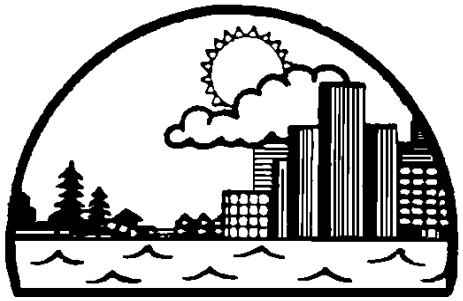
National Pollutant Release Inventory (2000)
&
Toxics Release Inventory (1999):

A Summary Report



Prepared for the Windsor-Essex County Air Quality Committee, April 2002

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http://www.mnsi.net/~cea

POLLUTANT RELEASE AND TRANSFER REGISTRIES: NATIONAL POLLUTANT RELEASE INVENTORY 2000 AND THE TOXICS RELEASE INVENTORY 1999 SUMMARY REPORT

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Introduction: What are Pollutant Release and Transfer Registries (PRTRs)?

PRTRs refer to data collected by national governments under a reporting system to track the sources, handling and release of industrial pollutants. The information includes data on the amounts of listed pollutants released by the facilities to the air, water and land. The facilities also report information about transfers off-site for disposal, treatment or recycling.

In Canada, the NPRI is the only legislated, nation-wide, publicly accessible pollutant inventory. There are 268 substances listed in the NPRI for the 2000 reporting year; 55 substances are designated toxic by the Canadian Environmental Protection Act. The 2000 NPRI report is the eighth annual release since the program's inception in 1992.

The NPRI is based upon the US Toxics Release Inventory (TRI). The 1999 reporting year is the thirteenth reporting year of the TRI. The TRI was established by the Emergency Planning and Community Right-to-Know Act of 1986, it was expanded to include more data by the Pollution Prevention Act of 1990. Currently, there are approximately 650 pollutants and pollutant categories in various industrial sectors and federal facilities tracked by the TRI.

The goals of the NPRI and TRI are to empower citizens, through information, to hold companies and governments accountable in terms of the management of pollutants. The active dissemination of the contents of these inventories to the public is vitally important for the efficacy of the inventory process.

A number of factors limit the efficacy of the NPRI and TRI. Data from these inventories represent only a small proportion of the total pollutant emissions in each country on an

annual basis. Not all sources of pollutants are listed in the inventories. Many pollutants are not currently included in the inventories. Thresholds determine which industries must report and many sources that do not meet the thresholds are excluded. Other sectors are exempted from reporting. Long-range transboundary air pollution from other countries is not tracked by these inventories.

Risk to the environment and human health cannot be determined by data from the NPRI and TRI exclusively, other information is required to determine these risks. Thus, these inventories do not represent a comprehensive assessment of pollutant loadings or impacts to the environment.

This report is the fifth review of NPRI data published by the Citizens Environment Alliance (CEA) and the first to combine NPRI data for Essex County with TRI data from Wayne County. Three primary sources of information were used to complete this summary report: *Taking Stock '98 – North American Pollutant Releases and Transfers*; the Toxic Release Inventory Database of 1999, and; the National Pollutant Release Inventory database of 2000. These sources were the most up-to-date inventories available.

Report Highlights

- **A total of 41 facilities from Essex County submitted reports to the NPRI in 2000, while 165 facilities from Wayne County submitted reports to the TRI in 1999**
- **Facilities in Essex County reported 51 pollutants, 11 designated toxic, to the NPRI in 2000**
- **Facilities in Wayne County reported 129 pollutants, 41 designated carcinogenic, to the TRI in 1999**
- **On-site releases from facilities in Essex County totaled 4,689 tonnes in 2000**
- **On-site releases from facilities in Wayne County totaled 8,401 tonnes in 1999**
- **ADM Agri-Industries of Windsor ranked third in Canada for the release of *n*-hexane**
- **General Chemical of Amherstburg ranked sixth in Canada for the release of ammonia (total)**

METHODOLOGY

This report mimics the format of the 1999 TRI, 2000 NPRI and previous CEA summary reports. The limitations of the TRI and NPRI databases apply to this report since the primary sources of information for this report were derived from the databases.

All facilities in Wayne County and Essex County required to report to their respective inventories are included in information presented in this report. Facilities located in Tilbury are considered to be part of Essex County.

Data in this report were compiled from the NPRI and TRI databases in March 2002. Where necessary, TRI data were converted to metric measurements for comparative purposes. Updates are frequently made to these databases and may differ with the data compiled in this report.

TERMINOLOGY

The NPRI and TRI share some common terms used to describe what the inventories measure. However, the TRI has a special method for classifying transfers of metals. In the TRI transfers of metals to sewage, treatment or energy recovery are considered releases, because metals are not destroyed by treatment or burned in energy recovery.

This report lists categories based on the *Taking Stock 1998* report. "On-site releases" describes pollutant releases that occur at the facility-i.e., releases to the air, water, underground injection, and landfills "on-site". "Off-site releases" describes pollutants sent off-site to other locations for disposal, including metals sent to treatment, sewage and energy recovery for TRI substances.

The terms pollutant, substance, and chemical are used interchangeably in this report.

ANALYSIS

Structural Differences Between the NPRI and TRI

Tables 1.0 and 1.1 list some of the similarities and differences between the NPRI and TRI.

Table 1.0 NPRI and TRI Reporting Features

	U.S. TRI	Canadian NPRI
Who reports?	• Federal facilities, manufacturing, coal and metal mining, electric utilities, hazardous waste treatment and disposal facilities, solvent recovery facilities, petroleum bulk terminals, and chemical wholesale distributors • Facilities must meet reporting thresholds	• Any facility that meets reporting thresholds • Exemptions are numerous (see footnote # 3)
Number of listed pollutants	650 pollutants	268 pollutants
What media are assessed?	Air, water, land, underground injection, transfers to recycling, energy recovery, treatment, sewage, and disposal	Air, water, land, underground injection, transfers to recycling, energy recovery, treatment, sewage, and disposal
Is facility reporting mandatory?	Yes	Yes
How often are data released to the public?	Annually	Annually
How does the public access data?	Annual summary report; full database publicly accessible	Annual summary report; full database publicly accessible

Table 1.1 Structural Differences between the NPRI and TRI Programmes

		TRI	NPRI
Number of Substances		650[1]	268
Reporting Thresholds	Manufacture	11.34 tonnes (25,000 pounds)	10 tonnes (22,050 pounds)
	Process	11.34 tonnes (25,000 pounds)	10 tonnes (22,050 pounds)
	Otherwise Use	4.54 tonnes (10,000 pounds)	10 tonnes (22,050 pounds)
Sectors		Manufacturing sectors with some other sectors[2]	All sectors[3]

[1] Number is greater than 650 due to chemical categories that include more than one chemical.

In the U.S. the EPA set alternate thresholds for pollutants' potential to persist and bioaccumulate in the environment. The two levels include setting manufacture, process and otherwise use thresholds at 100 pounds for these pollutants and 10 pounds for that subset of pollutants that are highly persistent and highly bioaccumulative. Dioxin and dioxin like compounds received special consideration because these highly persistent and highly bioaccumulative compounds are manufactured in extremely small amounts. The threshold for the dioxin and dioxin-like compound category was set at 0.1 gram. These alternate thresholds apply to the 2000 TRI reporting year.

In certain cases facilities are not required to count the amount of the TRI chemical present in a mixture if its concentration is less than 1 percent of the mixture, or its concentration is less than 0.1 percent of the mixture when the chemical is defined by the Occupational Safety and Health Administration (OSHA) as carcinogenic. These exemptions do not apply to chemicals designated as persistent, bioaccumulative and toxic (PBT).

Three criteria had to be met before a facility was required to report to the NPRI in 2000:

1. Employees worked a total of 20,000 hours or more (equivalent to 10 full-time employees) during the calendar year.
2. The facility manufactured, processed or otherwise used 10 tonnes or more of an NPRI substance in the calendar year.
3. 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 products considered to be by-products. By-products, regardless of their weight must be included in the concentration of the 10-tonne threshold for each NPRI substance.

Some significant changes were made to the NPRI for the reporting year 2000, specifically regarding reporting thresholds for some substances that were not being listed due to excessive threshold reporting requirements. The following changes were made to the NPRI for the year 2000:

- Four substances were added to the NPRI with the original 10-tonne and 1% concentration reporting thresholds;

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[2] Manufacturing sectors include SIC codes 20-39. Additionally, since the 1998 TRI metal mining (with some exceptions), coal mining (with some exceptions), electrical utilities that combust coal and/or oil, Resource Conservation and Recovery Act Subtitle C hazardous waste treatment and disposal facilities, chemicals and allied products wholesale distributors, petroleum bulk plants and terminals and solvent recovery services are required to report to the TRI.

[3] There are some exemptions: educating or training students, such as universities, colleges and schools; research or testing; the maintenance and repair of transportation vehicles; the distribution, storage or retail sale of fuels; the wholesale or retail sale of articles or products which contain NPRI substances, provided that the substances are not released to the environment during normal use at the facility; the retail sale of NPRI substances; growing, harvesting or managing renewable natural resources, such as fisheries, forestry or agriculture, but not those facilities that process or otherwise use their products; mining, but not those facilities engaged in further processing of mined materials; drilling or operating wells to obtain oil and gas products, but not those facilities engaged in further processing of these oil and gas products; and, dentistry.

- The reporting threshold for mercury (and its compounds) was reduced from 10 tonnes to 5 kg and the 1% concentration threshold was removed;
- Seventeen polycyclic aromatic hydrocarbons (PAHs) were added at a threshold in which any individual PAH was incidentally manufactured and the quantity of all PAHs released on site or transferred off site as the result of incidental manufacture together totaled 50 kg or more, except in the case of wood preservation using creosote;
- Polychlorinated dibenzo-*p*-dioxins (dioxins) and dibenzofurans (furans) were added as a single substance group with an alternate reporting threshold, in grams of toxicity equivalent (TEQ) to the most toxic congener of dioxin (2,3,7,8-tetrachlorodibenzo-*p*-dioxin);
- Hexachlorobenzene (HCB) was added with alternate reporting criteria primarily regarding the type of activity a facility is engaged in;
- The 20 000 hour (10 full-time employee equivalent) employee threshold was removed for facilities used for wood preservation and certain types of incineration.

Alternate thresholds mark an effort to lessen the weakness of excessively high thresholds that both the inventories have in common. However, high thresholds remain a problem, eliminating the inclusion of many smaller polluters, such as dry cleaners, into the inventories. Exclusions due to high thresholds continue to constitute a significant data gap in the NPRI and TRI.

A significant amount of exemptions from reporting also lessen the efficacy of the NPRI and TRI. The exemptions to the NPRI are listed in footnote #3. The 2000 NPRI also includes the exemption of the practice of dentistry due to the reduction of the threshold for mercury (and its compounds). Proprietary information remains a consideration for exclusion from the inventories.

Both inventories rely on the self-reporting of facilities. There is a wide variety of reporting methods within the self-reporting regimen. The various estimation methods include monitoring or direct measurement, mass balance, emission factors and engineering estimates. The range of accuracy of these estimation methods undermines the precision of the inventories.

The pollutant lists included in the inventories have expanded over the years, improving the overall scope of the inventories. However, the pollutants included in the inventories are a small minority of the substances in commercial use and released as pollutants in North America. Furthermore, the potential interaction or synergistic effects of pollutants released is beyond the scope of the inventories.

The Appendix, at the end of this summary, reveals some of the limitations of the NPRI. Tractebel-West Windsor Power reported only two substances to the NPRI in 2000. However, the facility released a far greater amount of pollutants than those listed in the NPRI. A Freedom of Information request filed with the Ontario government revealed a more accurate account of the pollutant releases from West Windsor Power in 2000.

ESSEX COUNTY IN THE 2000 NPRI

The three pollutants released in the greatest quantity in Essex County were ammonia (total), methyl ethyl ketone and *n*-hexane. These three pollutants were also the largest pollutant releases in 1999; the release of *n*-hexane was greater than methyl ethyl ketone in 1999. Two facilities were responsible for the majority of the release of ammonia (total) and *n*-hexane. General Chemical released the largest quantity of ammonia (total) of any facility in Essex County and was ranked sixth in Canada for the release of this substance. ADM Agri-Industries was the only facility to release *n*-hexane in Essex County and ranked third in Canada for the release of this substance.

The three pollutants released in the greatest quantity in Wayne County in 1999 were zinc compounds, barium compounds and hydrochloric acid.

ESSEX COUNTY'S LARGEST POLLUTERS

Table 2.0 The Largest Polluters of Essex County (On-site Releases)

Facility	Air (kg)	Water (kg)	Total (kg)
General Chemical-Amherstburg	2,190,700	119,000	2,209,700
ITW Foils-Windsor	703,410	0	703,410
Lou Romano Water Reclamation Plant-Windsor	0	556,580	556,580
ADM Agri-Industries-Windsor	343,000	0	343,000
LDM Technologies-Leamington	195,200	0	195,200
DaimlerChrysler-Pillette Road Truck Assembly-Windsor	191,820	0	191,820

Table 2.1 Largest Polluters of Essex County, 1999 (On-site Releases)

Facility	Air (kg)	Water (kg)	Total (kg)
General Chemical-Amherstburg	1,885,000	97,000	1,982,000
Maple Roll Leaf-Windsor	616,090	0	616,090
Lou Romano Water Reclamation Plant-Windsor	0	562,750	562,750
ADM Agri-Industries-Windsor	473,500	0	473,500
DaimlerChrysler-Pillette Road Truck Assembly-Windsor	256,710	0	256,710

The ranking of the largest polluters in Essex County remained relatively stable from 1999 to 2000; LDM Technologies of Leamington moved into the top five ranking while the Pillette Road Truck plant dropped to sixth in 2000. General Chemical, ITW Foils (formerly Maple Roll Leaf) significantly increased their on-site releases from 1999. Both facilities noted "changes in production levels" as the reason for the increase in releases from the previous year.

Table 2.2 The Largest Polluters of Wayne County (Releases)

Facility	Air (kgs)	Water (kgs)	Land (kgs)	Off-site	Total
Rouge Steel-Dearborn	16,036	245	0	5,347,528	5,363,809
Wayne Disposal-Belleville	2,209	0	3,178,600	1,626,591	4,807,400
National Steel-Ecorse	142,864	65,950	0	4,499,498	4,708,312
USL City Environmental-Detroit	0	0	0	4,074,477	4,074,477
Detroit Edison-Trenton Channel Power Plant-Trenton	1,189,662	2,280	27,769	323,370	1,543,081

The largest polluters of Wayne County included steel facilities, waste management facilities and power plants.

Table 3.0 Essex County and Wayne County On-site Releases by Media, in kilograms

	Wayne County (1999)	Essex County (1999)	Essex County (2000)	Essex County, % change (1999-2000)
Total Facilities	165	38	41	+7.9
Air	5,105,633 (61%)	3,742,830 (85%)	3,865,057 (82%)	+3.3
Water	81,240 (1%)	685,210 (15%)	823,520 (18%)	+20.2
Land	3,213,908 (38%)	0	10	-
Total[4]	8,400,781 (100%)	4,428,040 (100%)	4,688,587 (100%)	+5.9
Off-Site Transfers for Disposal[5]				
Landfill	-	987,440	616,920	-37.5
Chemical Treatment	-	385,950	461,730	+19.6
Incineration	-	436,400	315,150	-27.8
Underground Injection	-	67,630	77,410	+14.5
Municipal Sewage Treatment Plant	-	31,500	29,200	-7.3
Physical Treatment	-	6,110	15,490	+153.5
Storage	-	679,730	11,570	-
Total	-	2,594,760	1,527,470	-41.1

Note: values have been rounded; changes greater than 500% not included

Releases to the air form the majority of pollutant releases in Wayne and Essex Counties. Wayne County also had a significant amount of releases to land (landfilling). There was a substantial increase in releases to water in Essex County in 2000, primarily due to the inclusion of figures for the release of nitrate to the water from the City of Windsor's sewage treatment plants.

Off-site transfers decreased in Essex County in 2000. Landfilling remained the most significant off-site transfer. As noted previously, the TRI categorizes transfers differently from the NPRI and this may result in some confusion when examining the two inventories. Off-site releases (transfers) in Wayne County are noted primarily to provide context for the level of other releases in Wayne County.

[4] Air, Water and Land totals have been rounded. Total does not include undifferentiated total.
[5] The TRI measures transfers off-site to disposal as off-site releases. Off-site releases include metals and metal compounds transferred off-site for solidification/stabilization and for waste-water treatment, including to POTWs (MSTPs). The total amount was 17,010,124 kg in 1999.

Table 4.0 On-site Releases of Toxic/Carcinogenic Substances in Essex County and Wayne County, in kilograms

	Wayne County (1999)[6]	Essex County (2000)[7]
Air	241,349 (22%)	6,177 (100%)
Water	1,142	0
Land	867,563 (78%)	10
Total	1,110,054 (100%)	6,187 (100%)

A substantial amount of toxic/carcinogenic substances have been released to the air. Essex County's releases are almost exclusively to the air. Wayne County's releases in 1999 also included a substantial amount to the land and the overall proportion of releases that were categorized as carcinogenic was substantially greater in Wayne County. This may be the result of the types of facilities located in the jurisdictions and the legislative framework in which these substances are designated as toxic/carcinogenic.

MORE INFORMATION

Information from the NPRI and TRI database, as well as links to specific information on the substances and health impacts, is available from the websites of Environment Canada and the Environmental Protection Agency.
www.ec.gc.ca/pdb/npri/npri_home_e.cfm
www.epa.gov/tri

Information on North American PRTRs is available from the Commission for Environmental Cooperation's *Taking Stock* and is available at their website.
www.cec.org/home

Pollutant data, chemical information and health impacts based on the TRI database is available at www.scorecard.org and from the NPRI database at www.scorecard.org/pollutionwatch

A Citizens' Guide to the National Pollutant Release Inventory provides a detailed analysis about the NPRI. It is available at www.cielap.org/infocent/index.html

All analyses of Essex County in the NPRI by the Citizens Environment Alliance are available in the *Reports Section* at www.mnsi.net/~cea

[6] The list of carcinogenic TRI chemicals are based on the International Agency for Research on Cancer's classifications: the chemical is carcinogenic to humans; the chemical is probably carcinogenic to humans, and; the chemical is possibly carcinogenic to humans. Additional criteria were used from the National Toxicology Program and the Occupational Safety and Health Administration.
[7] The list of toxic/carcinogenic NPRI chemicals is based on criteria from the Canadian Environmental Protection Act and the International Agency for Research on Cancer: carcinogenic or probably carcinogenic

APPENDIX

Below is the NPRI listing of Tractebel Canada Inc.-West Windsor Power. Only two substances were reported to the NPRI from West Windsor Power. The second table, acquired from the Ontario Ministry of the Environment through a Freedom of Information Request by Environmental Defence Canada, reveals a significantly greater amount of pollutants released by West Windsor Power in 2000. The data are from the first eight months of 2000. Ontario Regulation 227 requires the annual reporting of emissions of Ontario's electric generating facilities.

Data as of 15 December 2001

Tractebel Canada Inc. - West Windsor Power
NPRI ID - 5901
4375 Sandwich Street
Windsor, ON
N9C 4C8

2000 Facility Substance Summary

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

CAS Nr.	Substance Name	On-Site Releases	Transfers for Disposal	Transfers for Recycling	Units
	Sort	Details	Details	Details	
NA - P/H	PAHs, total Schedule 1, Part 3*	6.95	0.00	0.00	kg
7664-93-9	Sulphuric acid	0.00	0.00	0.00	tonnes

Pollutants released by West Windsor Power for year 2000 under O. Reg. 227/00, ranked by quantity released:

Rank	Pollutant	Total release (kg)	% of total pollutant release for Ontario
1	Carbon dioxide (CO2)	214,044,899.000	0.73
2	Nitrogen Oxides (expressed as NO)	125,739.000	0.33
3	PM (Particulate Matter)	12,842.690	0.12
4	Ammonia	6,104.600	100.00
5	PM 10	5,723.100	0.08
6	Sulphur Dioxide (SO2)	1,800.100	0.00
7	Formaldehyde	1,381.560	4.18
8	Dichloromethane (Methylene Chloride)	444.460	100.00
9	Hydrochloric acid	222.230	0.00
10	Zinc (and its compounds)	55.320	0.88
11	Benzene	23.350	1.32
12	Acrolein	12.450	0.98

13	Hydrofluoric Acid	8.880	0.00
14	Vanadium (and its compounds)	4.390	0.45
15	Nickel (and its compounds, except Nickel Carbonyl)	4.010	0.35
16	Chromium (and its compounds, except CR(VI) compounds)	2.670	0.17
17	Cadmium (and its compounds)	2.100	1.79
18	Copper (and its compounds)	1.620	0.05
19	Sulphuric acid (including Sulphur Trioxide)	1.000	0.00
20	Trichloroethylene	1.000	100.00
21	Lead (and its compounds, except Alkylated Lead)	0.950	0.34
22	PAH - Pyrene	0.730	26.26
23	Manganese (and its compounds, except MMT)	0.720	0.07
24	Mercury (and its compounds, except Methyl Mercury)	0.500	0.10
25	Beryllium (and its compounds)	0.440	0.29
26	PAH - Fluoranthene	0.440	12.64
27	PAH - Fluorene	0.410	15.71
28	Arsenic (and its compounds)	0.380	0.15
29	PAH - Anthracene	0.350	100.00
30	PAH - 7h-Dibenzo(C,G)Carbazole	0.350	100.00
31	PAH - Acenaphthene	0.260	20.00
32	PAH - Acenaphthylene	0.260	92.86
33	PAH - Benzo(A)Phenanthrene	0.260	95.94
34	PAH - Benzo(B)Fluoranthene	0.260	95.80
35	PAH - Benzo(E)Pyrene	0.260	76.92
36	PAH - Benzo(J)Fluoranthene	0.260	100.00
37	PAH - Benzo(K)Fluoranthene	0.260	100.00
38	PAH - Dibenz(A,J)Acridine	0.260	100.00
39	PAH - Dibenzo(A,I)Pyrene	0.260	100.00
40	PAH - Indeno(1,2,3-C,D)Pyrene	0.260	100.00
41	PAH - Phenanthrene	0.260	3.01
42	PAH - Benz(A)Anthracene	0.260	100.00
43	PAH - Benzo(A)Pyrene	0.170	100.00
44	PAH - Benzo(G,H,I)Perylene	0.170	94.44
45	PAH - Dibenz(A,H)Anthracene	0.170	100.00