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Major Milestone for NPI Approaching

The National Pollutant Inventory (NPI) is approaching the major milestone of its first year report which will be available on the Internet from 1 February 2000.

The NPI will be the first database accessible to the public on pollutant emissions to air, land and water across Australia.

Anybody will be able to search the Internet or CD ROM database to find both the type and amount of pollutants entering the environment in their local area. They will be able to check emissions from both point sources, like factories or mines, and diffuse sources, such as pollution from motor vehicles*. Information on diffuse emissions to water, such as nutrient emissions, will be available for some catchments. Similar programs overseas do not include this aggregated information.

The NPI is a cooperative program between the Commonwealth and States and Territories. Facilities provide their emission reports to State and Territory environment agencies, which then provide the data to the Commonwealth as managers of the database. The State/Territory agencies also estimate aggregated emissions.

Environmental Management Tool

For the general public the NPI database provides valuable information; for governments it will be an important environmental management tool.

NPI data is likely to provide an indication of where environmental management policies should be targeted, where standards may be needed, and indicate progress in reducing pollution.

The NPI will be an incentive for cleaner production by showing facilities how they compare with others in the same industry. Companies are already making significant financial savings and reducing pollution through cleaner production practices such as reducing the use of raw materials and re-using waste.

State and Territory governments remain primarily responsible for management of pollutant emissions through a variety of programs and legislation. At the national level NPI will provide the information that is likely to become Australia's scorecard on environmental progress.

More data will become available as the NPI progressively expands its coverage. In the first year data is available from 23 industries, with reports from nearly 1200 facilities across Australia. Information will come from about 77 industries in the second year and about 80 in the third year.

As the NPI expands it will become a comprehensive database on Australian pollutant emissions of priority substances. This will then be not only a milestone for the NPI, but a milestone for environmental management in Australia.

Kathryn Kelly, Manager
NPI Section



* Update No. 4 provided detailed information on the pollutants that will be

Pollutant Inventories Overseas –

how does the NPI compare?

The NPI is similar to pollutant inventories in other countries. However, the type of data, the way countries collect it, and how it is presented differs depending on individual country concerns and priorities.

Rôle of the OECD

The OECD published a Pollutant Release and Transfer Registers (PRTR) Guidance Manual in 1996. The manual guides countries interested in designing a PRTR system and provides clear information on key issues needing to be addressed in the PRTR design process. While the OECD provides this tool, each country develops and implements a PRTR to suit its needs. PRTRs have been established in the USA, Canada, the UK, and a number of European countries. Mexico is in the process of developing their program.

PRTR Features

The US EPA administers a Toxic Release Inventory (TRI). National legislation on community right-to-know paved the way for the TRI which started in 1987. In Canada, a multi-stakeholder process was initiated by the national environment authorities to address important PRTR design questions.

In the case of Sweden, the Czech Republic and Switzerland, initial PRTR work focused on working with a select number of companies to implement a pilot reporting trial to gain practical experiences relevant to the design and operation of a PRTR system.

Sector Coverage

The US TRI only applies to certain industrial sectors. The number of sectors reporting has increased gradually since 1987. For example, the mining and chemical industries have only been required to report from 1998. Electric power facilities have only recently been included. Once all the industry handbooks have been published, Australia's NPI will apply to all industrial sectors.

Inventory Size

The US TRI contains 579 individually listed chemicals and 28 categories. Since 1987, substances have been added and removed from the list. Canada has recently added 76 chemicals to its PRTR reporting list, bringing the total to 246.

Australia's NPI currently lists 36 priority chemicals and will expand to 90 substances. A process is currently underway to decide the best timing for implementing the list expansion. One argument is that, from an environmental management viewpoint, it is more effective to have a priority listing of those chemicals posing the greatest risk to the community and/or the environment, than a large list of less hazardous chemicals.

A counter argument to this could be that the longer list provides more impetus for cleaner production practices and that the risks from some substances may not have been clearly identified. [An impact statement on the proposal to delay introduction of the Table 2 list will be released shortly for public consultation].

Aggregated Emissions

Unlike the US, Canadian and European inventories, Australia's NPI includes estimates of emissions to the air and water from non-point and smaller industry sources (aggregate emissions). These estimates are provided by the State and Territory EPAs. This aspect of the NPI is significant as it places emissions from industrial facilities in a wider perspective. NPI users will be able to see the relative proportion of emissions from industrial facilities as opposed to the emissions from motor vehicles, for example.

Transfers

A forthcoming review of the NPI will consider whether transfers of chemicals should be included in the NPI. Both the TRI and the Canadian programs include transfers to sewage and other off-site transfers.

Australian Innovation

Australia has been particularly innovative in the way it has helped industrial facilities estimate emissions. Most countries provide industry with guidance manuals, but Australia has gone one step further and has produced emission estimation technique handbooks, tailored for each sector. The NPI handbooks will be discussed in a forthcoming OECD report on emission estimation methodologies.

The NPI web site has direct links to overseas pollutant inventories – www.environment.gov.au/epg/npi/contact/overseas_inv.html

NPI at a glance

- The NPI is a program designed to provide the community, industry and government with information through an Internet database and CD ROM on the types and amounts of certain chemicals being emitted to the environment.
- Information from NPI trials can be found on the Internet at www.environment.gov.au/net/npi.html. The first national database will be available on the Internet from 1 February 2000.
- Data will come from industry and non-industrial sources. This means that data on estimated emissions from household sources and small industry will be on the database as well as data from industrial facilities.
- Contextual information is also available on the Internet to give perspective to the raw emissions data. This information is designed to help people understand the sources of substance emissions, their health effects and what happens to them in the environment.
- The NPI is being cooperatively implemented by the Commonwealth, State and Territory governments. It was developed as a National

By the end of the year, most of the planned industry handbooks, around 77, will be completed. These will all be available soon on our Internet home page.

We will shortly be starting the development of a Malting Handbook and revision of the Combustion Engines Manual.

If you have any comments you would like to make on the Combustion Engines Manual, please send them to the NPI Section, Environment Australia, GPO Box 787, Canberra, 2601, or via email (npi@ea.gov.au) by 28 January 2000.

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Review of the NPI to commence October 2000

The National Environment Protection Council decided at its meeting on 28 September 1999, that the review of the NPI would commence next year. This timing would ensure that results of the NPI's first and second reports will be available for analysis in the review.

Preliminary work on non-data-dependent issues will commence early next year. More detailed information on the preliminary work and the review itself will be provided in the next issue of Update.

The main issues identified in the review's terms of reference are to examine and report on:

- the NPI's effectiveness in achieving its goals;
- the resources available for implementation;
- the possible inclusion of transfers of wastes to landfill, sewer, tailings dams, recycling or re-use;
- any recommended changes to the reporting list or to reporting thresholds;
- any actions necessary to improve its effectiveness; and
- the adequacy of current implementation arrangements.

Kalgoorlie trial data on the WEB

Background to the Kalgoorlie Trial

The aim of the Kalgoorlie Trial was to develop and test all the parameters of the proposed NPI in a mining environment.

The Kalgoorlie NPI Trial was a partnership between WMC Resources Ltd (WMC), the Western Australian Department of Environmental Protection (DEP) and Environment Australia. The trial had a two-fold purpose -

- The major purpose was to develop and test all the parameters of the NPI in a regional mining environment. As such, the trial was to include point source and aggregated emissions to air, land and water.
- The secondary purpose was to provide information that could be used during the forthcoming review of the NPI. The trial therefore included the full NPI reporting list of 90 substances and the transfer of waste materials.

This project follows NPI air emission trials that have already been successfully conducted in Newcastle, Dandenong, Port Pirie and Launceston and the fully integrated trial in south-east Queensland. Methodologies developed by these trials and the Perth Photochemical Smog Study were followed and further developed where possible.

The trial was managed by the DEP and jointly funded by WMC and Environment Australia.

Participation in the trial was on a voluntary basis, relying on the good will of the companies approached.

The Kalgoorlie trial Report was officially launched at the Western Mining Corporation Resources nickel smelter in Kalgoorlie on 22 October by the Western Australian Minister for the Environment, Ms Cheryl Edwards. An interactive display of the Trial was showcased. Ms Jennie

and NPI, Environment Protection Group of Environment Australia, represented the Commonwealth at the launch. The event attracted considerable local media attention with coverage on local and State television and radio and in the print media, and provided a good opportunity to promote the NPI and its capabilities.

Reports on Emissions

Data detailing the sources and types of emissions collected during the trial of the NPI in Kalgoorlie has been compiled and uploaded to the Internet.

While the focus of the Kalgoorlie Trial was on the mining sector, an attempt was made to collect emissions data from all facilities in the region that triggered the reporting thresholds. Emissions from aggregated sources were also estimated. They included:

- Mobile sources - motor vehicles, off-road vehicles, locomotives and aircraft.
- Area-based sources - households, commercial premises, exempted and sub-threshold facilities.
- Natural sources - vegetation and soils.

With an approximately 80% participation rate by reporting facilities, the emissions data provides a reasonably complete picture of the total emissions in the area.

NPI manuals developed and tested

NPI emission estimation technique (EET) manuals for nickel smelting and gold refining were developed as a part of the trial. The applicability and usefulness of 12 of the EET manuals was also investigated. The manuals proved to be invaluable in the emission estimation process even though they did not cover the complete range of substances being estimated or all of the particular industrial processes involved in the trial.

The trial also tested the emission factors presented in these manuals by comparing the results obtained with direct monitoring data. It found that in many cases ongoing development work will be required to refine the emission factors.

Major emissions sources

The trial found that in the Kalgoorlie region industrial facilities were a significant source of sulfur dioxide, oxides of nitrogen, and particulate matter emissions. However, the major emissions of carbon monoxide and volatile organic compounds (VOCs) were found to be from other sources, such as motor vehicles, smaller facilities, or in the case of VOCs, biogenic sources.



Figure 1: Major Emission Points for Oxides of Nitrogen (NOX)

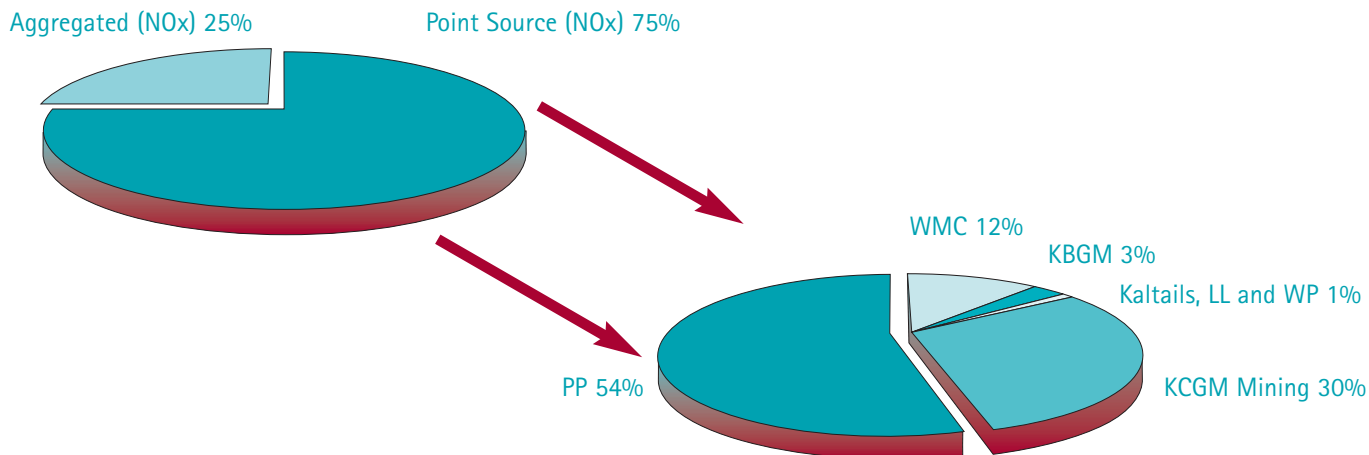


Figure 2: Major Emission Points for Carbon Monoxide (CO)

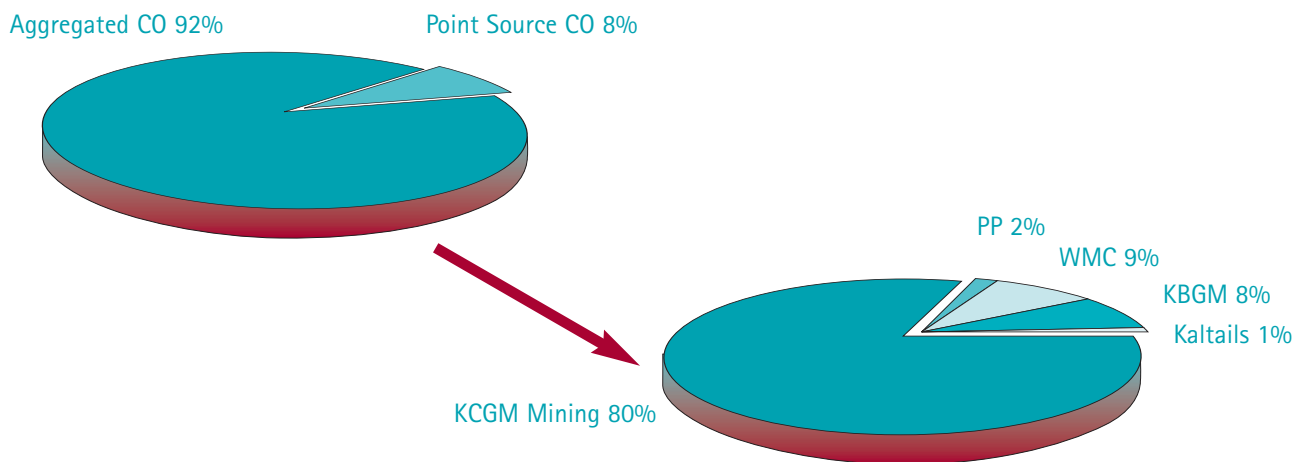
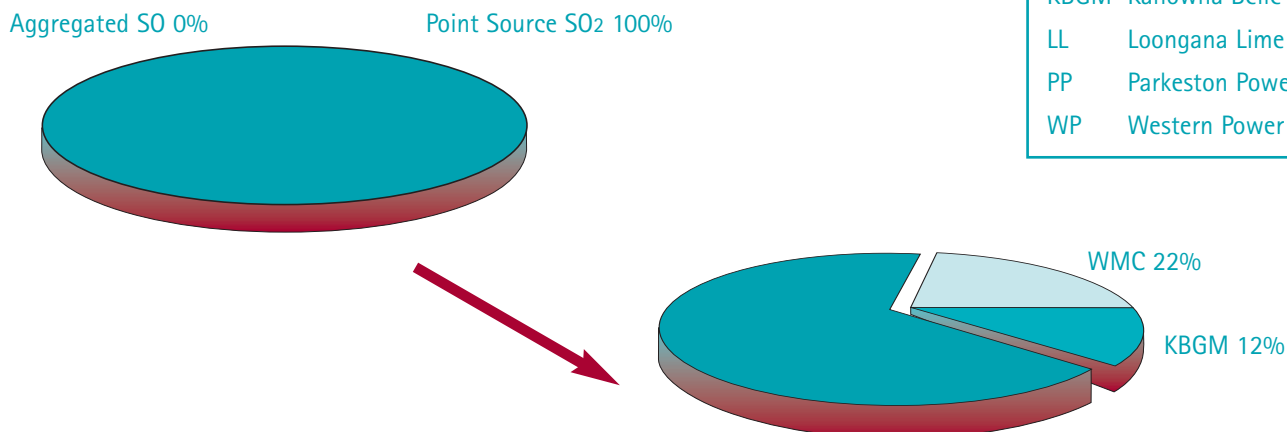
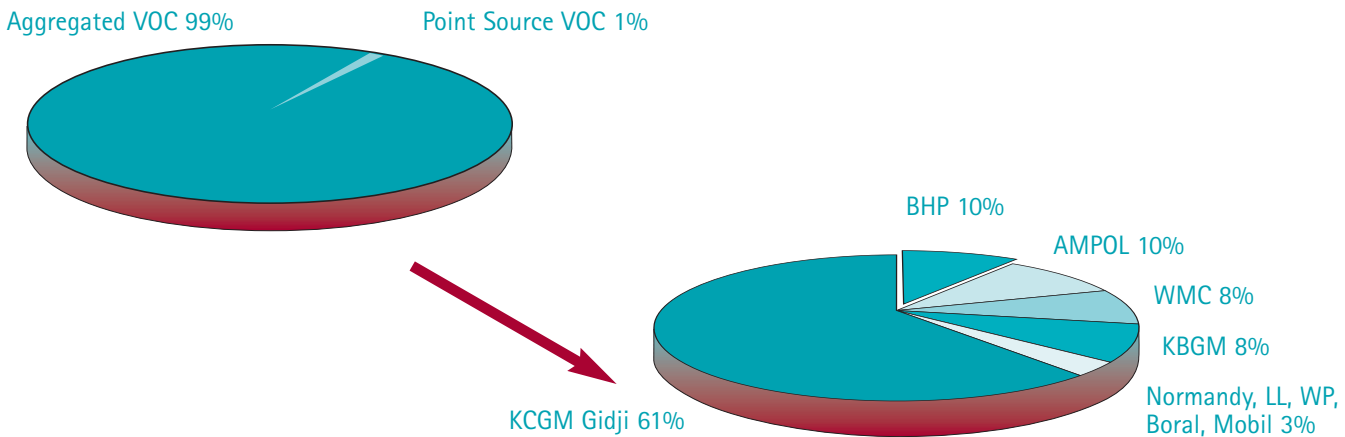


Figure 3: Major Emission Points for Sulfur Dioxide (SO₂)



WMC	WMC Resources Pty Ltd
KCGM	Kalgoorlie Consolidated Gold Mines
KBGM	Kanowna Belle Gold Mine
LL	Loongana Lime
PP	Parkeston Power
WP	Western Power

Figure 4: Major Emission Points for Total VOCs



Dust Emissions Challenge

Estimating particulate matter emissions (largely fugitive dusts) from mining operations in the Kalgoorlie-Boulder region proved to be the most challenging and resource-intensive aspect of the trial.

Kalgoorlie is located in a semi-arid region in which almost any human activity can generate dust which in turn is transported by wind. On a relatively calm day, emissions of dust from mining operations were observed to be minimal due to the extensive use of hypersaline water on roadways.

However, on dry windy days dust clouds sweep through the region, originating from any bare patch of earth and are so widespread and general in nature that it was almost impossible to identify a particular source. The dustiest operation that was observed within Kalgoorlie-Boulder was from land being cleared for residential development.

It was generally considered that particulate emissions from combustion

sources could be estimated with a reasonable degree of accuracy. However, at this stage the effort required to estimate fugitive emissions from mining operations was found to be extremely resource intensive and the results obtained were very approximate.

As a result the study recommended that combustion particulates be reported separately to fugitive dust ones. Other findings from the Kalgoorlie Trial were:

- Only 20 facilities in the study region were required to report, but there was a high participation rate in the trial (80 %).
- The trial provided direction on the best methodologies to estimate total VOCs and the specific VOC components within fuels.
- The estimates of waste transfers in the region were minimal when compared with emissions data.
- Mining facilities were required to estimate emissions of between 20 – 30

of the 90 substances listed on the NPI.

- Early involvement of the Kalgoorlie mining companies in the NPI helped pave the way for other mining operations by providing feedback on the best emission-estimating methodologies.
- Spreadsheets have basically been completed to facilitate NPI reporting for mining operations. The spreadsheets now need to be tested to gain approval.
- To increase awareness of the NPI among Kalgoorlie students, two senior high schools and a technical college participated in the trial by acting as mock reporting facilities.

To view the Kalgoorlie Trial data on the Internet, go to http://www.environment.gov.au/epg/npi/database/trials/wa_trial.html

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OECD Workshop in Australia

Environment Australia hosted an OECD workshop on release estimation techniques in Canberra, 15-17 December 1999.

The aim of the workshop was to identify and review estimation techniques for both point and diffuse sources, make them widely available and identify how the methods could be more easily adapted and shared between OECD member countries.

Australia's experience in the development of industry handbooks and aggregated emissions puts it in an ideal position to contribute to the workshop's aims. Representatives of Environment Australia, State and Territory environment authorities, the US EPA, Environment Canada, the Japanese Environment Agency, the European Commission, Germany, Korea, the Netherlands, Norway and industry were amongst the participants.

Environment Australia will make the workshop's outcomes available on its website. If you would like further information about the