	0.000	0.000	0.000	3.713

<b>Methylenebis(phenylisocyanate)</b>		<b>CAS #: 101-68-8</b>		<b>Total # of Reports: 53</b>		<b>Total Releases (tonnes): 2.761</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
0422	Icynene Inc.	Icynene Inc. - Processing Plant	Mississauga	ON	0.000	0.000	0.500
<b>Methyl ethyl ketone</b>		<b>CAS #: 78-93-3</b>		<b>Total # of Reports: 167</b>		<b>Total Releases (tonnes): 4 936.273</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
3475	Canadian General - Tower Ltd.		Cambridge	ON	688.959	0.000	688.959
0741	Morbern Incorporated		Cornwall	ON	606.000	0.000	606.000
2263	Imperial Home Decor Group (Canada) ULC		Brampton	ON	463.980	0.000	463.980
3759	International Wallcoverings Ltd.	Brampton Plant	Brampton	ON	454.000	0.000	454.000
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	42.600	386.000	428.600
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	331.429	0.000	331.429
4210	Velcro Canada Inc.		Brampton	ON	201.334	0.000	201.334
2656	Ventra Plastics	Peterborough Plant	Peterborough	ON	127.230	0.000	127.230
4173	Chrysler Canada, Ltd.	Bramalea Assembly Plant	Brampton	ON	98.597	0.000	98.597
1674	Navistar International Corp. Canada	Chatham Assembly Plant	Chatham	ON	74.807	0.000	74.807
<b>Methyl isobutyl ketone</b>		<b>CAS #: 108-10-1</b>		<b>Total # of Reports: 73</b>		<b>Total Releases (tonnes): 645.572</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	72.660	0.000	72.660
3759	International Wallcoverings Ltd.	Brampton Plant	Brampton	ON	69.000	0.000	69.000
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	66.670	0.000	66.670
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	47.485	0.000	47.485
3870	General Motors of Canada Limited	Oshawa Truck Assembly Centre	Oshawa	ON	43.091	0.000	43.091
4849	Tarxien Components Corporation	Paint Facility	Concord	ON	42.981	0.000	42.981
3790	Toyota Motor Manufacturing Canada Inc.		Cambridge	ON	38.250	0.000	38.250
3419	Ford Motor Company	Oakville Assembly Plant	Oakville	ON	38.186	0.000	38.186
3213	Crown Cork & Seal Canada Inc.	Crown Cork & Seal Canada Inc. - Plt.233	Concord	ON	31.875	0.000	31.875
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	30.560	0.000	30.560

<b>Methyl methacrylate</b>										<b>CAS #: 80-62-6</b>			<b>Total # of Reports: 15</b>			<b>Total Releases (tonnes): 17.432</b>			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3847	CYRO Canada Inc.		Niagara Falls	ON	12.231	0.000	0.000	0.030	12.261	5605	Unicell Ltd.		Toronto	ON	2.620	0.000	0.000	0.000	2.620
0361	Graham Products Ltd.		Inglewood	ON	1.350	0.000	0.000	0.000	1.350										
<b>Molybdenum trioxide</b>										<b>CAS #: 1313-27-5</b>			<b>Total # of Reports: 17</b>			<b>Total Releases (tonnes): 2.817</b>			
4650	Catalyst Recovery Canada Ltd.	CRCL - Medicine Hat	Medicine Hat	AB	1.531	0.000	0.000	0.000	1.531	3158	Atlas Steels Inc.	Atlas Specialty Steels	Welland	ON	0.479	0.000	0.242	0.000	0.721
<b>Naphthalene</b>										<b>CAS #: 91-20-3</b>			<b>Total # of Reports: 49</b>			<b>Total Releases (tonnes): 87.923</b>			
4993	TrentonWorks Ltd.	TrentonWorks	Trenton	NS	28.990	0.000	0.000	0.000	28.990	2070	VFT Inc.		Hamilton	ON	10.014	0.000	0.000	0.000	10.014
3713	Dofasco Inc.		Hamilton	ON	9.150	0.000	0.000	0.000	9.150	2984	Stelco Inc.	Hilton Works	Hamilton	ON	4.410	0.000	0.100	0.000	4.510
0787	Napierville Refineries Inc.	Napierville	Napierville	QC	3.700	0.000	0.000	0.000	3.700	3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	2.767	0.000	0.046	0.000	2.813
1070	Algoma Steel Inc	Algoma Steel Main Works	Sault Ste. Marie	ON	2.630	0.000	0.052	0.000	2.682	3899	Petro-Canada	Mississauga Lubricant Center	Mississauga	ON	2.399	0.000	0.000	0.000	2.399
3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	2.228	0.000	0.000	0.035	2.263	3701	Imperial Oil	IOL Nanticoke Refinery	Nanticoke	ON	1.932	0.000	0.011	0.000	1.943

Nickel (and its compounds)			CAS #: N/A			Total # of Reports: 201			Total Releases (tonnes): 696.740		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
1467	Inco Limited	Copper Cliff Nickel Refinery	Copper Cliff	ON	130.102	0.000	0.000	0.000	130.102		
1473	Inco Limited	Manitoba Division	Thompson	MB	92.072	0.000	12.284	0.000	104.356		
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	67.800	0.000	0.000	0.000	67.800		
1465	Inco Limited	Central Mills	Copper Cliff	ON	0.000	0.000	35.459	0.000	35.459		
1696	New Brunswick Power	Coleson Cove Generating Station	Saint John	NB	6.550	0.000	0.037	27.990	34.577		
2284	TransAlta Utilities Corporation	Sundance Thermal Generating Plant	Duffield	AB	0.420	0.000	0.000	33.700	34.120		
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	1.640	0.000	0.080	27.460	29.180		
4882	Newfoundland and Labrador Hydro	Holyrood Thermal Generating Station	Holyrood	NF	24.700	0.000	0.004	2.900	27.604		
1809	Ontario Power Generation Inc.	Lambton Generating Station	Courtright	ON	0.230	0.000	0.010	25.940	26.180		
1471	Inco Limited	Inco Limited Port Colborne Refinery	Port Colborne	ON	0.599	0.000	0.456	23.310	24.365		

Nitrate ion (in solution at pH ≥ 6.0)			CAS #: N/A			Total # of Reports: 82			Total Releases (tonnes): 4 212.388		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases		
2749	City of Medicine Hat	Wastewater Treatment Plant	Medicine Hat	AB	0.000	0.000	476.650	23.180	499.830		
0420	ICI Canada Inc.	McMasterville Complex	McMasterville	QC	0.000	0.000	399.000	0.000	399.000		
3953	Aciers Atlas Inc.	Aciers Inoxydables Atlas	Tracy	QC	0.000	0.000	373.000	0.000	373.000		
4743	City of London	Greenway Pollution Control Centre	London	ON	0.000	0.000	322.818	0.000	322.818		
2377	Western Pulp Limited Partnership	Port Alice Cellulose Operation	Port Alice	BC	0.000	0.000	270.000	0.000	270.000		
2134	Agrium Products Inc.	Redwater Fertilizer Operations	Redwater/Municipal District of Sturgeon	AB	6.750	145.730	96.530	10.530	259.540		
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	0.000	0.000	234.110	0.000	234.110		
3353	McCain Foods (Canada)	Grand Falls Plants	Grand Falls	NB	0.000	0.000	211.535	0.000	211.535		
3840	Parmalat Canada	Winchester	Winchester	ON	0.000	0.000	196.100	0.000	196.100		
0770	Regional Municipality of Ottawa-Carleton	Robert O. Pickard Environmental Centre	Gloucester	ON	0.000	0.000	188.000	0.000	188.000		

<b>Nitric acid</b>									
<b>CAS #: 7697-37-2</b>					<b>Total # of Reports: 92</b>			<b>Total Releases (tonnes): 11.616</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3850	Decor Products International		Midland	ON	2.800	0.000	0.000	0.000	2.800
2515	Simplot Canada Limited		Brandon	MB	2.500	0.000	0.000	0.000	2.500
0225	Daymond Aluminium		Chatham	ON	1.885	0.000	0.000	0.000	1.885
0322	Produits Chimiques Expro Inc.		Valleyfield	QC	0.000	0.000	0.989	0.000	0.989
3125	Viasystems Canada Inc.	Kirkland	Kirkland	QC	0.774	0.000	0.000	0.000	0.774
<b>Nitrioltriacetic acid (and its salts)</b>									
<b>CAS #: 139-13-9</b>					<b>Total # of Reports: 10</b>			<b>Total Releases (tonnes): 1.795</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3658	Lever Pond's - a Division of UL Canada Inc.		Toronto	ON	1.700	0.000	0.000	0.000	1.700
<b>Phenol (and its salts)</b>									
<b>CAS #: 108-95-2</b>					<b>Total # of Reports: 66</b>			<b>Total Releases (tonnes): 263.307</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
4378	Formica Canada Inc.		Saint-Jean-sur-Richelieu	QC	82.000	0.000	0.000	0.000	82.000
1797	Northwood Inc.	Northwood Pulp Mill	Prince George	BC	0.000	0.000	22.400	0.000	22.400
3201	3M Canada Company (Perth)	Perth, Ontario	Perth	ON	21.180	0.000	0.000	0.000	21.180
5406	Cartons St-Laurent Inc.	Cartons St-Laurent Inc. Usine de Matane	Matane	QC	20.160	0.000	0.000	0.000	20.160
5687	Roxul, Inc.	Milton Plant	Milton	ON	17.200	0.000	0.000	0.000	17.200
1882	Fibrex Insulations Inc.		Sarnia	ON	12.377	0.000	0.000	0.000	12.377
0011	Borden Chemical Canada Ltd.	Borden Chemical - Edmonton	Edmonton	AB	11.409	0.000	0.000	0.000	11.409
2760	Weyerhaeuser Canada Ltd.	Drayton Valley O.S.B. Mill	Drayton Valley	AB	8.270	0.000	0.000	0.000	8.270
2363	Longlac Wood Industries Inc.		Longlac	ON	7.831	0.000	0.000	0.000	7.831
0953	Alcatel Canada Wire	Simcoe Plant	Simcoe	ON	7.202	0.000	0.000	0.000	7.202

Phosphoric acid										CAS #: 7664-38-2			Total # of Reports: 223			Total Releases (tonnes): 27.695			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
4533	Can Mar Manufacturing Ltd. Inc.		Niagara Falls	ON	15.000	0.000	0.000	0.000	15.000	3127	Produits Shell Canada Limitée	Raffinerie de Montréal Est	Montréal Est	QC	1.600	0.000	0.000	0.000	1.600
0979	Abitibi-Consolidated Inc.	Division Kénogami	Jonquière	QC	0.000	0.000	3.200	0.000	3.200	2134	Agrium Products Inc.	Redwater Fertilizer Operations District of Sturgeon	Redwater/Municipal District of Sturgeon	AB	0.000	0.000	0.000	1.160	1.160
3121	A.G. Simpson Co. Ltd.	A.G. Simpson Co. Ltd. - Cambridge	Cambridge	ON	2.046	0.000	0.000	0.000	2.046	3850	Decor Products International		Midland	ON	1.000	0.000	0.000	0.000	1.000
3476	DaimlerChrysler AG	Windsor Assembly Plant	Windsor	ON	0.999	0.000	0.000	0.000	0.999										
Phosphorus (yellow or white)										CAS #: 7723-14-0			Total # of Reports: 23			Total Releases (tonnes): 27.293			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
5449	Les Services Safety-Kleen (Mercier) Ltée		Mercier	QC	11.327	0.000	0.000	0.000	11.327	3394	Irving Paper		Saint John	NB	0.000	0.000	10.972	0.000	10.972
4790	F.F. Soucy Inc.		Rivière-du-Loup	QC	0.000	0.000	4.700	0.000	4.700										
Phthalic anhydride										CAS #: 85-44-9			Total # of Reports: 16			Total Releases (tonnes): 1.129			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	0120	Ashland Canada Inc.	Resin & Chemical Div.	Mississauga	ON	0.000	0.000	0.000	0.000	0.555

<b>Propylene</b>										<b>CAS #: 115-07-1</b>			<b>Total # of Reports: 38</b>			<b>Total Releases (tonnes): 951.300</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
3634	Pétromont, société en commandite	Usine de Varennes	Varennes	QC	225.187	0.000	0.000	0.000	225.187	4763	Montell Canada Inc.	Sarnia Plant	Corunna	ON	123.000	0.000	0.000	0.000	123.000	
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	79.667	0.000	0.000	0.000	79.667	2125	Shell Chemicals Canada Ltd.	Sarnia IPA Plant	Corunna	ON	45.200	0.000	0.000	0.000	45.200	
3901	Petro-Canada	Oakville Refinery	Oakville	ON	43.790	0.000	0.000	0.000	43.790	1776	NOVA Chemicals (Canada) Ltd.	NOVA Chemicals (Canada) Ltd. - Corunna Site	Corunna	ON	42.380	0.000	0.000	0.000	42.380	
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	38.602	0.000	0.000	0.000	38.602	3701	Imperial Oil	IOL Nanticoke Refinery	Nanticoke	ON	37.222	0.000	0.000	0.000	37.222	
3928	Ultramar Ltée	Raffinerie Saint-Romuald	Saint-Romuald	QC	35.282	0.000	0.000	0.000	35.282	3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	28.835	0.000	0.000	0.000	28.835	
<b>Propylene oxide</b>										<b>CAS #: 75-56-9</b>			<b>Total # of Reports: 5</b>			<b>Total Releases (tonnes): 14.182</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
3146	Dow Chemical Canada Inc.	Dow Chemical Canada Inc. - Sarnia	Sarnia	ON	7.456	0.000	0.000	0.000	7.456	0800	Rhodia Canada Inc.	Cooksville Plant	Mississauga	ON	5.986	0.000	0.000	0.000	5.986	
1436	Huntsman Corporation Canada Inc.	Guelph Plant	Guelph	ON	0.600	0.000	0.000	0.000	0.600											
<b>Selenium (and its compounds)</b>										<b>CAS #: N/A</b>			<b>Total # of Reports: 13</b>			<b>Total Releases (tonnes): 19.976</b>				
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	4.400	0.000	0.040	4.930	9.370	3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	4.140	0.000	0.549	0.000	4.689	
2815	Falconbridge Limited - Kidd Metallurgical Div.	Kidd Metallurgical Site	District of Cochrane	ON	0.664	0.000	3.188	0.000	3.852	1469	Inco Limited	Copper Refinery	Copper Cliff	ON	1.341	0.000	0.000	0.000	1.341	



<b>Silver (and its compounds)</b>		<b>CAS #: N/A</b>		<b>Total # of Reports: 16</b>		<b>Total Releases (tonnes): 2.315</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Total Releases
3623	Noranda Inc.	Fonderie Horne	Rouyn-Noranda	QC	1.270	0.000	1.396
<b>Styrene</b>		<b>CAS #: 100-42-5</b>		<b>Total # of Reports: 92</b>		<b>Total Releases (tonnes): 1 083.246</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Total Releases
4916	MAAX Inc.	Fibre de Verre Moderne - usine 5	Tring-Jonction	QC	115.740	0.000	115.740
3573	Mirolin Industries	Mirolin	Toronto	ON	101.450	0.000	101.450
4981	Rene Materiaux Composites Ltée	Usine Saint-Ephrem	Saint-Ephrem-de-Beauce	QC	53.000	0.000	53.000
2561	Camoplast Inc.	Division Roxton Falls	Roxton Falls	QC	52.000	0.000	52.000
4323	MAAX Inc.	Acrylica	Sainte-Marie	QC	49.754	0.000	49.754
2031	Reinforced Plastic Systems Inc.	Mahone Bay Plant	Mahone Bay	NS	49.500	0.000	49.500
1659	Frank Fair Industries Ltd.		Winnipeg	MB	47.091	0.000	47.091
5262	ZCL Composites Inc.	Edmonton	Edmonton	AB	44.980	0.000	44.980
4996	ADS Groupe Composites/ div Beauce Composites		Sainte-Clotilde-de-Beauce	QC	43.368	0.000	43.368
5445	Granirex Inc.	Thetford Plant	Thetford Mines	QC	40.000	0.000	40.000
<b>Sulphuric acid</b>		<b>CAS #: 7664-93-9</b>		<b>Total # of Reports: 435</b>		<b>Total Releases (tonnes): 14 797.886</b>	
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Total Releases
0444	Inco Limited	Copper Cliff Smelter Complex	Copper Cliff	ON	2 796.000	0.000	2 796.000
1036	Sheerness Generating Station		Hanna	AB	1 743.655	0.000	1 743.655
4876	Avenor Maritimes Inc.	Dalhousie Mill	Dalhousie	NB	1 642.000	0.000	1 642.100
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	935.800	0.000	935.800
1696	New Brunswick Power	Coleson Cove Generating Station	Saint John	NB	903.900	0.000	903.900
1033	Alberta Power Limited	Battle River Generating Station	Forestburg	AB	641.417	0.000	641.417
2119	Shell Canada Limited	Jumping Pound Complex	Calgary	AB	569.000	0.000	569.000
1712	New Brunswick Power	Dalhousie Generating Station	Dalhousie	NB	544.100	0.000	544.100
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	456.340	0.000	456.340
1861	Ontario Power Generation Inc.	Nanticoke Generating Station	Nanticoke	ON	399.030	0.000	399.030

<b>1,1,2,2-Tetrachloroethane</b>		<b>CAS #: 79-34-5</b>		<b>Total # of Reports: 2</b>		<b>Total Releases (tonnes): 1.566</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	1.566	0.000	0.000	0.000	1.566
<b>Tetrachloroethylene</b>		<b>CAS #: 127-18-4</b>		<b>Total # of Reports: 41</b>		<b>Total Releases (tonnes): 126.106</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
4864	Uniglove Services Ltd.		Hamilton	ON	82.440	0.000	0.000	0.000	82.440
2852	ICI Canada Inc.	ICI Explosifs, Brownsburg	Brownsburg	QC	10.600	0.000	0.000	0.000	10.600
4718	Industrial Glove & Garment Ltd.	Cleaning Plant	Whitby	ON	8.200	0.000	0.000	0.000	8.200
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	6.825	0.000	0.000	0.000	6.825
4899	Deluxe Toronto		Toronto	ON	5.126	0.000	0.000	0.000	5.126
4471	Aries Flexographics Limited		Mississauga	ON	3.930	0.000	0.000	0.000	3.930
1447	IBM Canada Ltée	IBM Canada Ltée, Bromont	Bromont	QC	3.890	0.000	0.000	0.000	3.890
1553	CCL Industries Inc.	KG Packaging	Concord	ON	3.000	0.000	0.000	0.000	3.000
1260	Fielding Chemical Technologies Inc.	Anachemia Solvents Ltd. Division	Mississauga	ON	0.555	0.000	0.000	0.000	0.555
3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	0.000	0.000	0.000	0.000	0.503
<b>Toluene</b>		<b>CAS #: 108-88-3</b>		<b>Total # of Reports: 340</b>		<b>Total Releases (tonnes): 6 550.520</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
2263	Imperial Home Decor Group (Canada) ULC		Brampton	ON	357.640	0.000	0.000	0.000	357.640
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	299.098	0.000	0.000	0.000	299.098
3447	Québecor Printing Canada	Québecor Printing PE&E	Etobicoke	ON	290.232	0.000	3.328	0.000	293.560
4399	Canadian Technical Tape	Montréal Plant	Saint-Laurent	QC	290.800	0.000	0.000	0.000	290.800
3759	International Wallcoverings Ltd.	Brampton Plant	Brampton	ON	232.700	0.000	0.000	0.000	232.700
5627	Maple Roll Leaf	Maple Roll Leaf - Windsor	Windsor	ON	227.174	0.000	0.000	0.000	227.174
3475	Canadian General - Tower Ltd.		Cambridge	ON	197.977	0.000	0.000	0.000	197.977
4734	Consoltex Inc.		Alexandria	ON	181.544	0.000	0.000	0.000	181.544
0741	Morbern Incorporated		Cornwall	ON	181.500	0.000	0.000	0.000	181.500
3989	Jacobs & Thompson Inc.		Weston	ON	168.353	0.000	0.000	0.000	168.353

<b>1,1,2-Trichloroethane</b>										<b>Total Releases (tonnes): 1.394</b>		
<b>CAS #: 79-00-5</b>					<b>Total # of Reports: 3</b>			<b>Under-ground</b>			<b>Total Releases</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Water</b>	<b>Land</b>	<b>Under-ground</b>	<b>Air</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	1.018	0.000	0.000	0.000	1.018	0.000	0.000	1.018
<b>Trichloroethylene</b>										<b>Total Releases (tonnes): 844.492</b>		
<b>CAS #: 79-01-6</b>					<b>Total # of Reports: 46</b>			<b>Under-ground</b>			<b>Total Releases</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Water</b>	<b>Land</b>	<b>Under-ground</b>	<b>Air</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>
4524	Sandvik Steel Canada		Amrrior	ON	269.623	0.000	0.000	0.000	269.623	0.000	0.000	269.623
1189	Bombardier Aerospace	Downsview Plant	Downsview	ON	86.900	0.000	0.000	0.000	86.900	0.000	0.000	86.900
3845	Blount Canada Ltd.		Guelph	ON	58.846	0.000	0.000	0.000	58.846	0.000	0.000	58.846
2396	Wolverine Tube (Canada) Inc.	Wolverine Tube (Canada) Inc. London Operations	London	ON	58.815	0.000	0.000	0.000	58.815	0.000	0.000	58.815
0818	CANUSA, a Division of Shaw Industries, Ltd.	Huntsville	Huntsville	ON	49.707	0.000	0.000	0.000	49.707	0.000	0.000	49.707
3143	Derlan Aerospace Canada	Cambridge Division	Cambridge	ON	33.000	0.000	0.000	0.000	33.000	0.000	0.000	33.000
0123	Associated Tube Industries	A.T.I.	Markham	ON	30.100	0.000	0.000	0.000	30.100	0.000	0.000	30.100
4990	Fleet Industries Ltd.		Fort Erie	ON	29.300	0.000	0.000	0.000	29.300	0.000	0.000	29.300
0135	Bonar Inc.	Plastics Division	Burlington/Halton	ON	27.700	0.000	0.000	0.000	27.700	0.000	0.000	27.700
0448	ITL Industrial Tires		Mississauga	ON	27.670	0.000	0.000	0.000	27.670	0.000	0.000	27.670

1,2,4-Trimethylbenzene		CAS #: 95-63-6			Total # of Reports: 103			Total Releases (tonnes): 625.027		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
3419	Ford Motor Company	Oakville Assembly Plant	Oakville	ON	94.470	0.000	0.000	0.000	94.470	
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	66.846	0.000	0.000	0.000	66.846	
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	59.306	0.000	0.000	0.000	59.306	
3478	DaimlerChrysler	Pillette Road Truck Assembly Plant	Windsor	ON	34.414	0.000	0.000	0.000	34.414	
0733	Paintplas Inc.	650 Finley Ave.	Ajax	ON	31.400	0.000	0.000	0.000	31.400	
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	30.103	0.000	0.000	0.000	30.103	
4907	Budd Canada Inc.	Budd Canada Kitchener	Kitchener	ON	26.671	0.000	0.000	0.000	26.671	
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	25.151	0.000	0.000	0.000	25.151	
1492	Elf Atochem Canada		Bécancour	QC	23.145	0.000	0.042	0.000	23.187	
5703	Weatherstrong Building Products		Smiths Falls	ON	18.926	0.000	0.000	0.000	18.926	

Vanadium (fume or dust)		CAS #: 7440-62-2			Total # of Reports: 20			Total Releases (tonnes): 167.947		
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases	
3704	Imperial Oil	IOL Sarnia Refinery	Sarnia	ON	61.062	0.000	0.000	0.966	62.028	
4316	North Atlantic Refining Ltd.	North Atlantic Refinery	Come by Chance	NF	61.917	0.000	0.000	0.000	61.917	
3962	Shell Canada Products Limited	Sarnia Manufacturing Centre	Corunna	ON	14.946	0.000	0.000	0.149	15.095	
3897	Petro-Canada	Raffinerie de Montréal	Montréal	QC	10.569	0.000	0.000	0.000	10.569	
4101	Irving Oil Limited	Refining Division	Saint John	NB	7.324	0.000	0.000	0.000	7.324	
3127	Produits Shell Canada Limitée	Raffinerie de Montréal Est	Montréal Est	QC	5.870	0.000	0.000	0.000	5.870	
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	3.460	0.000	0.000	0.000	3.460	

<b>Vinyl acetate</b>										
<b>CAS #: 108-05-4</b>				<b>Total # of Reports: 10</b>			<b>Total Releases (tonnes): 297.106</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
1162	Celanese Canada Inc.	Edmonton Facility	Edmonton	AB	42.414	160.000	0.000	0.000	202.414	
0126	AT Plastics Inc.	Edmonton Site	Edmonton	AB	87.100	0.000	0.000	0.605	87.705	
3586	Nacan Products Limited	Produits Nacan Limitee	Boucherville	QC	3.080	0.000	0.000	0.000	3.080	
1165	Celanese Canada Inc.	Weston Terminal	North York	ON	1.500	0.000	0.000	0.000	1.500	
3114	Benjamin Moore & Co. Limited	Benjamin Moore & Co. Limited, Montréal Plant	Montréal	QC	1.071	0.000	0.000	0.000	1.071	
0374	Halltech Inc.	Scarborough	Scarborough	ON	0.846	0.000	0.000	0.000	0.846	
<b>Vinyl chloride</b>										
<b>CAS #: 75-01-4</b>				<b>Total # of Reports: 9</b>			<b>Total Releases (tonnes): 26.001</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
5728	Royal Polymers Limited	Sarnia PVC Plant	Sarnia	ON	8.614	0.000	0.000	0.000	8.614	
0355	Geon Canada Inc.	Scotford Plant	Fort Saskatchewan	AB	7.770	0.000	0.005	0.000	7.775	
1300	Geon Canada Inc.	Niagara Plant	Thorold	ON	6.187	0.000	0.004	0.000	6.191	
0280	Dow Chemical Canada Inc.	Western Canada Operations	Fort Saskatchewan	AB	2.796	0.000	0.000	0.000	2.796	
<b>Xylene (mixed isomers)</b>										
<b>CAS #: 1330-20-7</b>				<b>Total # of Reports: 328</b>			<b>Total Releases (tonnes): 7 019.210</b>			
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Water</b>	<b>Land</b>	<b>Total Releases</b>	
3893	General Motors of Canada Limited	Oshawa Car Assembly Plant	Oshawa	ON	570.781	0.000	0.000	0.000	570.781	
4796	Les Aciers Canam	Saint-Gédéon	Saint-Gédéon	QC	341.600	0.000	0.000	0.000	341.600	
0733	Paintplas Inc.	650 Finley Ave.	Ajax	ON	332.300	0.000	0.000	0.000	332.300	
2274	Syncrude Canada Ltd.	Mildred Lake Plant Site	Fort McMurray	AB	315.836	0.000	0.000	0.000	315.836	
3883	Ford Motor Company	St. Thomas Assembly Plant	St. Thomas	ON	226.300	0.000	0.000	0.000	226.300	
1215	Ford Motor Company	Ontario Truck	Oakville	ON	221.130	0.000	0.000	0.000	221.130	
2230	Suncor Energy Inc.	Suncor Energy Inc. Oil Sands	Fort McMurray	AB	204.890	0.000	0.000	0.000	204.890	
3478	DaimlerChrysler	Pillette Road Truck Assembly Plant	Windsor	ON	200.727	0.000	0.000	0.000	200.727	
3419	Ford Motor Company	Oakville Assembly Plant	Oakville	ON	192.990	0.000	0.000	0.000	192.990	
4946	Canam Steel Works	Calgary	Calgary	AB	184.400	0.000	0.000	0.000	184.400	

<b>m-Xylene</b>		<b>CAS #: 108-38-3</b>		<b>Total # of Reports: 7</b>		<b>Total Releases (tonnes): 26.092</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
4732	Canac Kitchens Limited		Thornhill	ON	16.163	0.000	16.163
3928	Ultramar Ltée	Raffinerie Saint-Romuald	Saint-Romuald	QC	6.605	0.000	6.605
2128	Shell Canada Ltd.	Peace River Complex	Peace River	AB	0.000	1.750	1.750
4316	North Atlantic Refining Ltd.	North Atlantic Refinery	Come by Chance	NF	1.474	0.000	1.474
<b>o-Xylene</b>		<b>CAS #: 95-47-6</b>		<b>Total # of Reports: 9</b>		<b>Total Releases (tonnes): 18.171</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
0921	Bartek Ingredients Inc.	Plant 2	Stoney Creek	ON	10.000	0.000	10.000
4316	North Atlantic Refining Ltd.	North Atlantic Refinery	Come by Chance	NF	3.590	0.000	3.622
3928	Ultramar Ltée	Raffinerie Saint-Romuald	Saint-Romuald	QC	2.686	0.000	2.686
2128	Shell Canada Ltd.	Peace River Complex	Peace River	AB	0.000	1.531	1.531
<b>p-Xylene</b>		<b>CAS #: 106-42-3</b>		<b>Total # of Reports: 9</b>		<b>Total Releases (tonnes): 43.083</b>	
<b>NPRI ID</b>	<b>Company Name</b>	<b>Facility Name</b>	<b>City</b>	<b>Province/ Territory</b>	<b>Air</b>	<b>Under- ground</b>	<b>Total Releases</b>
4569	Pétales Coastal Canada Inc.	Pétochimie Coastal du Canada	Montréal Est	QC	39.069	0.000	39.069
3928	Ultramar Ltée	Raffinerie Saint-Romuald	Saint-Romuald	QC	2.014	0.000	2.014
2128	Shell Canada Ltd.	Peace River Complex	Peace River	AB	0.000	1.750	1.750

Zinc (and its compounds)		CAS #: N/A		Total # of Reports: 387		Total Releases (tonnes): 6 927.306			
NPRI ID	Company Name	Facility Name	City	Province/ Territory	Air	Under- ground	Water	Land	Total Releases
3649	Ispat Sidbec Inc.	Aclerie	Contrecoeur	QC	7.800	0.000	0.750	2 698.160	2 706.710
1651	Gerdau MRM Steel Inc.	MRM Steel	Selkirk	MB	8.615	0.000	0.026	929.950	938.591
3824	Co-Steel Lasco		Whitby	ON	11.797	0.000	0.068	858.000	869.865
1106	AltaSteel Ltd.	AltaSteel Ltd.	Edmonton	AB	4.930	0.000	0.022	377.540	382.492
5246	Gerdau MRM Steel Inc.	Mandak Metal Processors	Selkirk	MB	0.000	0.000	0.000	373.924	373.924
4204	Sydney Steel Corporation	Sydney Steel	Sydney	NS	0.000	0.000	0.400	330.000	330.400
3655	Ispat Sidbec Inc.	Sidbec-Feruni (Ispat) Inc. Contrecoeur	Contrecoeur	QC	0.000	0.000	0.002	203.430	203.432
3802	Cominco Ltd.	Trail Operations	Trail	BC	139.400	0.000	54.400	0.000	193.800
3414	Hudson Bay Mining and Smelting Company Ltd.	HBM&S Co., Ltd. - Metallurgical Complex	Flin Flon	MB	172.544	0.000	3.577	0.000	176.121
2938	Noranda Inc. CEZinc	Usine d'extraction de zinc	Salaberry-de- Valleyfield	QC	86.546	0.000	3.823	0.000	90.369





## Appendix 3 - Information Summaries on NPRI Pollutants Reported in the Largest Quantities

Effects of chemicals on human health and the environment depend on a number of factors, including length and frequency of exposure, amount and toxicity of chemical, local climate and environmental conditions, sensitivity and proximity of people. The profiles provided below summarize environmental and health information for NPRI pollutants released on site or transferred off site in the largest quantities in 1998.

### Five NPRI Pollutants Released On Site in the Largest Quantities - 1998

#### 1. Ammonia (total)

Total ammonia is the sum of ammonia and the ammonium ion in solution. Ammonia is a colourless gas with a suffocating odour. It is alkaline, caustic and a powerful irritant. Under pressure, ammonia is a colourless liquid.

Little information is available on exposure of the general Canadian population to ammonia in the environment. However, acute toxic effects of ammonia, such as that which may occur in occupational scenarios, include swelling of the larynx, possibly leading to death, laryngitis, severe eye and pulmonary edema, wheezing, gastrointestinal irritation, nausea, vomiting, diarrhea, abdominal pain, chest pain, convulsions and coma (NSC, 1997). The liquified gas may also cause frostbite and corrosive injury to skin and eyes (CCOHS, 1999). Chronic exposure may result in increased susceptibility to viral illness and aggravation of chronic respiratory conditions (HC, 1998).

Ammonia is considered very toxic to aquatic organisms (ISIC, 1993).

Ammonia has a wide range of uses, including the production of fertilizers, plastics, fibres, chemicals, rubber, leather, explosives, water treatment, pharmaceuticals and metals. Ammonia is also used as a refrigerant, cleaner and a detergent (CCOHS, 1999).

#### 2. Methanol

Methanol is a clear, white liquid. It has a pungent odour at room temperature. Methanol is also called methyl alcohol, wood alcohol and carbinol (ISIC, 1993).

There is little information on environmental exposure of the general Canadian population to methanol. Nonetheless, effects reported following occupational or accidental exposure include visual disturbances, permanent blindness, damage to the nervous system, nausea, vomiting, cardiac depression, liver damage, and eye, nose, mouth, throat and skin irritation, and with exposure at high levels, death (NSC, 1997).

Methanol evaporates into the air, breaks down into other chemicals, and can contribute to smog formation. Methanol can react in the air to produce formaldehyde, a carcinogen. Methanol can dissolve completely in water, and can be washed out in rain. Methanol does not bind well to soil, and can evaporate from soil into the air. Methanol can be broken down by microorganisms or enter groundwater (EPA, 1988). Methanol is of low toxicity to aquatic and terrestrial organisms (ISIC, 1993).

Methanol is used as a solvent in adhesives, inks, resins and pharmaceuticals. It is also used in pesticides, pharmaceuticals, paint strippers, antifreeze, gasoline, and cleaners. It can be released from a number of sources, including: pulp mills, chemical and plastic manufacturing plants, during extraction of crude petroleum and natural gas, from transportation sources, volcanoes and during biological decomposition of wastes, sludges and sewage (EPA, 1998).

### **3. Sulphuric Acid**

Sulphuric acid is a clear, colourless, oily and odourless liquid. It is soluble in water, and can be found in the air as small droplets or attached to small particles (NSC, 1998).

Environmental exposure of the general Canadian population to sulphuric acid has not been assessed. Accidental and occupational exposure to sulphuric acid has been associated with pulmonary edema, bronchitis, emphysema, conjunctivitis, dermatitis, general irritation of the nose and throat, and effects on the gastrointestinal system, with particularly severe reactions reported among persons with asthma (EPA, 1989; NSC, 1998).

Sulphuric acid has a wide range of uses, including the manufacture of fertilizers, pigments, fibres, chemicals, explosives, detergents, drugs, plastics and pulp and paper. It is used in petroleum refining, the pickling of iron and steel and other metals, leaching of ores, as a catalyst and as a lab reagent (EPA, 1989), (CCOHS, 1998).

Sulphuric acid has moderate acute and chronic toxicity to aquatic life (EPA, 1989).

### **4. Hydrochloric Acid**

Hydrochloric acid can be either a colourless liquid or a colourless or slightly yellow gas. Fumes from hydrochloric acid have an acidic, penetrating odour.

There is no information on exposure of the general Canadian population to hydrochloric acid in the environment. However, effects observed following occupational or accidental exposure include irritation of the eyes, nose and throat, ulceration of the respiratory tract, laryngitis, tracheitis, bronchitis, pulmonary edema, gastrointestinal effects and convulsions (NSC, 1997).

Hydrochloric acid is used in the manufacture of other chemicals including phosphoric acid, chloride chemicals, fertilizers, dyes and pigments. Hydrochloric acid is used in a number of industrial processes including tanning, textiles, brewing, electroplating and metal treating (NSC, 1997).

### **5. Xylene (mixed isomers)**

Xylene (mixed isomers) is a colourless, sweet-smelling liquid. Xylene has three chemical forms: ortho-xylene, meta-xylene and para-xylene. Commercial xylene, generally referred to as xylene (mixed isomers) or technical xylene, is a mixture with differing proportions of these three chemical forms of xylene (CCOHS, 1998).

Following an assessment under the CEPA, it was concluded that xylenes were not present in the Canadian environment in quantities or under conditions that posed a danger to the health of the general Canadian population (HC, 1993). However, occupational studies and clinical trials involving exposure to xylenes have reported various neurological effects, eye, nose, throat and skin irritation, and respiratory and gastrointestinal effects (ATSDR, 1996; CCOHS, 1999).

Xylene occurs naturally in petroleum and coal tar, and is formed in forest fires. Commercial xylene is produced from petroleum and coal tars. Xylene is used as a solvent in paint, printing, rubber and leather industries, as a degreasing and cleaning agent, in paints, inks, dyes, adhesives, cleaning fluids and motor and aviation fuels (CCOHS, 1999).

Xylene evaporates quickly from soil and water into the air. In air, xylene is broken down into other chemicals. It can be broken down by microorganisms in soil and water (ATSDR, 1996).

## **Five NPRI Pollutants Transferred Off Site in the Largest Quantities - 1998**

### **1. Zinc (and its compounds)**

Pure zinc is a bluish-white shiny metal that is insoluble in water. Zinc combines with other chemicals to form zinc compounds such as zinc chloride, zinc sulphate, zinc carbonate, zinc acetate and zinc oxide.

There is little information on environmental exposure of the general Canadian population to zinc. Zinc is an essential element in the diet, although excessive intake has been associated with various metabolic effects (HC, 1987). Occupational exposure involving inhalation of high levels of zinc may cause "metal fume fever", thought to be an immune response affecting the lungs and body temperature (ATSDR, 1995). Exposure to zinc chloride may cause respiratory damage, dermatitis, irritation of the nasal passages and gastrointestinal tract, and pneumonitis (NSC, 1997).

Zinc is one of the most common elements in the earth's crust, and is found in air, soil, water and food. Zinc has a number of uses including coatings to prevent rust, batteries, and is combined with other metals to make alloys such as brass and bronze. Zinc compounds are widely used to make paints, rubber, dye, wood preservatives and ointments (ATSDR, 1995).

Zinc can attach to soil, sediments and small particles in the air. Zinc can move into groundwater and into lakes and streams (ATSDR, 1995).

### **2. Manganese (and its compounds)**

Manganese is a silvery, brittle metal found in many types of rock. Manganese dust or powder is flammable. Manganese combines with other chemicals to form manganese compounds, including manganese acetate, manganese fluoride, manganese chloride, manganese sulphate and manganese dioxide.

Manganese is regarded as an essential element in humans and animals. However, there is little information on the effect of manganese in the environment on the general Canadian population. Acute occupational exposure to manganese dioxide has resulted in "metal fume fever", and chronic exposure to inorganic manganese compounds, pneumonitis, and manganism which involves various neurological symptoms and biochemical alterations. There is also some evidence that occupational exposure to dusts of manganese oxide, sulphate and carbonate may have reproductive effects (HC, 1987). Less severe effects associated with occupational exposure to manganese include irritation of the eyes, nose, throat and respiratory tract (EPA, 1998).

Metallic manganese is used in the steel industry. Manganese compounds can be used in a number of products, including ceramics, matches, glass, metals, inks, paints, rubber, wood preservatives and fungicides.

Manganese and its compounds have moderate acute and chronic toxicity to aquatic life (EPA, 1989). Manganese and its compounds can be highly persistent in water with half-life greater than 200 days. Manganese does not tend to bioaccumulate in fish (EPA, 1989).

**3. Sulphuric Acid** (see NPRI pollutants released on site)

#### **4. Nitrate ion (in solution at pH equal to or greater than 6.0)**

Only the nitrate ion in solution at pH of 6.0 or greater is reportable to the NPRI. Nitric acid (with a pH less than 6.0) is reported separately to NPRI.

Little information is available on the effect of nitrates in the environment on the general Canadian population. However, epidemiological studies involving ingestion of nitrate-contaminated drinking water has been associated with methaemoglobinaemia, a condition whereby the body tissues are deprived of oxygen often leading to death, and to which infants have shown a particular susceptibility. There is also evidence that exposure to nitrates cause damage to the spleen and some suggestion that ingested nitrates increase the risk of cancer in humans (HC, 1987; EPA, 1998).

Nitrates are widely used as fertilizers. Nitrates are also found in sewage and livestock manure.

Nitrates are highly soluble and do not bind to soil, so they tend to enter the ground and surface waters. Nitrates and nitrites do not readily evaporate from water and tend to remain in water until taken up by plants or animals (EPA, 1998).

**5. Hydrochloric Acid** (see NPRI pollutants released on site)

### **Five NPRI-listed, CEPA-toxic and Carcinogenic Pollutants Released On Site in the Largest Quantities - 1998**

#### **1. Asbestos (friable form)**

Asbestos (friable form) is a greyish, non-combustible fibrous material, consisting primarily of magnesium silicate.

Asbestos refers to a group of six different fibrous materials that occur naturally in rocks and soil in certain regions.

Asbestos can enter the air and water from erosion of natural deposits or wearing down of products containing asbestos, such as brake pads. Smaller fibres of asbestos can remain in the air for a long time, while larger particles settle more quickly. Asbestos fibres do not move through the soil and are not easily broken down (ATSDR, 1996).

There has been no assessment of exposure of the general Canadian population to asbestos in the environment. In contrast, occupational and epidemiological studies have documented numerous health effects following exposure to asbestos. These include asbestosis or scarring of the lungs, lung cancer, mesothelioma or cancer of the lining of the chest or abdomen, and possibly gastrointestinal cancers (HC, 1995). In addition, asbestos is on the CEPA List of Toxic Substances and is classified as a Group-1 carcinogen by IARC.

Asbestos fibres are resistant to heat and most chemicals. As a result, asbestos is used in a wide range of goods, including roofing shingles, ceiling and floor tiles, cement, automobile products, coatings and paper products (ATSDR, 1996).

## **2. Arsenic (and its compounds)**

Pure arsenic is a grey-coloured metal found in the earth's crust. It is usually combined with one or more other elements such as oxygen, chlorine and sulphur to produce inorganic arsenic and combined with carbon and hydrogen to produce organic arsenic. Inorganic and organic arsenic have different properties and toxicities. Inorganic arsenic is usually more toxic than organic forms (ATSDR, 1993).

Arsenic doesn't evaporate into air. When materials containing arsenic and its compounds are burned or processed, particles of arsenic can become airborne.

Following assessment, it was concluded that inorganic arsenic compounds are carcinogenic to humans and are present in the Canadian environment in quantities or under conditions that pose a danger to the health of the general Canadian population. Inorganic arsenic and its compounds were therefore declared toxic under the CEPA. Numerous occupational studies have consistently demonstrated that exposure by inhalation of inorganic arsenic compounds causes cancer of the respiratory tract. Ingestion of arsenic in drinking water or medicines has also been linked with dermal lesions, peripheral neuropathy, peripheral vascular disease, skin cancer and cancers of various internal organs including the bladder, kidney, lung and liver (HC, 1992; 1993). Acute symptoms of arsenic poisoning reported upon ingestion of drinking water include abdominal pain, vomiting, pain and weakness in the muscles and extremities, and flushing of the skin. Further exposure may be followed by numbness and tingling in the extremities, muscle cramps and skin rash, and after a month, more severe effects on the skin and nails, accompanied by degraded motor and sensory responses. Children are particularly sensitive to the effects of arsenic, developing bronchial, cardiovascular and digestive problems at much lower levels of ingestion of arsenic than adults (HC, 1992).

Arsenic and its salts have low solubility in water, but are highly persistent, with a half-life greater than 200 days. Arsenic can build up in tissues of fish and shellfish. Inorganic arsenic in particle form can stay in the atmosphere for 5 to 15 days (EPA, 1998). Arsenic has high acute toxicity to aquatic life, birds and land animals (EPA, 1986).

Inorganic arsenic is released by industrial and commercial processes, volcanoes and weathering of the earth's crust (EPA, 1998). Inorganic arsenic compounds are used as wood preservatives, insecticides and herbicides (ATSDR, 1993). Some arsenic compounds are used in the microelectronics industry (EPA, 1998).

### 3. Chromium (and its compounds)

Pure chromium is a grey metal found in rocks, soil, plants and animals as well as in volcanic dust and gases. Chromium has three main forms chromium (0), chromium (III) and chromium (VI). Chromium (III) is stable and occurs naturally in the environment. Chromium (0) does not occur naturally in the environment, and chromium (VI) occurs only rarely. Chromium (III) forms thousands of different compounds with a wide range of chemical properties. Chromium (VI) is often bound with oxygen to form chromates and dichromates (ATSDR, 1993).

Hexavalent chromium was determined to be present in the Canadian environment in quantities or under conditions that posed a danger to the health of the general Canadian population, and was therefore declared toxic under the CEPA.

Occupational studies have demonstrated a strong association between exposure to hexavalent chromium and cancers of the nasal passages, lung, kidney, bladder and urinary tract. Other effects reported include nasal ulceration, septum perforation, asthma, bronchitis, skin ulceration and dermatitis (HC, 1994).

Hexavalent chromium is also genotoxic in animals. Acute exposures have resulted in liver necrosis, nephritis, gastrointestinal tract irritation, encephalitis and death (HC, 1986).

Chromium is used to make stainless steel and metal alloys, paint pigments, firebrick, tapes, chrome plating, pesticides, leathers and treated wood (ATSDR, 1993).

Larger chromium particles in the air settle in less than 10 days. Chromium can stick to soil and sediments. Chromium is highly persistent in water with a half-life greater than 200 days. Chromium III has moderate acute toxicity and high chronic toxicity to aquatic life and chromium (VI) has high acute and chronic toxicity (EPA, 1986).

### 4. Lead ( and its compounds)

Pure lead is a bluish-grey metal found in the earth's crust. Lead can combine with carbon to form organic lead, or with other compounds to form inorganic lead. Pure lead does not easily break down in the environment, but lead compounds can be changed by sunlight, air and water. When released into the air, lead stays in the air for approximately 10 days. It can then fall out of the air into the soil, where it tends to stick to soil particles (ATSDR, 1993).

Lead has been classified as a toxic substance under the CEPA and studies have indicated that chronic exposure to even small amounts of lead can be harmful, particularly for children. Typical routes of human exposure are inhalation and ingestion, although certain organic species of lead may enter the body through dermal contact. Once absorbed, lead deposits in the soft tissues and the skeleton, the latter where it may remain for several decades. Acute exposure to lead may induce severe gastrointestinal effects, convulsions, coma or death. Chronic exposure to lead is associated with anemia, kidney problems, gastrointestinal effects, and neurological disorders. Hyperactivity, learning disabilities and lower IQ scores are among the various neurological disorders observed in children exposed to lead. Pregnant women with elevated blood lead levels have a higher incidence of miscarriage, stillbirths and premature deliveries (HC, 1996).

Lead is released into the air from industrial process, smelters and refineries (HC 1996). Lead has many different uses, including batteries, metal products, roofing, ceramics, electronics, plastics and ammunition. Many uses of lead in gasoline, paints and solder have been reduced. Concentrations of lead in the air have declined since the introduction of unleaded gasoline in Canada in 1975 (HC, 1996).

## 5. Benzene

Benzene is a colourless liquid with a sweet odour.

Following assessment, it was concluded that benzene is carcinogenic to humans and is present in the Canadian environment in quantities or under conditions that pose a danger to the health of the general Canadian population. Accordingly, benzene has been classified as a toxic substance under the CEPA. Occupational studies have reported various hematotoxic effects among those exposed to benzene, including depression of bone marrow activity, alterations in white and red blood cell and hemoglobin levels, aplastic anemia, and leukemia. Genotoxic and immune system effects have also been observed. Acute exposure may induce neurotoxic effects, nausea, dermatitis and eye irritation (HC, 1993; CCOHS, 1999).

Benzene is produced from petroleum and coal. Benzene is used to make other chemicals used as solvents and in gasoline (CCOHS, 1999). Benzene is used in the rubber industry, oil refineries, chemical plants and shoe-manufacturing industry (ATSDR, 1989).

Benzene evaporates quickly into air, and can react with other chemicals. In the air, benzene breaks down within a few days (ATSDR, 1997). Benzene is moderately soluble in water, and slightly persistent, with a half-life of 2 to 20 days. Benzene breaks down slowly in soil and can enter groundwater. Benzene has high acute and chronic toxicity to aquatic life (EPA, 1988).

### Five NPRI-listed, CEPA-toxic and Carcinogenic Pollutants Transferred Off Site in the Largest Quantities - 1998

1. **Lead (and its compounds)** (see NPRI-listed, CEPA-toxic and carcinogenic pollutants released on site)
2. **Chromium (and its compounds)** (see NPRI-listed, CEPA-toxic and carcinogenic pollutants released on site)
3. **Asbestos (friable form)** (see NPRI-listed, CEPA-toxic and carcinogenic pollutants released on site)

#### 4. Nickel (and its compounds)

Nickel is a silvery metal found in the earth's crust, mainly as a part of silicate, sulphide, oxide and arsenide ores, in volcanoes, forest fires and sea spray. Nickel can combine with other elements to form a wide variety of nickel compounds including nickel carbonyl, nickel sulphate, nickel carbonate, nickel chloride, nickel fluoride and nickel oxide. These nickel compounds have different properties, toxicities and uses.

Following assessment, it was concluded that oxidic, sulphidic and soluble nickel compounds are carcinogenic to humans and are present in the Canadian environment in quantities or under conditions that pose a danger to the health of the general Canadian population. Therefore, these groups of nickel compounds have been classified as toxic under the CEPA. Based on the results of occupational studies, there is a clear association between inhalation of these substances and the development of nasal and lung cancer. Genotoxic effects have also been observed in humans. In addition, exposure to some nickel compounds has been associated with other effects including dermatitis and various nasal disorders (HC, 1994).

Nickel is used for nickel alloys, electroplating, batteries, dyes, coins, machinery parts, stainless steel and catalysts. Nickel carbonyl is used in refining nickel and as a catalyst in petroleum, plastic and rubber industries. Nickel and its compounds are released from a number of sources including the burning of fossil fuels, tobacco smoke, manufacturing processes, refining and smelting processes (ASTDR, 1997).

Nickel and its compounds may remain in the atmosphere for 5-15 days. Nickel attaches to particles in the air and can settle to the ground or be taken out with rain. Nickel attaches to particles that contain iron or manganese, and so is often found in the soil and sediment.

## **5. Formaldehyde**

Formaldehyde is a colourless gas with a strong odour. Formaldehyde is often sold mixed in solution with water or methanol.

The effects of human exposure to formaldehyde in the Canadian environment are currently being assessed under the CEPA. It is known that formaldehyde is associated with nasal, respiratory tract and eye irritation in humans, and is genotoxic and carcinogenic in animals (HC, 1989).

Formaldehyde can be released from industrial processes, electricity generation, transportation and consumer products. Formaldehyde can also be easily formed in the air. Formaldehyde is used in the manufacture of other chemicals, leather tanning, and as a wood preservative. Formaldehyde is often used in products such as detergents, cosmetics and fumigants for its antimicrobial action (EPA, 1998).

Most formaldehyde is released to the air. Formaldehyde is highly soluble in water, with a half-life of between 2 and 20 days. Formaldehyde has high acute and chronic toxicity to aquatic life (EPA, 1989).



## References for Information Summaries on NPRI Pollutants:

### Ammonia (total):

1. Ammonia Chemical Backgrounder, 1997. Environmental Health Center. Environmental Writer. National Safety Council. 1025 Connecticut Avenue, NW, Suite 1200, Washington, DC 20036 202-293-2270 (202-293-0032 fax) [nsc.org/ehc/ew/chems/ammonia](http://nsc.org/ehc/ew/chems/ammonia)>
2. Basic Information on Ammonia Gas. Chemical Profiles, 1999. Canadian Centre for Occupational Health and Safety. [ccohs.ca/oshanswers/chemicals/chem\\_profiles/](http://ccohs.ca/oshanswers/chemicals/chem_profiles/)>
3. Constituents of Tobacco Smoke, 1998. Health Canada.
4. Ammonia (anhydrous), 1993. International Chemical Safety Cards. International Program on Chemical Safety and the Commission of the European Communities.

### Arsenic (and its compounds)

1. Arsenic, 1993. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
2. Arsenic, Guidelines for Canadian Drinking Water Quality Supporting Documents, 1992. Health Canada.
3. *Canadian Environmental Protection Act* – Priority Substances List Assessment Reports for the following substances: Arsenic and its Compounds, 1993. Government of Canada, Environment Canada and Health Canada.
4. Arsenic and compounds, 1998. Technology Transfer Network. U.S. Environmental Protection Agency.
5. Arsenic, 1986. TRI Facts. U.S. Environmental Protection Agency.

### Asbestos (friable form)

1. Asbestos, 1996. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
2. It's Your Health – Asbestos and Risks to Health, 1995. Health Canada.

### Benzene

1. *Canadian Environmental Protection Act* – Priority Substances List Assessment Reports for the following substances: Benzene, 1993. Government of Canada, Environment Canada and Health Canada.
2. Basic Information on Benzene, 1999. Health Effects of Benzene. Canadian Center for Occupational Health and Safety.
3. Benzene, 1988. TRI Facts. U.S. Environmental Protection Agency.
4. Benzene, 1997. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
5. Benzene, 1989. Agency for Toxic Substances and Diseases Registry. Public Health Statement.

**Chromium (and its compounds)**

1. Chromium, 1993. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
2. *Canadian Environmental Protection Act* – Priority Substances List Assessment Reports for the following substances: Chromium and its Compounds, 1994. Government of Canada, Environment Canada and Health Canada.
3. Chromium, Guidelines for Canadian Drinking Water Quality Supporting Documents, 1986. Health Canada.
4. Chromium, 1986. TRI Facts. U.S. Environmental Protection Agency.

**Formaldehyde**

1. Exposure Guidelines for Residential Indoor Air Quality – A Report of the Federal-Provincial Advisory Committee on Environmental and Occupational Health, 1989. Health Canada.
2. Formaldehyde, 1998. Technology Transfer Network. U.S. Environmental Protection Agency.
3. Formaldehyde, 1989. TRI Facts. U.S. Environmental Protection Agency.

**Lead (and its compounds)**

1. Lead, 1993. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
2. It's Your Health – Lead and Human Health, 1996. Health Canada.

**Manganese (and its compounds)**

1. Manganese, Guidelines for Canadian Drinking Water Quality Supporting Documents, 1987. Health Canada.
2. Manganese, 1989. TRI Facts. U.S. Environmental Protection Agency.
3. Manganese, 1993. International Chemical Safety Cards. International Program on Chemical Safety and the Commission of the European Communities.
4. Manganese and its Compounds, 1998. Technology Transfer Network. U.S. Environmental Protection Agency.

**Methanol**

1. Methanol, 1993. International Chemical Safety Cards. International Program on Chemical Safety and the Commission of the European Communities.
2. Methanol. Technology Transfer Web. 1998. U.S. Environmental Protection Agency. United Air Toxics Web site.
3. Methanol Chemical Backgrounder. Environmental Health Center. Environmental Writer. National Safety Council. 1997.  
1025 Connecticut Avenue, NW, Suite 1200, Washington, DC 20036  
202-293-2270 (202-293-0032 fax)  
<[www.nsc.org/ehc/ew/chems](http://www.nsc.org/ehc/ew/chems)>
4. Chemicals in the Environment. Methanol. 1994. Office of Pollution Prevention and Toxics. U.S. Environmental Protection Agency.

---

### **Nickel (and its compounds)**

1. *Canadian Environmental Protection Act* – Priority Substances List Assessment Reports for the following substances: Nickel and its Compounds, 1994. Government of Canada, Environment Canada and Health Canada.
2. Nickel, 1997. Agency for Toxic Substances and Disease Registry. ToxFAQs.

### **Nitrates**

1. Nitrate/Nitrite, Guidelines for Canadian Drinking Water Quality Supporting Documents, 1987. Health Canada.
2. Nitrates/Nitrites. Consumer fact sheet. 1998. Drinking Water and Health. U.S. Environmental Protection Agency. Office of ground water and drinking water.

### **Sulphuric Acid**

1. Sulphuric Acid, 1989. TRI Facts. U.S. Environmental Protection Agency.
2. Basic Information about Sulphuric Acid. 1999. Canadian Centre for Occupational Health and Safety.
3. Sulphuric Acid Chemical Backgrounder, 1998. Environment Writer. National Safety Council.

### **Xylene (mixed isomers)**

1. *Canadian Environmental Protection Act* – Priority Substances List Assessment Reports for the following substances: Xylenes, 1993. Government of Canada, Environment Canada and Health Canada.
2. Xylene, 1996. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
3. Basic Information on Xylene (mixed isomers), 1999 and Health Effects of Xylene (mixed isomers), 1998. Canadian Center for Occupational Health and Safety.

### **Zinc (and its compounds)**

1. Zinc, Guidelines for Canadian Drinking Water Quality Supporting Documents, 1987. Health Canada.
2. Zinc, 1995. Agency for Toxic Substances and Diseases Registry. ToxFAQs.
3. Zinc Chemical Backgrounder. Zinc Compounds 1: Chemical Backgrounder. Zinc Compounds 2: Chemical Backgrounder. Zinc Compounds 3: Chemical Backgrounder. 1997. Environment Writer. National Safety Council.

