Environment Canada
Ontario Region

Environnement Canada
Région de l'Ontario

**July 2000**

**1998 data, updated on July 18, 2000**

# NPRI in Ontario

## NATIONAL POLLUTANT RELEASE INVENTORY 1998

| Canada | | Ontario |
|---|---|---|
| 2 037 Facilities | | 982 Facilities (48% of national total) |
| On-site Releases: 159 620 tonnes | | On-site Releases: 63 960 tonnes (40%) |
| Air Releases: 107 482 tonnes | | Air Releases: 49 215 tonnes (46%) |
| Water Releases: 16 626 tonnes | | Water Releases: 9 181 tonnes (55%) |
| Land Releases: 18 725 tonnes | | Land Releases: 5 468 tonnes (29%) |
| Off-site Transfers for Disposal: 87 821 tonnes | | Off-site Transfers for Disposal: 65 515 tonnes (75%) |
| Off-site Transfers for Recycling: 258 770 tonnes | | Off-site Transfers for Recycling: 176 274 tonnes (68%) |

**Comparison of NPRI data for Ontario-based facilities to national totals reported in 1998**

### What is the National Pollutant Release Inventory (NPRI)?

The NPRI is the only legislated, nation-wide, publicly accessible inventory of its type in Canada. One of the fundamental purposes 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 to identify priorities for action, encouraging industry to take voluntary measures to reduce releases, allowing the tracking of progress in reducing releases, and supporting numerous regulatory initiatives across Canada. Information gathered under the NPRI is provided by Environment Canada on an annual basis.

### Background Information About the 1998 NPRI

The 1998 NPRI National Overview includes data from the National Pollutant Release Inventory for the calendar years 1997 and 1998 as it appeared in the NPRI database on March 29, 2000. Non-confidential NPRI information and data are also accessible on the Internet at the Environment Canada National NPRI website at:

**http://www.ec.gc.ca/pdb/npri/**

Readers should note that the NPRI data on the Internet site is updated regularly as new or revised reports are submitted by facilities. As a result of revisions submitted between March 29th and July 18th, the quantities identified in this fact sheet may at times differ from those listed in the National Overview.

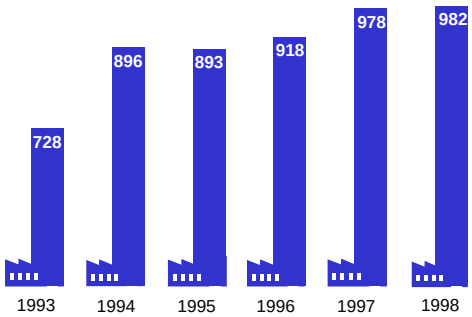
### Ontario on a National Scale

In 1998, 2 037 Canadian facilities filed a total of 7 596 reports on pollutants, an average of 3.7 pollutants per facility. In Ontario, 982 facilities filed 3 672 pollutant reports, for an average of 3.7 pollutants per facility.

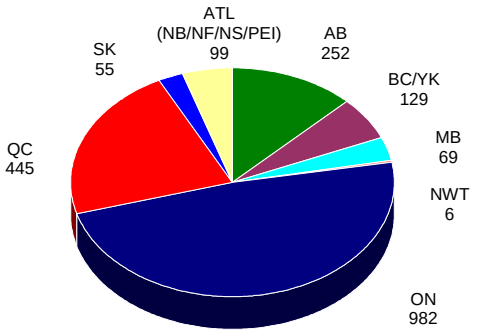
Canada's NPRI facilities reported on-site releases totaling 159 620 tonnes in 1998, while Ontario-based facilities reported 63 960 tonnes. This represented a 40% contribution to the total releases reported in Canada.

Additionally, NPRI facilities across Canada reported off-site transfers of NPRI pollutants for disposal totaling 87 821 tonnes in 1998; with Ontario-based facilities reporting 65 515 tonnes. This represented a 75% contribution to the total transfers for disposal reported in Canada.

NPRI facilities across Canada also reported off-site transfers from recycling totaling 258 770 tonnes in 1998; with Ontario-based facilities reporting 176 274 tonnes. This represented a 68% contribution to the total transfers for recycling in Canada. It is important to note that reporting for off-site transfers for recycling became mandatory for the 1998 reporting year.

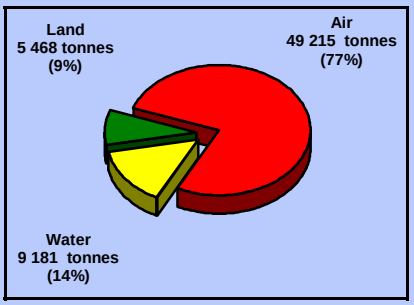



**Number of facilities in Ontario**




**Distribution of facilities in Canada**

# On-site Releases




**On-site releases reported in Ontario by environmental media for 1998**

| NPRI Pollutant | On-site Releases (tonnes) |
|---|---|
| Ammonia (total) | 12 111 |
| Hydrochloric acid | 7 386 |
| Xylene (mixed isomers) | 4 760 |
| Toluene | 4 589 |
| Methanol | 4 381 |

**Five NPRI pollutants released on site in the largest quantities in Ontario for 1998**

## On-site Releases in Ontario

In 1998, Ontario-based facilities reported releases to air totaling 49 215 tonnes, releases to surface water of 9 181 tonnes, and releases to land of 5 468 tonnes. Total releases may be greater than the sum of the releases by environmental media since releases of less than one tonne could be reported as undifferentiated total releases.

The five pollutants released in the largest quantities in Ontario for 1998 were ammonia (total), hydrochloric acid, xylene (mixed isomers), toluene, and methanol. These pollutants contributed 33 227 tonnes (51.9%) of the total on-site releases in Ontario for 1998.

The industrial sectors in Ontario that reported the largest on-site releases in 1998 include: other utility industries, chemical and chemical product industries, primary metal industries, transportation equipment industries, and paper and allied products industries.

## What is Considered a Release?

A release is an on-site discharge of a pollutant to the environment. This includes emissions to air, discharges to surface waters, releases to land within the boundaries of the facility and underground injection.

Releases are further subdivided as follows:

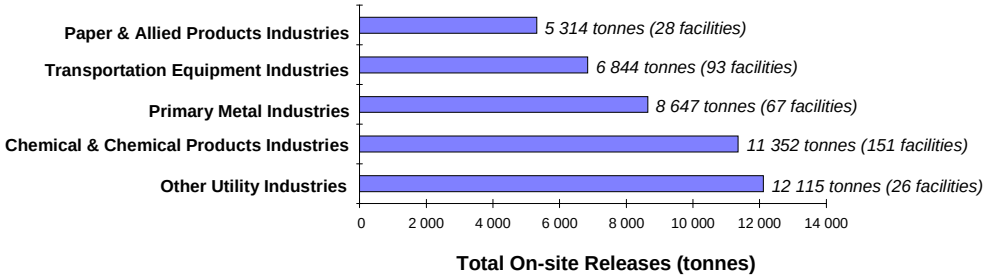
- ***Releases to Air:*** stack/point, storage/handling, fugitive, spills, other non-point
- ***Releases to Surface Water:*** direct discharge, spills, leaks
- ***Releases to Land:*** landfill, land treatment, spills, leaks, other
- ***Underground Injection***

Releases to surface waters do not include transfers to municipal sewage treatment plants. These are considered transfers to off-site facilities and are reported accordingly.

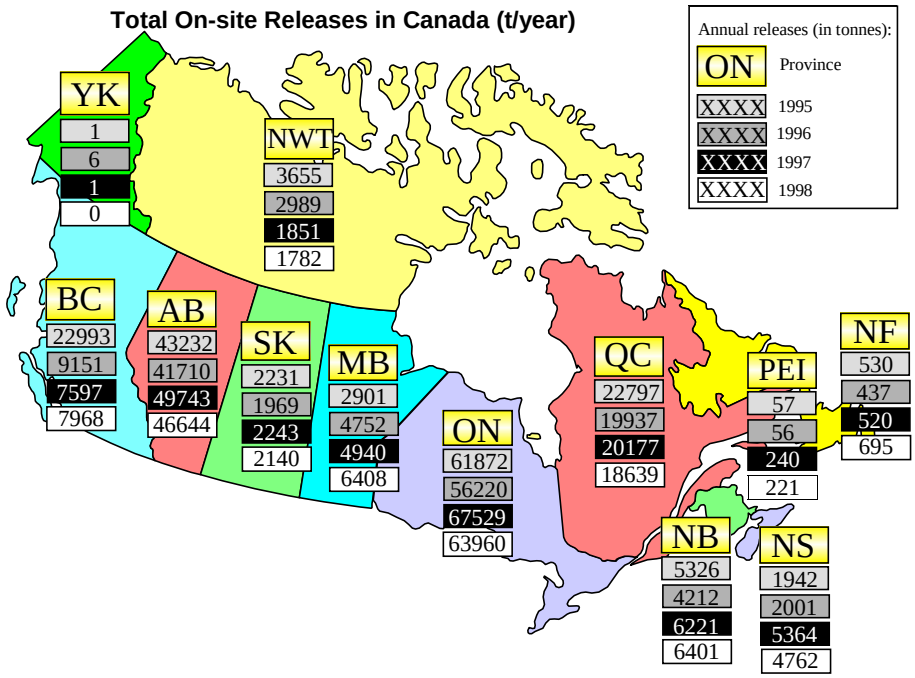
A leak differs from a spill in terms of the time required for an event. Spills normally occur over a period of hours to days, whereas leaks occur over periods of days to months.

Underground injection is one method of waste disposal. Wastes are injected into known geological formations, generally at great depths. No facilities in Ontario reported this type of release.

### Industrial Sectors Reporting the Largest On-site Releases in Ontario




### Total On-site Releases in Canada (t/year)



# Off-site Transfers for Disposal

## What are Transfers for Disposal?

A transfer is a shipment of a listed pollutant **in waste** to an **off-site location**. Facilities must provide the name and location of the off-site facility receiving the shipment. Waste is defined as material that is sent for final disposal or for treatment prior to final disposal. Five treatment methods are listed for off-site transfers for disposal:

- physical treatment such as encapsulation and vitrification,
- chemical treatment such as stabilization and neutralization,
- biological treatment such as bio-oxidation,
- incineration or thermal treatment where energy is not recovered, and
- municipal sewage treatment plant (MSTP).

Additionally, there are four off-site disposal methods listed:

- containment in a landfill,
- containment in other storage,
- underground injection where pollutants are injected into known geologic formations, and
- land treatment used for the purpose of land application or land farming.

Off-site transfers for disposal are reported separately from on-site releases because:

- off-site transfers represent a movement of the pollutant to a different geographic location than that of the facility,
- transfers off-site may not necessarily represent entry of the pollutant into the environment,
- management of the pollutant becomes the responsibility of another owner or operator,
- reporting on off-site transfers completes information on fate of the pollutant, and
- wastes could be transferred a number of times leading to some double counting.

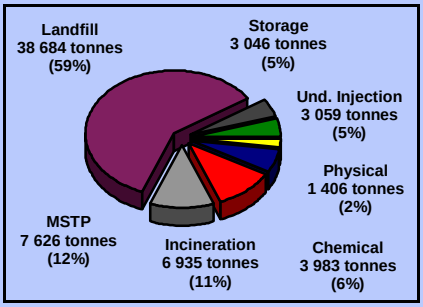
The NPRI requires that only the quantity of the listed pollutant in the waste be reported. Waste materials, such as sludge, are often a mixture of many compounds associated with water and other inert material with a small quantity of potentially hazardous pollutants. As a result, the total reported to the NPRI may be smaller than the quantity reported in other inventories since only the net weight of a listed pollutant is reported.

## Off-site Transfers for Disposal in Ontario

In 1998, NPRI facilities in Ontario reported off-site transfers for disposal totaling 65 515 tonnes. Off-site transfers of waste for treatment prior to final disposal accounted for 20 347 tonnes (31.1%), and off-site transfers sent directly to final disposal accounted for 45 168 tonnes (68.9%).

In 1998, the five pollutants transferred off site for disposal in the largest quantities in Ontario were zinc (and its compounds), manganese (and its compounds), nitrate ion in solution (pH ≥ 6.0), sulphuric acid, and xylene (mixed isomers). These pollutants contributed 42 207 tonnes (64.4%) of the total off-site transfers for disposal in Ontario.

The industrial sectors in Ontario that reported the largest off-site transfers for disposal in 1998 include: primary metal industries, business service industries, chemical and chemical products industries, fabricated metal products, and other utility industries.

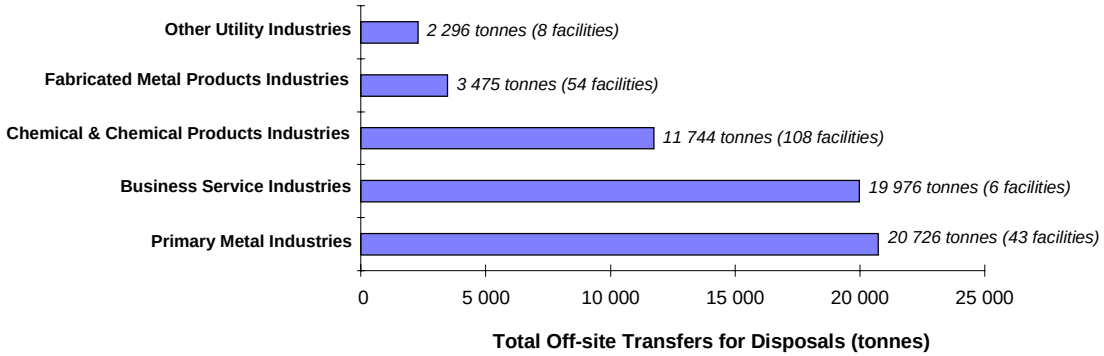



**Off-site transfers for final disposal and treatment prior to final disposal in Ontario for 1998**

| NPRI Pollutant | Off-site Transfers (tonnes) |
|---|---|
| Zinc (and its compounds) | 23 650 |
| Manganese (and its compounds) | 5 184 |
| Nitrate ion in solution (pH ≥ 6.0) | 4 842 |
| Sulphuric Acid | 4 271 |
| Xylene (mixed isomers) | 4 260 |

**Five NPRI pollutants transferred off site for disposal in the largest quantities in Ontario for 1998**

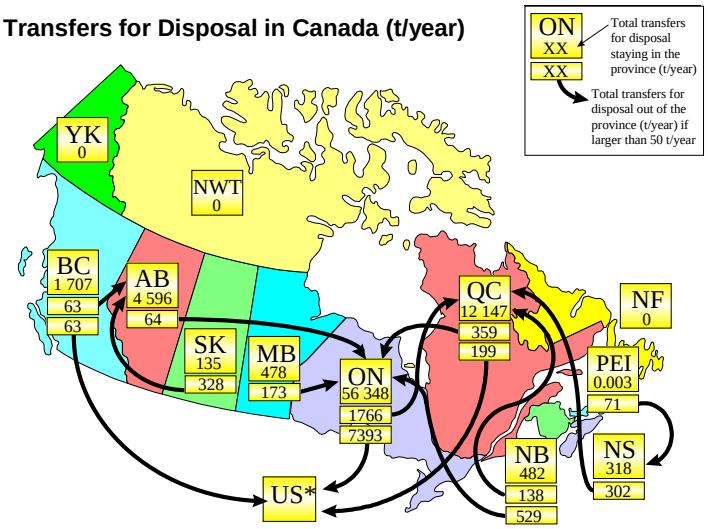
**Industrial Sectors Reporting the Largest Off-site Transfers for Disposal in Ontario**



# Off-site Transfers for Disposal (cont'd)

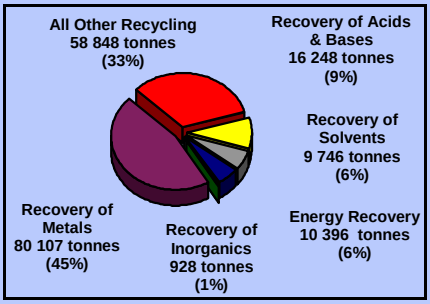
Most of the pollutants being transferred off site for disposal from Ontario remained within provincial boundaries (86%). Other Canadian provinces (Alberta, Nova Scotia and Quebec) received 1 774 tonnes (3%) of Ontario's off-site transfers for disposal, and other countries (United States and Germany) received 7 394 tonnes (11%). In addition, Ontario receives 1 155 tonnes of off-site transfers for disposal from other provinces within Canada (Alberta, Manitoba, New Brunswick, Nova Scotia, Quebec and Saskatchewan). This map shows the total transfers for disposal out of the province that exceed 50 tonnes per year. The totals quoted above include all transfers for disposal.

**Total Transfers for Disposal in Canada (t/year)**




* NOTE: Information on waste transferred into Ontario from other countries (i.e., the United States) is not collected under the NPRI program. Quantities of waste transferred into Ontario are reported separately, and tracked by the department through Import and Export of Hazardous Waste Regulations.

# Off-site Transfers for Recycling




**Off-site Transfers for Recycling in Ontario for 1998**

As with off-site transfers for disposal, recycling activities (including energy recovery) represent a physical movement of a substance to an off-site facility under the jurisdiction of another owner or operator. Facilities are requested to report the name and address of the receiving off-site facility. Reporting for recycling became mandatory for the 1998 reporting year.

Generally, substances and materials transferred off site for recycling are not normally released to an environmental medium. Once transferred off site to another facility, the handling and further processing of those substances may result in releases, which may be reportable by that off-site facility if they meet the NPRI reporting criteria.

In 1998, facilities in Ontario reported off-site transfers for recycling totaling 176 274 tonnes. Ten recycling methods are listed for off-site transfers:

- energy recovery;
- recovery of solvents;
- recovery of organic substances (not solvents);
- recovery of metals and metal compounds;
- recovery of inorganic materials (not metals);
- recovery of acids of bases;
- recovery of catalysts;
- recovery of pollution abatement residues;
- refining or re-use of used oil; and
- other recovery, re-use and recycling activities.

Energy recovery applies when energy is recovered from combustion and is used as an alternative to fossil fuels or other forms of energy. Off-site transfers for energy recovery in Ontario accounted for 10 396 tonnes (5.9%), and off-site transfers for all other recycling categories accounted for 165 878 tonnes (94.1%).

| NPRI Substance | Off-site Transfers (tonnes) |
|---|---|
| Zinc (and its compounds) | 36 445 |
| Chromium (and its compounds) | 33 470 |
| Nickel (and its compounds) | 18 627 |
| Sulphuric Acid | 17 953 |
| Manganese (and its compounds) | 17 587 |

**Five NPRI substances transferred off site for recycling in the largest quantities in Ontario for 1998**

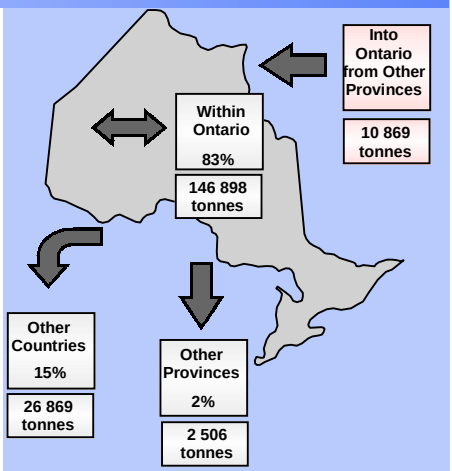
The five substances transferred off site for recycling in the largest quantities in Ontario for 1998 were zinc (and its compounds), chromium (and its compounds), nickel (and its compounds), sulphuric acid, and manganese (and its compounds). These substances contributed 124 082 tonnes (70.4%) of the total off-site transfers for recycling in Ontario for 1998.

# Off-site Transfers for Recycling (cont'd)

Most of the substances being transferred off site for recycling from Ontario-based facilities remained within provincial boundaries (83%). Other Canadian provinces received 2 506 tonnes (2%) of Ontario's off-site transfers for recycling, and other countries (England, Germany and the United States) received 26 869 tonnes (15%). In addition, Ontario receives 10 869 tonnes of off-site transfers for recycling from other provinces within Canada.

| Transfers from Ontario | Off-site Transfers (tonnes) |
|---|---|
| **To Ontario** | **146 898** |
| **To Other Provinces** | **2 506** |
| British Columbia | 53 |
| Manitoba | 127 |
| New Brunswick | 462 |
| Nova Scotia | 1 |
| Quebec | 1 863 |
| **To Other Countries** | **26 869** |
| England | 16 |
| Germany | 1 |
| United States | 26 852 |

| Transfers into Ontario | Off-site Transfers (tonnes) |
|---|---|
| **From Ontario** | **146 898** |
| **From Other Provinces** | **10 869** |
| Alberta | 786 |
| British Columbia | 7 666 |
| New Brunswick | 83 |
| Nova Scotia | 30 |
| Quebec | 2 304 |




**Destinations and quantities of substances transferred off site for recycling from Ontario**

# Toxic and Carcinogenic Pollutants

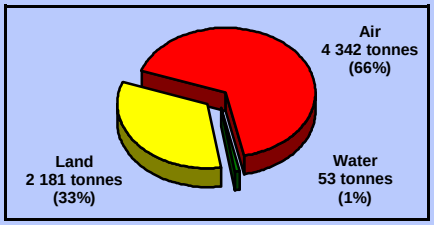
Some substances on the NPRI list may be of particular interest because they have been defined as toxic (under the *Canadian Environmental Protection Act*) or are definite or probable carcinogens. In 1998, 395 facilities in Ontario submitted 666 NPRI-listed CEPA-toxic and carcinogenic pollutant reports. A total of 22 of the 25 CEPA-toxic and carcinogenic pollutants were reported in Ontario for 1998.

On-site releases of NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1998 totaled 6 596 tonnes. Total releases may be greater than the sum of the releases by environmental medium since releases of less than one tonne could be reported as undifferentiated total releases.

The five NPRI-listed CEPA-toxic and carcinogenic pollutants released on site in Ontario for 1998 were chromium (and its compounds), dichloromethane, benzene, trichloroethylene, and lead (and its compounds). These pollutants contributed 5 493 tonnes (83.3%) of the total on-site releases for NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1998.

In 1998, NPRI facilities in Ontario reported off-site transfers of CEPA-toxic and carcinogenic pollutants for disposal totaling 6 757 tonnes. More specifically, off-site transfers for treatment prior to final disposal accounted for 729 tonnes (10.8%), and off-site transfers sent directly for final disposal accounted for 6 028 tonnes (89.2%). Most of Ontario's off-site transfers in waste of CEPA-toxic and carcinogenic pollutants were sent to landfill (82.7%).

The five NPRI-listed CEPA-toxic and carcinogenic pollutants transferred off site for disposal in Ontario for 1998 were lead (and its compounds), chromium (and its compounds), asbestos (friable form), nickel (and its compounds), and mercury (and its compounds). These substances contributed 6 164 tonnes (91.2%) of the total off-site transfers for disposal of NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1998.




**Releases of CEPA-toxic and carcinogenic pollutants in Ontario for 1998**

| NPRI Pollutant | On-site Releases (tonnes) |
|---|---|
| **Chromium (and its compounds)** | **1 757** |
| **Dichloromethane** | **1 565** |
| **Benzene** | **956** |
| **Trichloroethylene** | **798** |
| **Lead (and its compounds)** | **417** |

**Five NPRI-listed CEPA-toxic and carcinogenic pollutants released in the largest quantities in Ontario for 1998**

| NPRI Pollutant | Off-site Transfers (tonnes) |
|---|---|
| **Lead (and its compounds)** | **2 480** |
| **Chromium (and its compounds)** | **2 137** |
| **Asbestos (friable form)** | **918** |
| **Nickel (and its compounds)** | **315** |
| **Mercury (and its compounds)** | **314** |

**Five NPRI-listed CEPA-toxic and carcinogenic pollutants transferred off site for disposal in the largest quantities in Ontario for 1998**

# The NPRI

## Reporting Requirements

Each year, the Minister of Environment publishes a Notice respecting the NPRI in the *Canada Gazette*, under the authority of section 16 of the *Canadian Environmental Protection Act (CEPA)*. The Notice requires the owners or operators of facilities which meet certain criteria to file a report with Environment Canada declaring the amounts of any of the 176 NPRI pollutants released on site to the environment or transferred off site for treatment, disposal, or recycling. In general, facilities must meet all three of the following reporting criteria:

- employees at the facility work 20,000 hours or more in a calendar year, and;
- the facility manufactures, processes or otherwise uses 10 tonnes (10,000 kg) of an NPRI substance, and;
- the substance is at a concentration of 1% or greater, unless produced as a by-product. By-products must be reported at any concentration.

Certain activities are exempt from reporting:

- education and training of students;
- research and testing;
- management of renewable resources;
- primary extraction of ore at mines;
- drilling or operating oil or gas wells;
- maintenance of transportation vehicles;
- distribution, storage and retail sale of fuels; and,
- wholesale or retail sale of products that contain NPRI substances

Prior to 1998, reporting of off-site transfers for recycling was voluntary. In 1998 this reporting became mandatory. As a result, the 1998 NPRI provides a clearer picture of the quantity of NPRI substances which were being diverted for recovery activities instead of being destined for release to the environment or disposal as waste.

Reports of releases and transfers that occur in a calendar year must be submitted by June 1st of the following year. Once the data has been compiled, Environment Canada publishes summary reports and provides public access to the data on the NPRI web site.

## NPRI Substances

In 1998, there were 176 substances on the NPRI list, chosen through a consultation process by a multi-stakeholder committee. The committee includes representatives from public organizations, industrial associations, and government agencies.

Twenty-five of the NPRI substances are classified as toxic under CEPA, or carcinogenic by the International Agency for Research on Cancer (IARC). In general, these pollutants pose a greater risk to the environment and human health.

## 1998 NPRI Reports

This year, Environment Canada will be releasing a series of documents summarizing the NPRI. The series will include: a general overview of the NPRI program; a National Overview summary report; a series of regional and provincial fact sheets; and, supplementary reports on year-to-year trends, substance profiles, and economic indicators. The 1998 National Overview report contains additional context and data analyses not found in this fact sheet, including:

- year-to-year data comparisons;
- national data summaries;
- significant sources of all NPRI pollutants across Canada;
- profiles of possible health and environmental impacts of certain NPRI pollutants;
- summaries of quantitative pollution prevention information reported by facilities; and,
- summary data from other pollutant sources and non-NPRI inventories.

## NPRI Web Site

Access to all NPRI data and program information is provided on the NPRI web site at:

**http://www.ec.gc.ca/pdb/npri/**

From this site, users may:

- download datasets containing current and historic NPRI data;
- conduct on-line queries on NPRI data;
- download current and historic NPRI Summary Reports;
- download Reporting Guides and electronic data reporting forms;
- browse or download public consultation material on modifications to the NPRI;
- link to other pollutant release and transfer registry web sites; and,
- find out how to contact NPRI program personnel.

## Using the data

NPRI data represent only a portion of all pollutant releases and transfers to the environment in Ontario. Other significant pollutants such as greenhouse gases, common air contaminants, ozone-depleting substances, and many pesticides are not on the current NPRI list.

Risk to human health and the environment from on-site releases of pollutants cannot be determined from NPRI data alone. Risk depends on many factors such as the toxicity of the pollutant, the extent of the exposure, the type of release or transfer and the environmental medium receiving the pollutant.

Similarly, different factors must be considered before drawing conclusions on the environmental performance of specific industrial sectors. It is important to consider the relative size of the facility, the complexity of the process and the best available technologies.

Industrial facilities which report to the NPRI operate under stipulations of provincial operating permits and provincial or federal regulations or codes of practice. These permits, regulations and codes may or may not apply to emissions or discharges of all NPRI pollutants.

Facilities are required to file reports based on information to which they may be reasonably expected to have access. In some cases, facilities monitor releases of certain NPRI pollutants according to the requirements of their provincial or operating permits. However, in other cases, they must rely on other methods of estimating releases. Estimates may be based on standard emission factors, mass balance calculations, or other estimation methods.

While over 2000 facilities from a broad range of industrial sectors report to the NPRI across Canada, not all sources of NPRI pollutants are captured by the inventory. For example, the NPRI does not include releases from mobile sources (vehicles and vessels) which are known to be major contributors of certain hazardous air pollutants on the NPRI list.

Facilities that do not meet the reporting requirements because of their size, are not required to report to the NPRI. Collectively however, releases from these sources may account for the majority of releases of some NPRI pollutants.

**national pollutant release inventory**

For further information on the NPRI program, the National Overview and this regional fact sheet, please contact the regional NPRI office of Environment Canada, located at the following address:

National Pollutant Release Inventory
Environment Canada
Environmental Protection Branch
Ontario Region
4905 Dufferin Street, 2nd Floor
Downsview, Ontario
M3H 5T4

Tel: (416) 739-5886
Fax: (416)739-4326

NPRI_Ontario@ec.gc.ca

Canada