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AN INTRODUCTION TO THE NATIONAL POLLUANT RELEASE INVENTORY (NPRI)

Environment Canada Environnement Canada

Canada

Acknowledgements

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Description of the NPRI

What is it?

The National Pollutant Release Inventory (NPRI) was established in 1992 to provide a national, publicly accessible database of pollutants released into the Canadian environment. Each year, releases and transfers of pollutants from facilities nation-wide are reported.

The program's main objectives are to:

- inform the public;
- encourage voluntary reduction and monitor progress;
- set priorities for action.

Almost 2 000 facilities across Canada report to the NPRI on a yearly basis.

Who should report?

Any person who owns or operates a facility must submit an NPRI report for the substances listed only if all three of the following criteria are met:

- employees worked a total of 20 000 hours or more during the year, which is equivalent to 10 full-time employees, **and**
- the facility manufactured, processed or otherwise used 10 tonnes (10 000 kg) or more of an NPRI substance in the calendar year, **and**
- the NPRI substance was manufactured, processed or otherwise used at a concentration greater than or equal to 1% by weight, with the exception of NPRI substances considered to be by-products. The total weight of by-products must also be included in the calculation of the 10-tonne threshold of each NPRI substance.

Beginning with the year 2000, the reporting threshold for some substances, such as toxic micro-polluants, has been lowered to ensure that releases of the substances are reported to the NPRI.

Substances

For the 2000 reporting year, there were 268 substances on the NPRI list, including 55 considered to be carcinogenic (as defined by the International Agency for Research on Cancer) and/or toxic (under the Canadian Environmental Protection Act).
A complete list of the substances is available on the NPRI national web site.

NPRI definitions

Throughout this document, you will notice that certain terms are regularly used. In order to facilitate your understanding of the text, here are the main terms related to the NPRI, with a brief description for each of them:

Facility — All buildings, equipment, structures or other stationary items that are located on a single site or on contiguous or adjacent sites and that are owned by the same company and operated as a single integrated site.
Facilities must meet certain criteria regarding, for an example, the number of employees, the quantity and concentration of substances released.
It is important to differentiate between a facility and a company, since one single company can own and operate many facilities.

Substance — Material of particular or definite chemical constitution; within the NPRI program, the term substance refers to all the polluants listed in the inventory in accordance with CEPA.

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

Off-site transfers — When a listed pollutant is shipped to an off-site location for final disposal, for treatment prior to final disposal, or for recycling., it is identified as an off-site transfer.
In the case of the NPRI, facilities must report their off-site transfers for disposal and for recycling of a pollutant.

Where to find the information

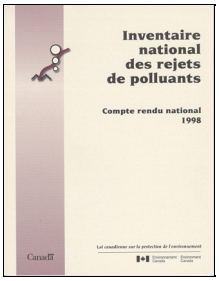
There are many sources of NPRI data. This document deals with the following:

- publications;
- resource persons;
- electronic tools.

Publications

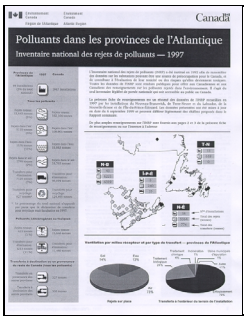
Reports:

Once all facilities have reported, the data are compiled, analysed and formatted. They are then presented in an NPRI annual report, which provides an overview of the year's releases. Annual Reports are available for the years 1993 through 1998.



National Overview 1998

Provincial/Regional fact sheets:



Annually, each of the regional offices produce fact sheets showing key NPRI data for that region or province. They contain, for example, comparative analyses and success stories in a practical, easy-to-use format. Fact sheets are available from regional offices or can be downloaded and printed from the NPRI national web site.

Atlantic region fact sheet

Sometimes, at the request of an organization or in the context of a special event, a region may issue a fact sheet for a specific area or industry. You can find out about and order existing fact sheets from regional NPRI offices, or you can download those versions that are print-ready from the national NPRI web site.

Ressource persons

You can also contact members of the national NPRI team at one of 11 regional offices coast to coast. They will be able to help you find the tools that best meet your needs and show you how to use them. If you are looking for highly specific information, they can assist you in your research.

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Fax : (709) 772-5097

Nova Scotia
Queen Square
45 Alderney Drive, 16th floor
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Fax: (204) 983-0960

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2365 Albert street
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E-mail : nancy.taschuk@ec.gc.ca

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Fax: (867) 667-7962
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5204 - 50th avenue (Franklin)
Yellowknife, NWT X1A 2R2
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Fax: (867)873-8185

Nunavut
National Pollutant Release inventory
Environment Canada
Iqaluit, Nunavut
Tel.: (867) 979-3660
Fax: (867) 979-8608

Electronic tools

The most practical tool for finding information on NPRI is the national NPRI web site at **www.ec.gc.ca/pdb/npri/index.html.**
This site contains a wealth of information on the program and many documents that can be downloaded; it also allows for on-line searches.

CD-Rom with the data

There is a CD-Rom containing all NPRI databases, from 1994 to 1998. This CD-Rom can be obtained by contacting one of the regional offices.

The database

The national NPRI web site contains all information compiled for the inventory, ready for review or downloading from the database. All raw data is stored in .dbf format; you will need software such as *Access* or *dBase* and some knowledge of how to use databases to get the results you want.

Regional sites

Some regions have developed web sites to complement the national site; there you can find information specific to that region.

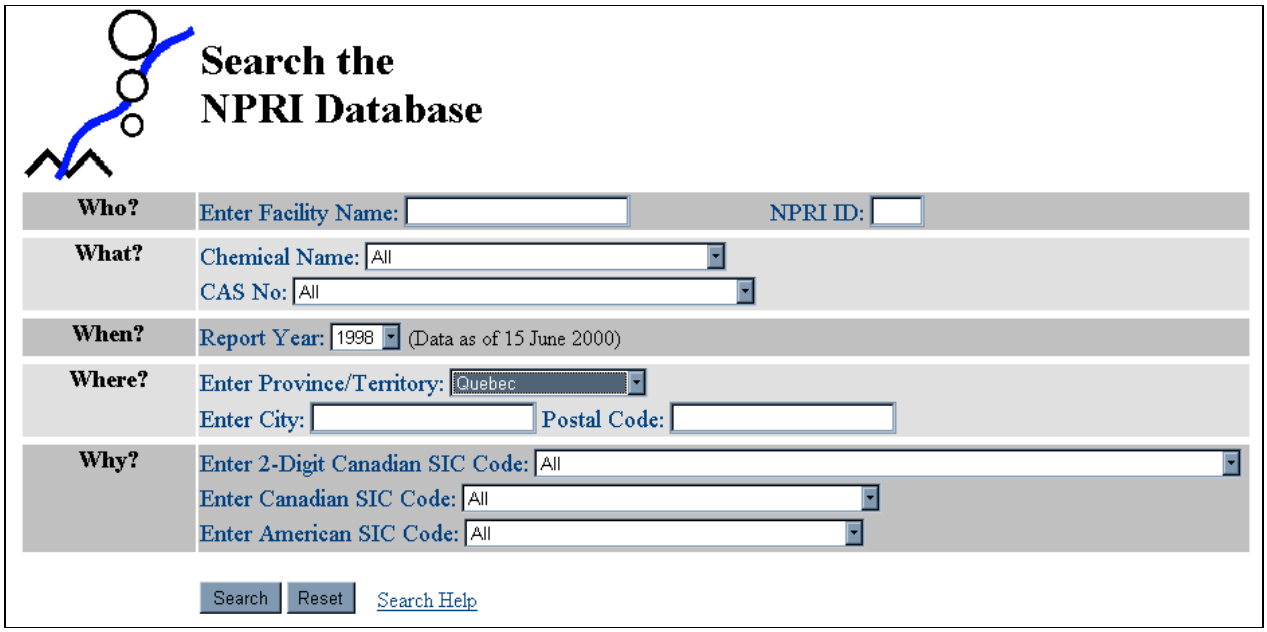
Atlantic region web site

Internet searches

Once on the web site, you can query the database for specific information. The following example shows how an on-line search works and will help you execute your own searches.

Select the search criteria

Enter the name of the substance and of the province chosen (this limits the search and so speeds up the process):



Click on the "Search" button and you will see, for instance, a list of all the facilities in Quebec reporting methanol use:

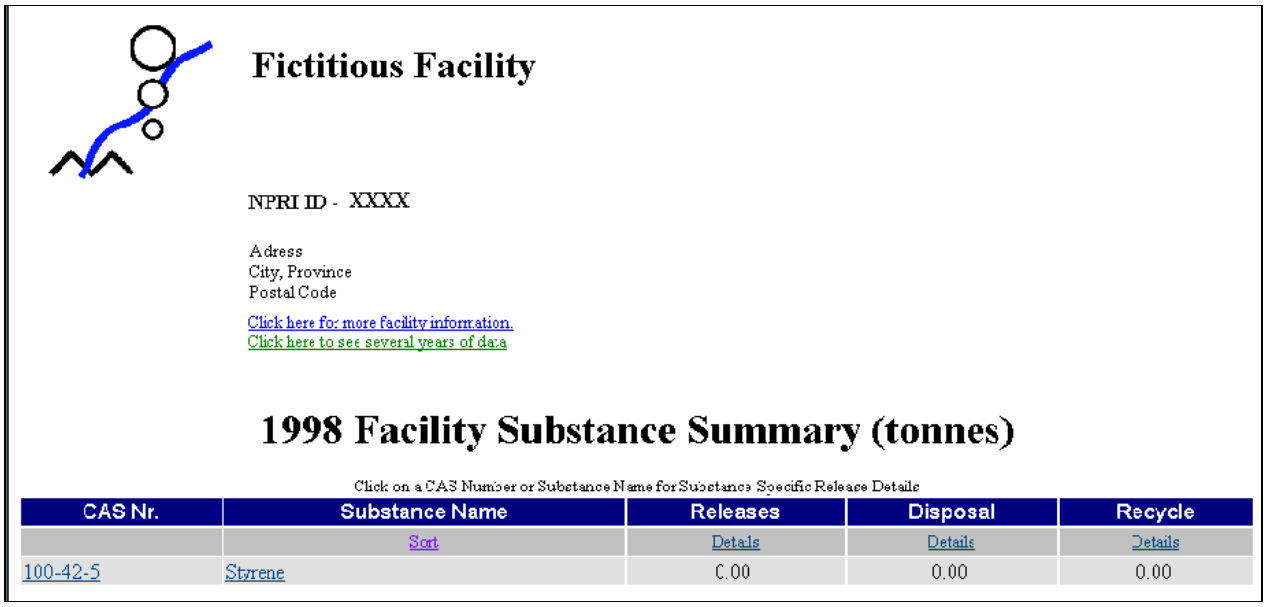
NPRI ID	Report Year	Facility Name	City	Province	Release	Disposal	Recycle
Sort		Sort	Sort	Sort	Sort	Sort	Sort
2752	1998	Abitibi Consolidated Inc - Division Belgo	Shawinigan	QC	.37	0.00	0.00
2502	1998	Abitibi-consolidated - Div. Wayagamack	Trois-Rivieres	QC	0.00	0.00	0.00
2587	1998	Abitibi-Consolidated - Division Laurentide	Grand-Mère	QC	50.11	0.00	0.00
0983	1998	Abitibi-Consolidated Inc. - Division Alma	Alma	QC	.81	0.00	0.00
2636	1998	Abitibi-Consolidated Inc. - Division Port-Alfred	La Baie	QC	18.96	0.00	0.00
4996	1998	Ads Groupe composites/div Beauce Composites	Sainte-Clotilde-de-Beauce	QC	.35	.53	0.00
4369	1998	AKZO NOBEL COATINGS LTD	SAINT JEROME	QC	1.20	.45	0.00
5443	1998	ANACHEMIA CANADA INC	VILLE ST-PIERRE	QC	.30	4.00	0.00
3564	1998	Anachemia Ltee/Ltd	St-Pierre	QC	0.00	0.00	46.30
4407	1998	ARBORITE INC. - ARBORITE DIVISION DE/OF PREMARK CANADA INC.	LA SALLE	QC	.13	.10	0.00
1099	1998	Ashland Chemical Canada Ltd. - Distribution Services	Boucherville	QC	.25	0.00	1.54
5436	1998	BALCAN PLASTICS LTD - SAME	ST LEONARD	QC	.30	0.00	0.00
0007	1998	Borden Chemical Canada Ltd. - Borden Chemical - Laval	Laval	QC	5.28	0.00	0.00
0929	1998	Bowater Pulp and Paper Canada Inc. - Usine de Gatineau	Gatineau	QC	1.49	0.00	0.00
0156	1998	Canada Colors and Chemicals limited - Montreal Facility	Ville St. Laurent	QC	.07	.37	0.00
3140	1998	Cartons St-Laurent inc. - Cartons St-Laurent inc. LaTuque	LaTuque	QC	353.05	0.00	0.00
		Cartons St-Laurent inc. - Cartons St-Laurent inc. Usine de					

In-depth Internet searches: two options

At this stage, you have two options: you can either click on one of the facilities listed for more detailed information (**option 1**), or you can opt for an in-depth search on the substance itself (**option 2**).

Option 1

For each facility, this is the screen you will see:



Fictitious Facility

NPRI ID - XXXX

Adress
City, Province
Postal Code

Click here for more facility information.
Click here to see several years of data

1998 Facility Substance Summary (tonnes)

Click on a CAS Number or Substance Name for Substance Specific Release Details

CAS Nr.	Substance Name	Releases	Disposal	Recycle
	Sort	Details	Details	Details
100-42-5	Styrene	C.00	0.00	0.00

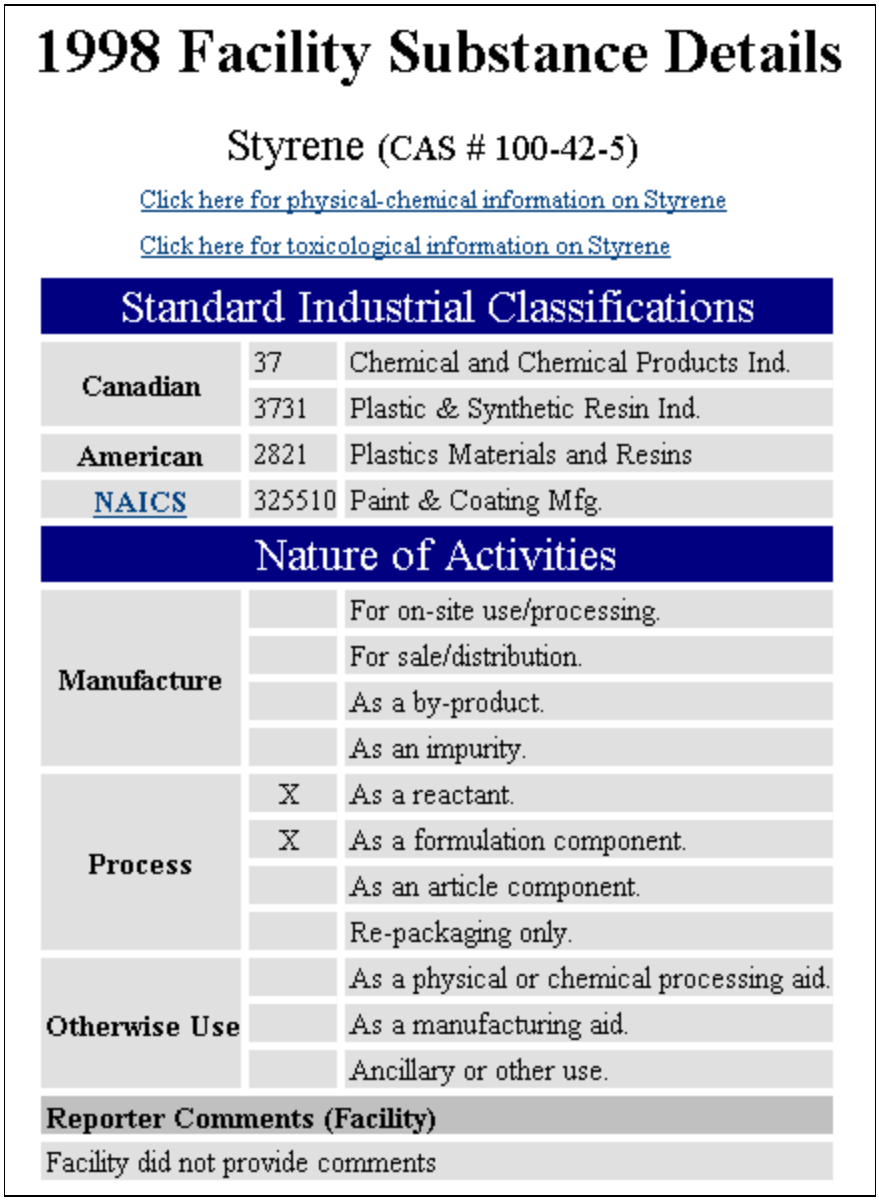
Other information on the facility:

For any given facility, you can also find the following data:

- graphs showing releases of each substance;
- detailed information on the facility: addresses, contacts, etc.;
- multi-year reviews showing release trends;
- maps showing where facilities are located.

Information on pollutants released by a facility

If you click on one of the substance names reported by the facility, this is what you will see:



1998 Facility Substance Details

Styrene (CAS # 100-42-5)

Click here for physical-chemical information on Styrene

Click here for toxicological information on Styrene

Standard Industrial Classifications		
Canadian	37	Chemical and Chemical Products Ind.
	3731	Plastic & Synthetic Resin Ind.
American	2821	Plastics Materials and Resins
NAICS	325510	Paint & Coating Mfg.

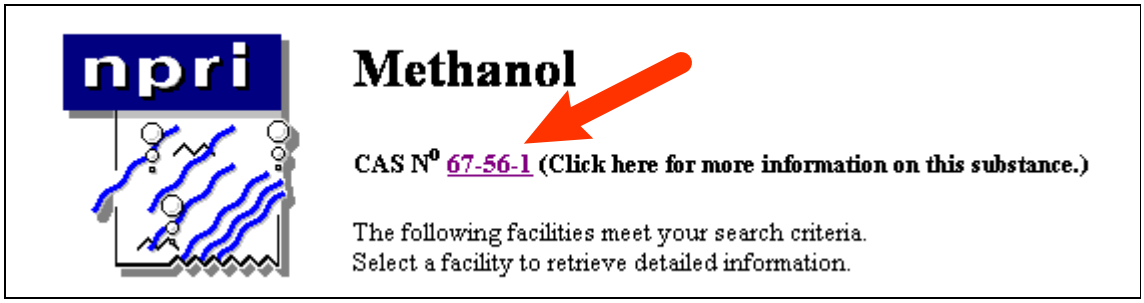
Nature of Activities		
Manufacture		For on-site use/processing.
		For sale/distribution.
		As a by-product.
		As an impurity.
Process	X	As a reactant.
	X	As a formulation component.
		As an article component.
		Re-packaging only.
Otherwise Use		As a physical or chemical processing aid.
		As a manufacturing aid.
		Ancillary or other use.

Reporter Comments (Facility)
Facility did not provide comments

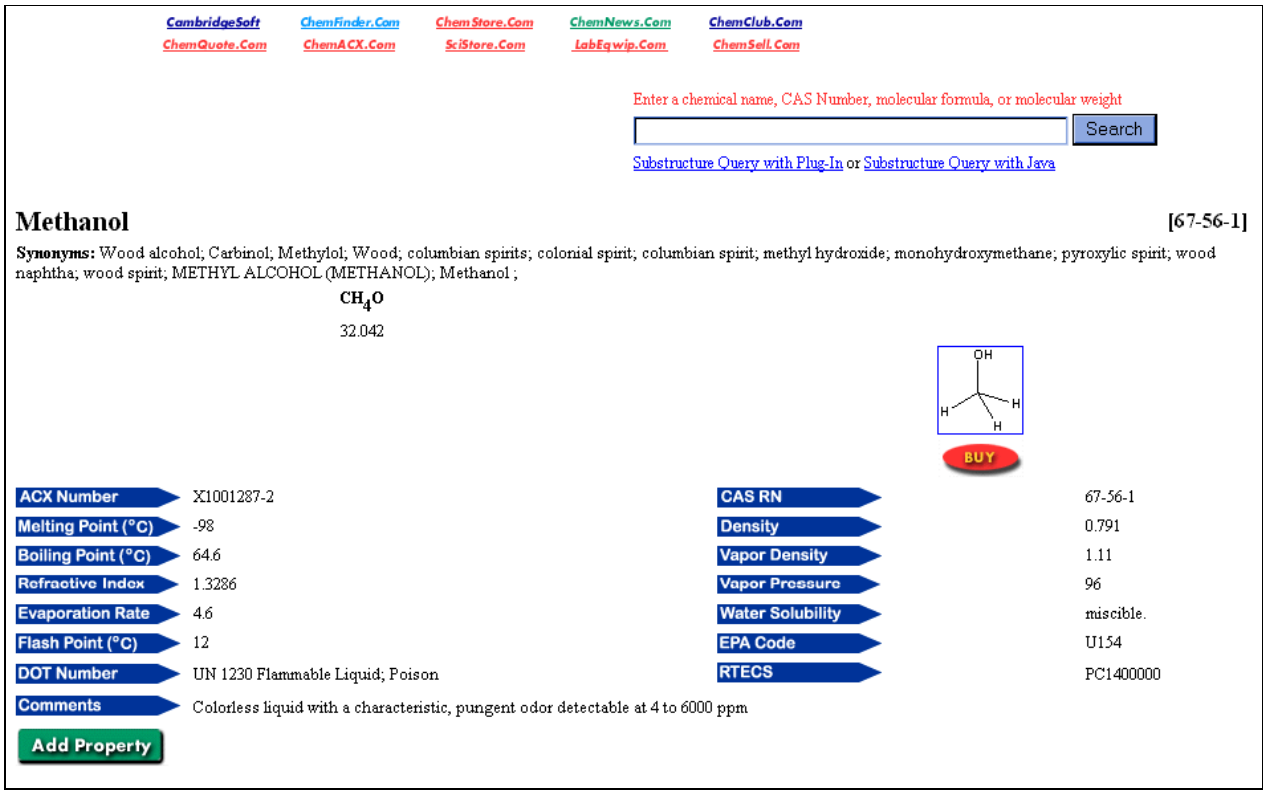
From this window, you can click on links to obtain either physical and chemical or toxicological data on the substance you have selected.
These links take you to another Internet site where technical information on most known chemical substances, including those listed by NPRI, is stored.

Option 2

If you are mainly interested in information on a particular substance, you should take a slightly different approach: when you reach the screen below, click on **CAS number** for the information sought.



Clicking on this number takes you to the Internet site where technical data on most known chemical substances are compiled (www.chemfinder.com). This is the information you would obtain on methanol:



The site also has many links to other sites dealing with the same substance but from different perspectives.

What can I do with the data?

Depending on the search criteria you selected, you will obtain different kinds of results. Some data will be more useful than others, according to your interests or field of work.

I work with environmental protection agencies:

- I can find out which facilities in my region have cut back their releases in recent years;
- I will know which facilities take pollution prevention measures;
- I can publicize the information among friends, family and colleagues;
- I can initiate prevention or restoration projects, and
- I can work with facilities to improve local environmental quality.

I work with public health agencies:

- I will know whether facilities in my area are releasing carcinogenic or toxic substances;
- I will be able to undertake impact studies, and
- I will be able to inform the medical community.

I am a teacher:

- I can use the data to make my students aware of environmental issues;
- I can use the database to teach my students how to do research;
- I can initiate environmental projects.

I work for civil protection agency:

- I will know which facilities in the area of interest harbour explosive, flammable, poisonous or otherwise hazardous substances;
- If an emergency occurs at the facility, I will have some idea of what to expect when I go in;
- I will be able to inform my partners and plan my action with them on the basis of the data I have.

I am a concerned citizen:

- I can pressure facilities in my neighborhood to adopt more pollution prevention measures;
- I can contact my Member of Parliament to urge debate of environmental issues;
- I can exert pressure on authorities where there are problems;
- I can work with other organizations and tell them about the NPRI.

Conclusion

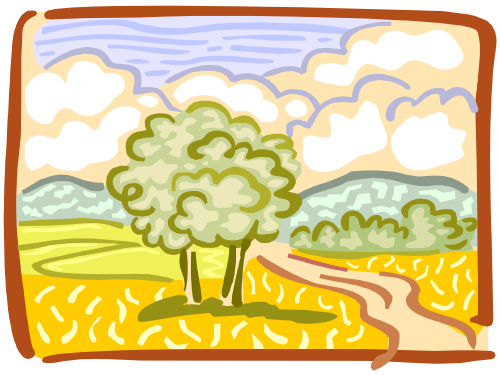
This document provides an introduction to the National Pollutant Release Inventory. Its purpose is to demonstrate the many possible uses of this research tool. We hope that it will help you to be more effective in working to protect the quality of our environment.

The National Pollutant Release Inventory is constantly evolving. Substances and facilities may change from year to year. Publications are updated annually, new tools are produced, and new methods for gathering information are developed. Keep your eyes open for the innovations that regularly appear on the web site. The data included in the inventory, however accurate, represent only part of the picture, a fraction of all the chemical products discharged or transferred to the Canadian environment.

Other substances (for example, greenhouse gases such as carbon dioxide and methane) are reported in other inventories or administered under other programs. Moreover, pollutant releasing facilities are only required to report to the NPRI if they meet a number of criteria (number of employees, quantities manufactured, processed or otherwise used or transferred, etc). For this reason it is important to gather information from a number of sources available across the country to obtain a more complete understanding of the situation.

Another consideration is that the impact of releases depends on a range of factors: the toxicity of the substance, conditions and duration of exposure, type of release and target environment (water, air or soil). Large releases of one substance may do less damage than another, even if the quantities vary widely.

Finally, the NPRI, despite its limitations, is an effective and useful tool for citizens who want to learn more and get involved in environmental protection. Everyone can use the inventory data to help improve the quality of our environment.



Glossary

CAS — *Chemical Abstract Service*, a unique registry number for a substance, allowing its identification in spite of its many aliases.

Carcinogenic — A substance is considered to be carcinogenic by the International Agency for Research on Cancer: capable of increasing the incidence of malignant neoplasm or tumour.

SIC Code — Standard Industrial Classification ; numerical identifiers for different types of businesses and industries.

Criteria — *CEPA* requires any facility located in Canada to produce a report if it meets the following criteria:

- employees worked a total of 20 000 hours or more during the year (equivalent to 10 full-time employees) ;
- the facility manufactured, processed or otherwise used 10 tonnes of more of a NPRI substance during the year, and its concentration was greater than 1% (except for by-products).

Lower reporting thresholds have been established for some substances, such as micro-pollutants, beginning in the year 2000.

Disposal — There are eight major disposal methods:

- physical, chemical or biological treatment ;
- incineration or thermal treatment;
- containment;
- municipal sewage treatment plant (MSTP);
- underground injection
- land treatment

CEPA — *Canadian Environmental Protection Act.*

Recycling — For the NPRI, a substance may be recycled by the following methods:

- recovery of energy, solvents, organic substances, metals and metal compounds, inorganic materials, acids or bases, catalysts, and of pollution abatment residues;
- refining or reuse of used oil

Toxic — In accordance to the CEPA, a substance will be considered as toxic if its presence may have an immediate or long-term harmful effect on the environment and/or health.

Appendix

Methanol: the story of a substance

In general, the public is unaware of the properties and uses of toxic substances, yet they are present in some way or other in our daily lives; thus, it might be worth learning more about them. Therefore, the following presentation on and description of a specific substance may serve as a useful example for users of NPRI information, explaining its possible effects on the environment and human health.

Characteristics

Colourless, transparent liquid which readily evaporates
Strong odour at room temperature
a.k.a.: methyl alcohol, wood alcohol or carbinol

Uses for methanol

Methanol is used in the manufacture of the following products:

Pesticides
Pharmaceuticals
Paint stripper
Antifreeze
Gasoline
Cleaning products

It is also found as a solvent in the following products:

Resins
Adhesives
Ink
Pharmaceuticals

Sources

Methanol may come from the following sources:

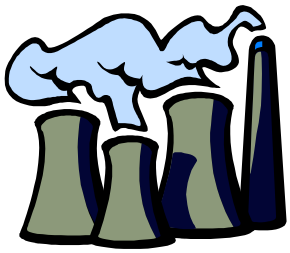
Pulp and paper plants
Chemical (eg plastics) plants
Crude oil and natural gas extraction processes
Vehicles
Volcanoes and hot springs
Biological breakdown of garbage
Sludge
Waste water
Wood stoves

Forms found in the environment

When methanol is used in industrial processes, it evaporates and is discharged into the air, which is why most methanol releases are reported as gas emissions. This substance gets into the environment for the following reasons:

- It may mix with rainwater and drain away in run-off;
- It tends not to stay in the soil but to evaporate into the atmosphere;
- It may be broken down by microbial action and penetrate the water table.

Environmental effects



Information on the environmental effects of methanol is very limited; for this reason, caution is called for. The known effects of methanol are:

- It breaks down into other substances which contribute to smog formation;
- It is a low-level toxin for aquatic and land organisms;
- In the medium term, it inhibits growth in plants and is fatal to certain animal species;
- In the long term, it may cause fertility problems in animals.

Effects on our health

As in the case of the environment, little is known about the effects of exposure to methanol, though we do know that it may cause the following:

- Visual troubles, even permanent blindness, if absorbed through the skin;
- In heavy concentrations, nausea, vomiting, cardiac depression, liver problems, neurological problems;
- On direct contact, irritation of the eyes, nose, mouth, throat and skin;
- May react with the air and turn into formaldehyde, which is carcinogenic.

This information comes from a range of sources, namely the NPRI Summary Report. There are also programs like NPRI in other countries, and these may be a complementary source, accessible through the tools presented in this document. For the Internet addresses of pollutant inventory programs, please go to the NPRI national web site.