



# NPRI in Ontario

## NATIONAL POLLUTANT RELEASE INVENTORY 1997

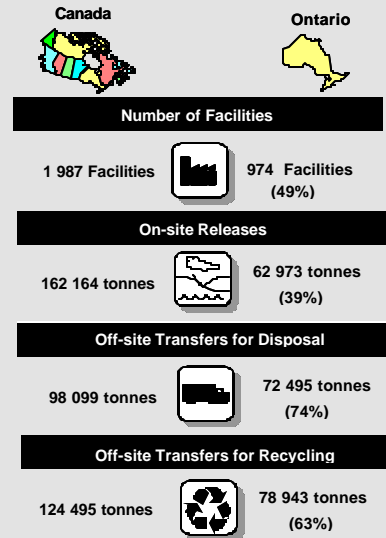


Figure 1. Comparison of NPRI data for Ontario-based facilities to national totals reported in 1997

## 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 1997 NPRI

The 1997 NPRI Summary Report includes data from the National Pollutant Release Inventory for the calendar years 1995, 1996 and 1997 as it appeared in the NPRI database on March 4<sup>th</sup>, 1999. 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 4<sup>th</sup> and September 6<sup>th</sup>, the quantities identified in this fact sheet may at times differ from those listed in the national Summary Report.

## Ontario on a National Scale

In 1997, 1 987 Canadian facilities filed a total of 7 411 reports on pollutants, an average of 3.7 pollutants per facility. In Ontario, 974 facilities filed 3 636 pollutant reports, for an average of 3.7 pollutants per facility.

Canada's NPRI facilities reported on-site releases totaling 162 164 tonnes in 1997, while Ontario-based facilities reported 62 973 tonnes. This represented a 38.8% contribution to the total releases reported in Canada.

Additionally, NPRI facilities across Canada reported off-site transfers of NPRI pollutants for disposal totaling 98 099 tonnes in 1997; with Ontario-based facilities reporting 72 495 tonnes. This represented a 73.9% contribution to the total transfers for disposal reported in Canada.

NPRI facilities across Canada also reported off-site transfers from recycling totaling 124 495 tonnes in 1997; with Ontario-based facilities reporting 78 943 tonnes. This represented a 63.4% contribution to the total transfers for recycling in Canada. It is important to note that recycling activities were optionally reported in 1997.



# On-site Releases

## 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*

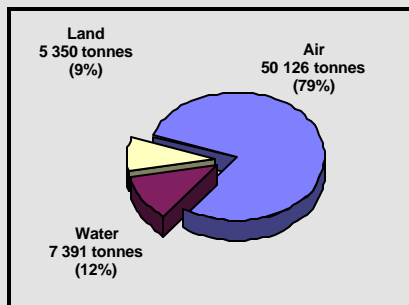


Figure 2. On-site releases reported in Ontario by environmental media for 1997

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 report this type of release.

## On-site Releases in Ontario

In 1997, Ontario-based facilities reported releases to air totaling 50 126 tonnes, releases to surface water of 7 391 tonnes, and releases to land of 5 350 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 1997 were ammonia (total), hydrochloric acid, methanol, xylene (mixed isomers), and sulphuric acid. These pollutants contributed 29 992 tonnes (47.6%) of the total on-site releases in Ontario for 1997.

The industrial sectors in Ontario that reported the largest on-site releases in 1997 include:

1. **Chemical and Chemical Products Industries:**  
12 799 tonnes (144 facilities)
2. **Other Utility Industries:**  
9 768 tonnes (26 facilities)
3. **Primary Metal Industries:**  
9 226 tonnes (60 facilities)
4. **Transportation Equipment Industries:**  
6 961 tonnes (89 facilities)
5. **Paper and Allied Products Industries:**  
5 555 tonnes (29 facilities)

CAS #	NPRI Pollutant	On-site Releases (tonnes)
NA	Ammonia (total)	9 960
7647-01-0	Hydrochloric acid	5 183
67-56-1	Methanol	5 047
1330-20-7	Xylene (mixed isomers)	4 934
7664-93-9	Sulphuric acid	4 868

Table 1. Five NPRI pollutants released on site in the largest quantities in Ontario for 1997

# 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 1997, NPRI facilities in Ontario reported off-site transfers for disposal totaling 72 495 tonnes. Off-site transfers of waste for treatment prior to final disposal accounted for 25 995 tonnes (35.9%), and off-site transfers sent directly to final disposal accounted for 46 500 tonnes (64.1%).

In 1997, 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), xylene (mixed isomers), and sulphuric acid. These pollutants contributed 48 346 tonnes (66.7%) of the total off-site transfers for disposal in Ontario.

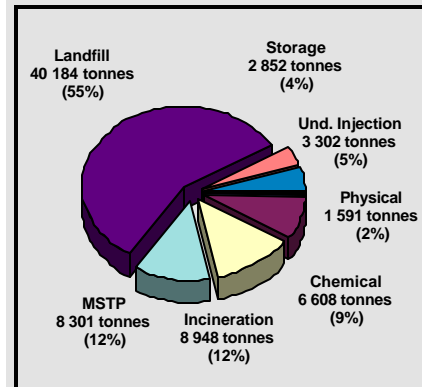


Figure 3. Off-site transfers for final disposal and treatment prior to final disposal in Ontario for 1997

CAS #	NPRI Pollutant	Off-site Transfers (tonnes)
NA	Zinc (and its compounds)	28 560
NA	Manganese (and its compounds)	5 951
NA	Nitrate ion in solution (pH ≥ 6.0)	4 808
1330-20-7	Xylene (mixed isomers)	4 575
7664-93-9	Sulphuric Acid	4 452

Table 2. Five NPRI pollutants transferred off site for disposal in the largest quantities in Ontario for 1997



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

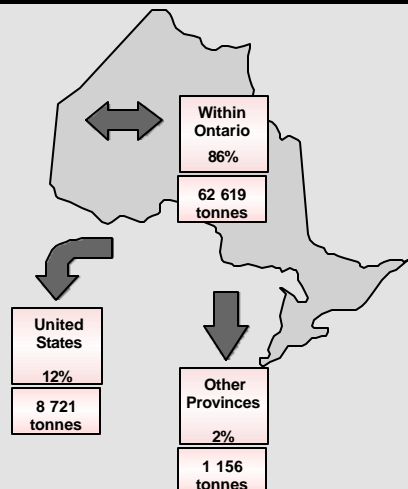


Figure 4. Destinations and quantities of pollutants transferred off site for disposal from Ontario

The industrial sectors in Ontario that reported the largest off-site transfers for disposal in 1997 include:

- Primary Metal Industries:**  
23 237 tonnes (39 facilities)
- Business Service Industries:**  
22 452 tonnes (6 facilities)
- Chemical and Chemical Products Industries:**  
12 170 tonnes (101 facilities)
- Fabricated Metal Products Industries:**  
3 245 tonnes (61 facilities)
- Other Utility Industries:**  
2 594 tonnes (14 facilities)

Most of the pollutants being transferred off site for disposal from Ontario remained within provincial boundaries (86%). Other Canadian provinces received 1 156 tonnes (2%) of Ontario's off-site transfers for disposal, and the United States received 8 721 tonnes (12%).



# Off-site Transfers for Recycling

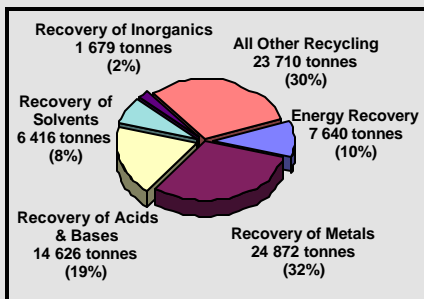


Figure 5. Off-Site Transfers for Recycling in Ontario for 1997

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.

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.

Reporting for recycling was optional for the 1997 reporting year. As a result, the quantities reported here may not represent the true industrial effort toward recycling in Canada. Mandatory reporting for recycling activities began with the 1998 reporting year.

In 1997, NPRI facilities in Ontario reported off-site transfers for recycling totaling 78 943 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.

CAS #	NPRI Substance	Off-site Transfers (tonnes)
7664-93-9	Sulphuric Acid	15 899
NA	Zinc (and its compounds)	11 735
NA	Manganese (and its compounds)	8 847
NA	Copper (and its compounds)	8 746
NA	Lead (and its compounds)	6 911

Table 3. Five NPRI substances transferred off site for recycling in the largest quantities in Ontario for 1997

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

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 7 640 tonnes (9.7%), and off-site transfers for all other recycling categories accounted for 71 303 tonnes (90.3%).

The five substances transferred off site for recycling in the largest quantities in Ontario for 1997 were sulphuric acid, zinc (and its compounds), manganese (and its compounds), copper (and its compounds), and lead (and its compounds). These substances contributed 52 138 tonnes (66.0%) of the total off-site transfers for recycling in Ontario for 1997.

Most of the substances being transferred off site for recycling from Ontario-based facilities remained within provincial boundaries (81%). Other Canadian provinces received 1 273 tonnes (2%) of Ontario's off-site transfers for recycling, and other countries (England, Germany and the United States) received 13 800 tonnes (17%).

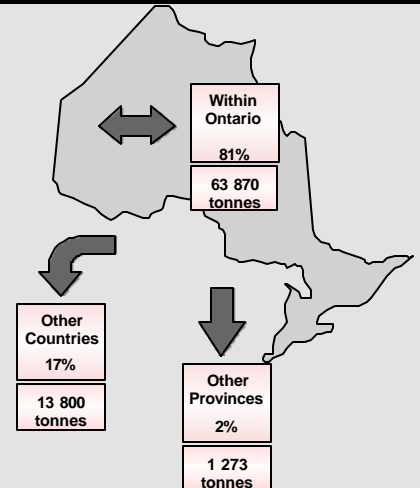


Figure 6. Destinations and quantities of substances transferred off site for recycling from Ontario

# 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 1997, 384 NPRI facilities in Ontario submitted 655 NPRI-listed CEPA-toxic and carcinogenic pollutant reports. A total of 21 of the 24 CEPA-toxic and carcinogenic pollutants were reported in Ontario for 1997.

On-site releases of NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1997 totaled 6 049 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 1997 were dichloromethane, benzene, chromium (and its compounds), trichloroethylene and formaldehyde. These pollutants contributed 4 882 tonnes (80.7%) of the total on-site releases for NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1997.

In 1997, NPRI facilities in Ontario reported off-site transfers of CEPA-toxic and carcinogenic pollutants for disposal totaling 6 723 tonnes. More specifically, off-site transfers for treatment prior to final disposal accounted for 676 tonnes (10.0%), and off-site transfers sent directly for final disposal accounted for 6 047 tonnes (90.0%). Most of Ontario's off-site transfers in waste of CEPA-toxic and carcinogenic pollutants were sent to landfill (85.0%).

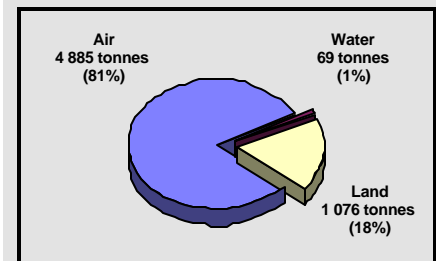


Figure 7. Releases of CEPA-toxic and carcinogenic pollutants in Ontario for 1997

CAS #	NPRI Pollutant	On-site Releases (tonnes)
75-09-2	Dichloromethane	1 733
71-43-2	Benzene	1 141
NA	Chromium (and its compounds)	773
79-01-6	Trichloroethylene	712
50-00-0	Formaldehyde	524

Table 4. Five NPRI-listed CEPA-toxic and carcinogenic pollutants released in the largest quantities in Ontario for 1997



# Toxic and Carcinogenic Pollutants (cont'd)

CAS #	NPRI Pollutant	Off-site Transfers (tonnes)
NA	Lead (and its compounds)	2 911
NA	Chromium (and its compounds)	2 053
1332-21-4	Asbestos (friable form)	779
NA	Nickel (and its compounds)	462
71-43-2	Benzene	157

The five NPRI-listed CEPA-toxic and carcinogenic pollutants transferred off site for disposal in Ontario for 1997 were lead (and its compounds), chromium (and its compounds), asbestos (friable form), nickel (and its compounds), and benzene. These substances contributed 6 361 tonnes (94.6%) of the total off-site transfers for disposal of NPRI-listed CEPA-toxic and carcinogenic pollutants in Ontario for 1997.

**Table 5. Five NPRI-listed CEPA-toxic and carcinogenic pollutants transferred off site for disposal in the largest quantities in Ontario for 1997**



## Where to find information?

All NPRI non-confidential data are available on the Internet at the following address:

<http://www.ec.gc.ca/pdb/npri/>

This web site allows you to have access to information reported by different NPRI facilities. It also includes downloadable files on the detailed data, relevant documents on NPRI (including the software, downloadable version of the reporting guide), related information, and the summary report.

For further information on the NPRI program, the national summary report 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/ (416) 739-5890  
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