



National Pollutant Inventory



Summary
Report of
First Year
Data
1998 • 1999



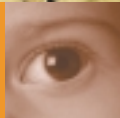
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Keep an eye on pollution



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Introduction

Over recent years the Commonwealth, State and Territory Governments, believing that Australians are entitled to know about pollution in the environment, have been working together to produce a publicly accessible database which will provide for the first time a comprehensive record of major pollutants entering the air, land and water throughout Australia.

The first report for this database, known as the National Pollutant Inventory (NPI), became available on the Internet on 28 January 2000 at www.npi.ea.gov.au, and will also be available on CD-ROM. This brochure provides a summary of the first NPI report.

Background

The NPI was made as a National Environment Protection Measure (NEPM) by the National Environment Protection Council (NEPC) in February 1998. It was the first NEPM to be made by NEPC.

The NPI is an Internet database designed to provide the Australian community, industry and government with information on the types and amounts of certain chemicals being emitted to the air, land and water around Australia. Information is provided on both point sources and what are termed "aggregated emissions" from diffuse or mobile sources. The latter are data on various air pollutant sources emitted into priority airsheds and nutrient emissions into selected catchments.

The implementation arrangements for the NPI are detailed in the NPI National Environment Protection Measure (NEPM) document and associated Memorandum of Understanding which are available on the NPI web site.

Development of the NPI Reporting List

A Technical Advisory Panel was established to develop the NPI reporting list. The Panel considered the environmental and human health effects of over 400 substances and from these developed a priority list of 90 for inclusion in the Inventory.

Facilities are currently required to report against the NPI Table 1 list of 36 substances. The Table 2 list, which contains the Table 1 substances plus a further 54 substances, will be introduced from the fourth reporting year (commencing 1 July 2001).

NPI Objectives

The objectives of the NPI are to:

- Provide information to enhance and facilitate policy formulation and decision making for environmental management and planning;
- Provide publicly accessible and available information, on a geographic basis about specified emissions to the environment, including those of a hazardous nature or involving significant impact; and
- Promote and assist with the facilitation of waste minimisation and cleaner production programs for industry, government and the community.

How does the NPI work?

Pollutants enter our environment from a variety of sources. These include not only factories and manufacturing plants and industries, but also other activities such as transport (cars, trains, aeroplanes, recreational and commercial boating and shipping) and other domestic activities such as household heating and cooking, lawn mowers and chain saws.

Larger Australian 'facilities' (for example, manufacturing sites) are required to estimate and report their emissions to the NPI, if a handbook has been published for their industry sector.

These handbooks are guides to the relevant industry on how to estimate and report emissions. Estimates of emissions from smaller industries, mobile sources and household and everyday activities are made by State and Territory Governments and are also provided on the database.

Thresholds

In deciding what has to be reported, a *threshold* is set for each substance according to its nature. There are three categories of thresholds. The Category 1 threshold is based on the quantity of substance manufactured, imported, processed, produced as a by-product or otherwise used. The Category 2 threshold is based on fossil fuel or energy consumption and the Category 3 threshold is based on emissions to water. Once a threshold is tripped and an appropriate industry handbook is available to assist in calculating the emission, the facility is required to report to the NPI. The facility

reports to the relevant State or Territory Environment Protection Agency, which in turn reports its findings from both point sources (reporting facilities) and from selected airsheds and watersheds to the Commonwealth Government (Environment Australia). Environment Australia then publishes the Inventory on the Internet for the reporting year.

Contextual Information

Details of each of the NPI substances can be found in the NPI's *contextual information*, available on the NPI website (www.npi.ea.gov.au) and is also available in hard copy. The information is provided to help people gain a better understanding of the nature of the substance in question and includes:

- the Chemical Abstract Series Registered (CASR) number of the substance and common synonyms and product names for the substance;
- the chemical characteristics and intrinsic properties of these substances;
- the health and environment effects of the substance, including toxicity profiles, environmental impacts, likely fate and transport of the substance in the environment, and other relevant effects;
- information on common uses of the substances including products or processes reliant on the substance; and
- information on common anthropogenic (human-made) and other sources of the substance.

Co-operative Program

The Commonwealth is working closely with the States and Territories to implement the NPI program consistently across Australia. This is achieved through the Implementation Working Group, comprising a representative from each jurisdiction, which has the role of ensuring national consistency of implementation.

Important functions of the Implementation Working Group have been to monitor the development of industry handbooks and provide interpretations of the NEPM as necessary to ensure consistent implementation of the program across all jurisdictions.



NPI Trials and Studies

The Commonwealth Government has funded several NPI trials: in South-East Queensland, in the Kalgoorlie-Boulder area of Western Australia, and earlier in the regions of Dandenong, Port Pirie, Newcastle and Launceston. These trials have provided valuable information to jurisdictions in relation to implementation of the Inventory.

A study of nutrient emissions in the Murray Darling Basin has also been commissioned by Environment Australia. This report is available on the Internet site.

Evolving Program

The NPI is a growing, evolving program, and users of the database can expect to see continuing changes, improvements and developments in future years.

The information on emissions reported in the NPI in this first reporting year is based on 1200 reports from approximately 23 industry sectors across the country for the period 1 July 1998 to 30 June 1999. This is not the total number of industry sectors that will eventually be required to report to the NPI and therefore any comparative analysis of emissions from current reporters would be likely to be misleading. Industries were not required to report for the full year, but the vast majority has chosen to do so. For next year's report, close to 80 industry sectors will be reporting.

It is also important to note that the NPI is a database of **estimated** emissions and the accuracy of the emissions data will vary with the technique and data used. Emissions data based on monitoring data is likely to be more accurate, for example, than data based on emission factors which may not be completely appropriate in all instances. Similarly, data on aggregated emissions are estimates only. Analysis of this data will also be affected by the number of sources and substances which have been studied. The number of sources for which data is provided may be added to in future years.

Some reporting facilities have included internet links to their own pages in their Internet reports, to allow them to provide more details on their pollution reduction activities, or additional contextual information on the pollutants emitted.

As a result of these varying requirements, the data contained in this first version of the Inventory must be read with care, and it would be unwise to make comparisons between industries or facilities without first checking to ascertain the basis and extent of reporting.



Reporting Facilities: Point Source Emissions

A total of 1200 facilities reported emissions to the NPI for the year 1998-99.
The distribution of these facilities across the States and Territories was as follows:

Table 1: Number of reporting facilities and substances by jurisdiction in 1998/99

Jurisdiction	Number of reporting facilities	Number of substances reported
Australian Capital Territory	10	27
New South Wales	270	58
Northern Territory	74	47
Queensland	283	46
South Australia	116	29
Tasmania	68	32
Victoria	177	50
Western Australia	199	47
TOTAL	1200	67

In the first year of reporting there was an average of 5.8 substances reported per facility. Two hundred and forty-eight facilities reported on substances which are only on the Table 2 list.

Full details of the emissions from any of the listed facilities can be obtained from the NPI database, available on the Internet at www.npi.ea.gov.au. Note that a facility was not required to report if there was no handbook published for its sector, so the report does not include all facilities in Australia emitting NPI substances.

As a limited number of facilities and industry sectors have reported in this first reporting year of 1998/99, no comparative analysis of emissions has been undertaken as any conclusions reached would be likely to be misleading or inaccurate.

Table 2: Sectors Grouped for NPI reporting in 1998/99

ANZSIC Codes	Industry Sector for NPI Purposes	Reporting From
2542 & 2547	Paint and ink manufacturing	1 Nov 1998
2712 & 2713	Iron and steel casting and forging	1 Nov 1998
261 series	Glass and glass product manufacturing	1 Nov 1998
233 series	Paper and paper product manufacturing	1 Nov 1998
2543	Medicinal and pharmaceutical product manufacturing	1 Nov 1998
241/2 series	Printing, publishing and services to printing	1 Nov 1998
2733	Non-ferrous metal casting	1 Nov 1998
262 series	Ceramic product manufacturing	1 Nov 1998
9634	Waste disposal services	1 May 1999
2633-4-5	Concrete product manufacturing	1 May 1999
2171	Sugar manufacturing	1 May 1999
216 series	Bakery product manufacturing	1 May 1999
2182	Beer and malt manufacturing	1 May 1999
251 series	Petroleum refining	1 May 1999
120 series	Oil and gas extraction	1 May 1999
2721	Alumina production	1 June 1999
2722	Aluminium smelting	1 June 1999
110 & 131 series	Mining – coal, iron ore, nickel ore, silver-lead-zinc ore and metallic mineral ore	1 June 1999
9521	Dry cleaners and laundries	1 June 1999
3610	Electricity supply	1 June 1999
4521	Petroleum product wholesaling	1 June 1999
2534	Organic industrial chemical manufacturing	1 June 1999
3702	Sewerage and drainage services	1 June 1999

While reporting was required only for the periods shown, the majority of facilities chose to provide estimated data for the full year.

Table 3: Major Reporting Sectors by Jurisdictions in 1998/99

Industry Sectors	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Bakery Product Manufacturing	2	12	2	11	2	1	8	4
Beer and Malt Manufacturing		2		3	2	2	3	2
Ceramic Product Manufacture		16		7	6	1	14	9
Electricity Supply		7	29	9	4	3	8	31
Glass and Glass Product Manufacturing		4		1	2		2	1
Iron, Steel Casting and Forging, Steel Pipe, Tube Manufacture		5		2	3	1	1	1
Mining		6	15	22	2	5	2	58
Non-ferrous Metal Casting		1		2	1	1		
Oil and Gas Extraction			1	20				6
Organic Industrial Chemical Manufacturing		9		7	1		5	3
Paint and Ink Manufacturing		2		2	1		5	1
Paper and Paper Product Manufacturing		4		5	3	3	10	1
Petroleum Product Wholesaling	5	144	16	118	70	17	75	58
Petroleum Refining		3	1	2	1		2	4
Sewerage and Drainage Services	2	35	6	47	13	26	15	4

Note: Not all industries were required to report in 1998/99.

Table 4: Major sectors reporting Total Nitrogen in 1998/99

Sector	Total Emissions kg
Alumina Production	30126
Basic and Iron and Steel Manufacturing	190800
Mining	85
Paper and Paper Product Manufacturing	301500
Petroleum Refining	60792
Sewerage and Drainage Services	36169825

Note: Not all industries were required to report in 1998/99.

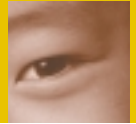


Table 5: Major sectors reporting Total Phosphorus in 1998/99

Sector	Total Emissions kg
Alumina Production	11400
Electricity Supply	10984
Mining	2812
Paper and Paper Product Manufacturing	29500
Sewerage and Drainage Services	9801097

Note: Not all industries were required to report in 1998/99.



Facility Reports

Details of facility emissions are available on the NPI Internet database. Two examples of typical facility reports are presented below:

Emissions from Reporting Facilities

Region: Australian Capital Territory

Queanbeyan Sewage Treatment Plant

ACN:

Address: Nimrod Rd, Oaks Estate Canberra, ACT 2620

Postal Address: PO Box 90 Queanbeyan NSW 2620

Public Contact: Greg Fogarty

Public Contact (Phone): 02-62980233

Public Contact Email:

Web Address:

Number of Employees: 4

Main Activities: Treatment of Sewage

Primary ANZSIC Industry Classification: Sewerage and Drainage Services

Other Subsidiary ANZSIC Industry Classification(s):

Reporting Period	01 Jul 1998 to 30 Jun 1999			
Emitted Substance	Air	Land	Water	
Ammonia (total)			940	kg
Hydrogen Sulphide	10000			kg
Total Nitrogen			65000	kg
Total Phosphorus			330	kg

Note: The NPI consists of substances spanning a wide range of toxicities. A small number may not necessarily imply an insignificant emission, for example, a small emission of a highly toxic substance may be of more concern than a larger emission of a substance of relatively lower toxicity.

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- NPI Facilities
- Rivers
- Roads
- Waterbodies

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Emissions from Reporting Facilities

Region: Northern Territory

Consolidated Meat Group

ACN: 065 093 709

Address: Victoria Highway Katherine NT 850

Postal Address: PO Box 105 Katherine NT 850

Public Contact:

Public Contact (Phone): 08 8972 1844

Public Contact Email:

Web Address:

Number of Employees: 140

Main Activities: Meat Works with boning and meat packing, freezing facilities

Primary ANZSIC Industry Classification: Meat Processing

Other Subsidiary ANZSIC Industry Classification(s):

Reporting Period	01 Jul 1998 to 30 Jun 1999			
Emitted Substance	Air	Land	Water	
Ammonia (total)	2000		1200	kg
Carbon Monoxide	710			kg
Oxides of Nitrogen	6600			kg
Particulate Matter 10.0 um	140		330	kg
Total Volatile Organic Compounds	110			kg

Note: The NPI consists of substances spanning a wide range of toxicities. A small number may not necessarily imply an insignificant emission, for example, a small emission of a highly toxic substance may be of more concern than a larger emission of a substance of relatively lower toxicity.

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- NPI Facilities
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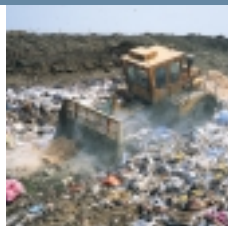


Aggregated Emissions: Airsheds and Water Catchments

Background Information

Aggregated emissions data refers to that data estimated by State and Territory environment protection agencies for substances emitted from such sources as mobile sources (motor vehicles, trains, aircraft, commercial and recreational boating), domestic engines such as mowers, chain saws and sub-threshold facilities (smaller companies that do not trip the threshold). These sources are listed below. Such data is, of course, restricted to specific airsheds and catchments and each is therefore geographically discrete. It should be borne in mind that each airshed and catchment is influenced by climate, size, general topography, population densities and other characteristics. Emissions reported may therefore bear little relationship in some instances to substance concentrations at a particular location.

In this first reporting year there is a degree of variation between airsheds in relation to sources reported, and methodologies used in making the estimations. These gaps in data will be addressed in future years with the aim of having consistent reports on common sources (where relevant) in all airsheds. The Northern Territory and the Australian Capital Territory were not required to provide airshed or catchment data in the 1998/99 reporting year. Their data will be provided for the 1999/2000 reporting year.



Airsheds

Emission sources for an airshed include sources, currently classified as 'core' or 'non-core'. Core sources are those estimated by all States. Non-core sources are sources on which jurisdictions may report where relevant.

Emission estimation technique handbooks are being finalised for all 'core' and 'non-core' sources.

Core - to be reported by a jurisdiction if it is appropriate to the airshed

- 1 Mobile Sources: motor vehicles, boating (commercial shipping/boating, recreational boating), aircraft, railways
- 2 Domestic/Commercial Solvents
- 3 Domestic Fuel Use (Solid (wood, coal), liquid, gas)
- 4 Lawn Mowing (Domestic, open space)
- 5 Service Stations
- 6 Architectural Surface coating
- 7 Motor vehicle refinishing
- 8 Dry cleaning
- 9 Printers (Volatile Organic Compounds only)
- 10 Cutback Bitumen

- 11 Sub threshold industrial solvents (trichloroethylene)
- 12 Bushfires and prescribed burning (not agricultural burning)
- 13 Fuel Combustion sub threshold

Non Core - may be reported by jurisdiction

- 1 Backyard incinerators
- 2 Biogenics
- 3 Paved and Unpaved Roads
- 4 Gas Leakage

Airshed Reports 1998/99

The airsheds covered by the 1998/99 Inventory are:

Sydney-Newcastle-Wollongong,
South-East Queensland,
Adelaide,
Hobart,
Port Phillip Region,
Kalgoorlie and
Perth.



Water Catchments

Ten catchment areas have been studied and estimations of total nitrogen and total phosphorus emissions in them have been made.

The catchments covered by the 1998/99 Inventory are:

Botany Bay,
Hawkesbury-Nepean,
Hunter River,
Lake Illawarra,

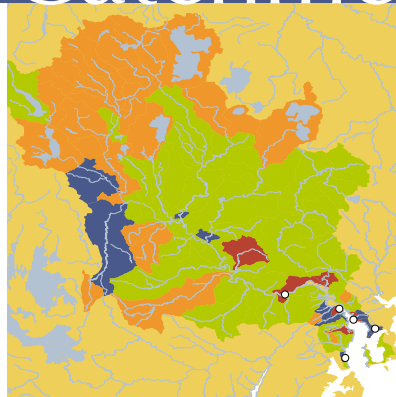
Port Jackson,
South-East Queensland,
Adelaide (Mt Lofty Ranges),
Derwent,
Port Phillip Bay and
Perth (Swan-Canning)

Detailed information on each of these catchments can be obtained from the NPI database on the Internet, using the 'advanced search' function.

Derwent Catchment, TAS

Emissions of Total Nitrogen from Aggregate Sources

Map shows subcatchments included in emission report for this region.



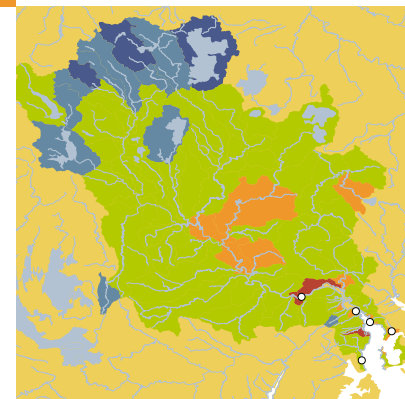
Source	Amount (kg)
Agriculture-Derwent	520000
Woodland-Derwent	240000
Forest-Derwent	190000
Sewage Treatment Plant-Derwent	130000
Rainforest-Derwent	77000
Scrub-Derwent	44000
Bare-Derwent	26000
Fish Farm (Aquaculture)-Derwent	19000
Buttongrass-Derwent	18000
Urban-Derwent	17000
Non Reporting Facility-Derwent	13000
Suburb-Derwent	12000
Alpine Heath-Derwent	68
Alpine Scrub-Derwent	37

- Facilities emitting Nitrogen
- Total Nitrogen emission kg/ha/yr
- Less than 1kg
- 1-2kgs
- 2-3kgs
- Over 3kgs
- Rivers
- Lakes



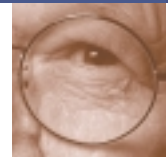
Source	Amount (kg)
Agriculture-Derwent	170000
Sewage Treatment Plant-Derwent	31000
Woodland-Derwent	24000
Forest-Derwent	19000
Rainforest-Derwent	7700
Scrub-Derwent	4500
Urban-Derwent	3100
Suburb-Derwent	2100
Bare-Derwent	2100
Fish Farm (Aquaculture) -Derwent	1800
Buttongrass-Derwent	1200
Alpine Heath-Derwent	3.0
Alpine Scrub-Derwent	1.0

- Facilities emitting Phosphorous
- Total Phosphorous emission kg/ha/yr
- 0.05 kg or less
- 0.05-0.10 kg
- 0.10-0.50 kg
- 0.5-1.0 kg
- 1.0 kg and over
- Rivers
- Lakes



Emissions of Total Phosphorus from Aggregate Sources

Map shows subcatchments included in emission report for this region.



Airshed Substance Reports

Volatile Organic Compounds

A Volatile Organic Compound is defined as any chemical compound based on carbon chains or rings (and also containing hydrogen) with a vapour pressure greater than 2mm of mercury (0.27 kPa) at 25°C, excluding methane. Note : These compounds may contain oxygen, nitrogen and other elements, but specifically excluded are carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.

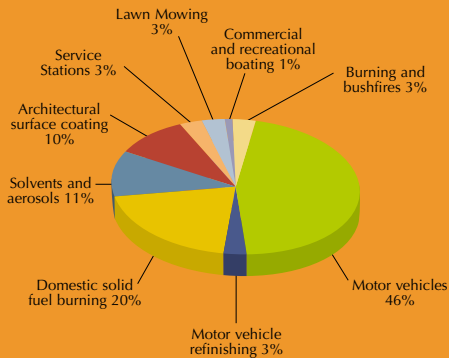
Table 6: Volatile Organic Compounds – predominant source by airshed (million kg/yr)

Source	Sydney	SE Q'ld	Adelaide	Hobart
Motor Vehicles	96	51	14	*
Motor Vehicle Refinishing	2.4	0.5	0.6	0.08
Solid Fuel Burning (Domestic)	22	6.7	6.3	5.3
Domestic Commercial solvents/aerosols	16	*	5.4	0.96
Architectural Surface Coating	4	6.2	2.8	0.53
Service Stations	6.7	3	1.6	0.27
Lawn Mowing	5.9	3.7	1.9	0.34
Commercial and Rec. Boating	*	14.7	*	0.41
Print shops/graphic arts	2.7	0.41	0.56	0.008
Burning/bushfires	1.2	*	*	0.14

* No report



Volatile Organic Compounds – Predominant Sources – Perth Airshield



Port Phillip	Kalgoorlie	Perth
59	0.65	20
1.1	0.012	1.1
29	0.43	8.7
8.7	0.11	4.7
7.5	0.19	4.5
4.4	0.12	1.5
3.9	0.02	1.4
1.3	*	0.45
1.4	0.001	*
0.32	*	1.1

National Pollutant Inventory contacts

Inquiries regarding emissions data on the National Pollutant Inventory should be directed to the State or Territory Environment Protection Agency, as the State or Territory undertakes the collection of data from reporting facilities.

Questions relating to the database itself, or on major policy issues can be directed to the Commonwealth contact.

The contact points for the NPI are:

Commonwealth

NPI Section - Environment
Australia
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CANBERRA ACT 2601
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Facsimile: (02) 6250 0365
Email: npi@ea.gov.au

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LYNEHAM ACT 2602
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barryw@dpiwe.tas.gov.au

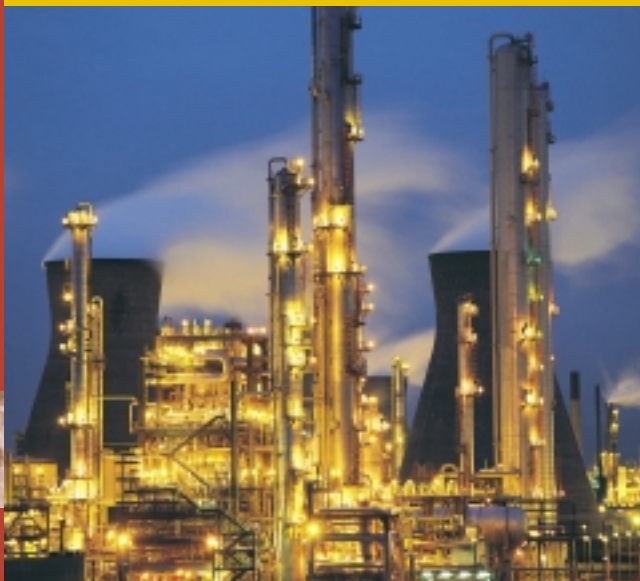
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