National Pollutant Inventory audit report 2009

EPA South Australia

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1 Introduction

Purpose of this report

This report has been prepared to present the key findings of the National Pollutant Inventory (NPI) audit program conducted on selected facilities that reported to the NPI for the 2007–08 reporting period.

This report details the criteria used to choose the facilities, the methodology used to conduct the audits and the findings from the audit program.

The report will be used by the South Australian (SA) NPI team to address the issues identified by the audit and in turn, focus desktop audits of NPI reports during the 2008–09 validation period. This report can also be used by other NPI facilities to improve the thoroughness of their site assessments with relation to pollutant estimates by adopting the audit checklist as a self assessment and checking the findings in this report against their own report for 2009–10.

Selection of facilities

Facilities were selected for the NPI audit program based on an assessment of previously submitted NPI reports. Individual facility reports from 2007–08 were ranked in descending order from reports with the highest number of errors detected through previous years' validations to the lowest. From this shortlist, the reports with the highest number of errors were prioritised for audit selection and four facilities were chosen after consultation with relevant licence coordinators. The facilities selected for auditing were not representative of their industrial sector. However, they were intended to represent the worst-case scenario of facilities reporting to the NPI overall.

Description of the facilities selected

There were various industrial sectors covered in this audit as classified under the Australian New Zealand Standard Industrial Classification 2006 (ANZSIC 2006). The ANSZIC codes of the selected facilities and the total number of facilities that report to the NPI in South Australia under those codes are listed in Table 1.

Table 1 Number of facilities that report to the NPI in SA under the selected ANZSIC 2006 Codes

ANZSIC 2006 CODE	Number of facilities reporting to the NPI in SA
1212 – Beer manufacturing	2
1214 – Wine and other alcoholic beverage manufacturing	85
2021 – Clay brick manufacturing	3
5309 – Other warehousing & storage services	4

The facilities selected for this audit program consisted of a fertiliser storage, a winery, a brewery and a brick manufacturer.

Audit objectives

The objectives of the audit program were:

- to satisfy our agreement with the Australian Government to undertake compliance activities including onsite audits where necessary
- to ensure a complete and accurate NPI report is submitted by a facility. The audit included:
  - inspecting the facility to gain a greater understanding of the processes undertaken at the facility

- ensuring that all pollution sources were identified and included in their report
- assisting with any pollution emission estimate calculations and the understanding of guidance material
- determining if there are any further ways that the NPI team can assist with NPI reporting
- developing a list of recommendations for each facility to be implemented and included in their next NPI report.

Audit scope

The scope of the audit program was:

- to undertake a desktop assessment and then site audit
- to complete the checklist with the auditee/s
- to answer any questions from the auditee about the NPI.

The audit did not include assessment of other requirements from the EPA (licence conditions, Environment Protection Orders, development assessments, etc).

Audit criteria

The audits were limited to a review of each facility's compliance with the NPI Environment Protection Policy (EPP) 2008 and the NPI National Environment Protection Measure (NEPM).

Audit methodology

EPA NPI audits were performed on the selected facilities in accordance with the EPA working offsite procedures and protocols, and the NPI Audit Checklist.

The NPI Audit Checklist contains questions and checkpoints covering facility background information, chemicals and fuels, site processes and NPI reporting. For more information please refer to Appendix B.

On completion of individual audits a summary of audit findings and recommendations was presented in an NPI audit report to the facility.

The findings presented in this report are a collation of those presented in the individual NPI audit reports.

2 Audit findings

Compliance with the NPI NEPM and EPP (NPI) 2008 was assessed and findings are summarised in Table 2. This table details issues for all audited facilities and classifies them into different areas.

Table 3 identifies areas where audited facilities have the opportunity to gain positive recognition for activities or equipment that has led to a reduction in pollution emissions.

Table 2 Summary of the issues found during the NPI audits

Area of Concern	Issue	Frequency of occurrence
Environmental planning and training	Minimal number of staff familiar with NPI reporting[1]	2/4
Reporting thresholds	Category 1 substance not considered in threshold determination[2]	2/4
	Fuel usage not included in report	1/4
Reporting emissions	Error found in emission estimation calculations	4/4
	Fuel/chemical storage emissions not included in report	3/4
	No cross check of data is conducted	2/4
	Emissions not split into point and fugitive sources	1/4
	Pollution control measures not included in emission estimation calculation	1/4
	Combustion of fuel in engines not included as an emission source	1/4
	Incorrect EET reported	1/4
Reporting transfers	Mandatory transfer of Category 1, 1a, 3 substances in waste streams not considered[2]	1/4

[1] Minimal (≤1 staff member), Adequate (>1 staff member). Familiarity with NPI based on whether a staff member could competently submit an NPI report.

[2] For a complete list of the 93 NPI substances and threshold categories please refer to Appendix C.

Table 3 Summary of the opportunities for positive recognition found during the NPI audits

Area for recognition	Issue	Frequency of occurrence
Cleaner Production activities/ pollution control equipment	Opportunity to report cleaner production activities in next NPI report	3/4
	Opportunity to report pollution control equipment in next NPI report	1/4

3 Where to from here?

The findings from auditing **four** NPI reporting facilities out of a total of **438** statewide provide some information about aspects of compliance with the NPI NEPM in the **NPI reporting** sector. However, the selected facilities represent a worst-case scenario and therefore the findings from the audits are not typical of the whole sector. The findings identify areas where additional attention from the NPI team during report validation may be useful.

The SA NPI team will use the findings from the NPI audit program to determine how best to allocate resources to address the issues identified. This may involve a number of tools to reach the desired outcomes of the further actions program. For example:

- training and industry workshops for NPI reporters
- desktop audits
- more site audits
- information provided in annual newsletter and summary reports.

4 References

Environment Protection Act 1993, <www.legislation.sa.gov.au>.

National Pollution Inventory Environment Protection Policy 2008, <www.legislation.sa.gov.au>.

National Environment Protection Council 1998, *National Environment Protection National Pollutant Inventory Measure*, <www.ephc.gov.au/sites/default/files/NPI_NEPM__NPI_NEPM_as_Varied_200811.pdf>.

Acknowledgments

The SA NPI team would like to acknowledge and thank the EPA licence coordinators of the audited facilities for their time and assistance throughout the audit process.

The SA NPI team would also like to acknowledge and thank all of the NPI reporters and site managers from the audited facilities for their time, cooperation and support with the site visits and NPI Audit checklists.

Appendix A Definitions and abbreviations

ANZSIC	Australian New Zealand Standard Industrial Classification
EET	Emission Estimation Technique
EPA	Environment Protection Authority
EPP	Environment Protection Policy
NEPM	National Environment Protection Measure
NPI	National Pollutant Inventory

Appendix B NPI Audit Checklist

The NPI Audit Checklist is available to be used by NPI reporting facilities to perform a self assessment as part of their internal quality assurance procedures. To download and view the checklist please click on the following link <www.epa.sa.gov.au/businesses/national_pollutant_inventory/reports_and_updates>.

Appendix C Complete list of the 93 NPI substances

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
	Acetaldehyde	75-07-0	1	10 tonnes per year
	Acetic acid (ethanoic acid)	64-19-7	1	10 tonnes per year
	Acetone	67-64-1	1	10 tonnes per year
	Acetonitrile	75-05-8	1	10 tonnes per year
	Acrolein	107-02-8	1	10 tonnes per year
	Acrylamide	79-06-1	1	10 tonnes per year
	Acrylic acid	79-10-7	1	10 tonnes per year
	Acrylonitrile (2-propenenitrile)	107-13-1	1	10 tonnes per year
	Ammonia (total)	N/A	1	10 tonnes per year
	Aniline (benzenamine)	62-53-3	1	10 tonnes per year
	Antimony and compounds	7440-36-0	1	10 tonnes per year
	Arsenic and compounds	7440-38-2	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Benzene	71-43-2	1	10 tonnes per year
	Benzene hexachloro- (HCB)	118-74-1	1	10 tonnes per year
	Beryllium and compounds	7440-41-7	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Biphenyl (1,1-biphenyl)	92-52-4	1	10 tonnes per year
	Boron and compounds	7440-42-8	1	10 tonnes per year
1,3-	Butadiene (vinyl ethylene)	106-99-0	1	10 tonnes per year
	Cadmium and compounds	7440-43-9	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
	Carbon disulfide	75-15-0	1	10 tonnes per year
	Carbon monoxide	630-08-0	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Chlorine and compounds	N/A	1	10 tonnes per year
	Chlorine dioxide	10049-04-4	1	10 tonnes per year
	Chloroethane (ethyl chloride)	75-00-3	1	10 tonnes per year
	Chloroform (trichloromethane)	67-66-3	1	10 tonnes per year
	Chlorophenols (di, tri, tetra)	N/A	1	10 tonnes per year
	Chromium (III) compounds	7440-47-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Chromium (VI) compounds	7440-47-3	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Cobalt and compounds	7440-48-4	1	10 tonnes per year
	Copper and compounds	7440-50-8	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Cumene (1-methylethylbenzene)	98-82-8	1	10 tonnes per year
	Cyanide (inorganic) compounds	N/A	1	10 tonnes per year
	Cyclohexane	110-82-7	1	10 tonnes per year
1,2-	Dibromoethane	106-93-4	1	10 tonnes per year
	Dibutyl phthalate	84-74-2	1	10 tonnes per year

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
1,2-	Dichloroethane	107-06-2	1	10 tonnes per year
	Dichloromethane	75-09-2	1	10 tonnes per year
	Ethanol	64-17-5	1	10 tonnes per year
2-	Ethoxyethanol	110-80-5	1	10 tonnes per year
2-	Ethoxyethanol acetate	111-15-9	1	10 tonnes per year
	Ethyl acetate	141-78-6	1	10 tonnes per year
	Ethyl butyl ketone	106-35-4	1	10 tonnes per year
	Ethylbenzene	100-41-4	1	10 tonnes per year
	Ethylene glycol (1,2-ethanediol)	107-21-1	1	10 tonnes per year
	Ethylene oxide	75-21-8	1	10 tonnes per year
	Di-(2-Ethylhexyl) phthalate (DEHP)	117-81-7	1	10 tonnes per year
	Fluoride compounds	N/A	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Formaldehyde (methyl aldehyde)	50-00-0	1	10 tonnes per year
	Glutaraldehyde	111-30-8	1	10 tonnes per year
n-	Hexane	110-54-3	1	10 tonnes per year
	Hydrochloric acid	7647-01-0	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Hydrogen sulfide	7783-06-4	1	10 tonnes per year

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
	Lead and compounds	7439-92-1	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Magnesium oxide fume	1309-48-4	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Manganese and compounds	7439-96-5	1	10 tonnes per year
	Mercury and compounds	7439-97-6	1b	5 kilograms per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Methanol	67-56-1	1	10 tonnes per year
2-	Methoxyethanol	109-86-4	1	10 tonnes per year
2-	Methoxyethanol acetate	110-49-6	1	10 tonnes per year
	Methyl ethyl ketone	78-93-3	1	10 tonnes per year
	Methyl isobutyl ketone	108-10-1	1	10 tonnes per year
	Methyl methacrylate	80-62-6	1	10 tonnes per year
4,4'-	Methylene-bis(2-chloroaniline) (MOCA)	101-14-4	1	10 tonnes per year
	Methylene bis (phenylisocyanate)	101-68-8	1	10 tonnes per year
	Nickel and compounds	7440-02-0	1	10 tonnes per year
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Nickel carbonyl	13463-39-3	1	10 tonnes per year
	Nickel subsulfide	12035-72-2	1	10 tonnes per year
	Nitric acid	7697-37-2	1	10 tonnes per year
	Organo-tin compounds	N/A	1	10 tonnes per year

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
	Oxides of Nitrogen	N/A	2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Particulate Matter 2.5 um (particulate matter 2.5 microns or less, also know as $PM_{2.5}$)	N/A	2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Particulate Matter 10.0 um (particulate matter 10 microns or less, also know as PM_{10})	N/A	2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Phenol	108-95-2	1	10 tonnes per year
	Phosphoric acid	7664-38-2	1	10 tonnes per year
	Polychlorinated biphenyls	N/A	1	10 tonnes per year
	Polychlorinated dioxins and furans (TEQ)	N/A	2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Polycyclic aromatic hydrocarbons (B[a]Peq)	N/A	2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Selenium and compounds	7782-49-2	1	10 tonnes per year
	Styrene (ethenylbenzene)	100-42-5	1	10 tonnes per year
	Sulfur dioxide	7446-09-5	1	10 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour

prefix	SUBSTANCE	CAS No.	THRESHOLD CATEGORY	THRESHOLD
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
	Sulfuric acid	7664-93-9	1	10 tonnes per year
1,1,1,2-	Tetrachloroethane	630-20-6	1	10 tonnes per year
	Tetrachloroethylene	127-18-4	1	10 tonnes per year
	Toluene (methylbenzene)	108-88-3	1	10 tonnes per year
	Toluene-2,4-diisocyanate	584-84-9	1	10 tonnes per year
	Total Nitrogen	N/A	3	15 tonnes per year
	Total Phosphorus	N/A	3	3 tonnes per year
	Total Volatile Organic Compounds	N/A	1a	25 tonnes per year
			2a	400 tonnes per year, or 1 tonne per hour
			2b	2,000 tonnes per year, or 60,000 megawatt hours, or rated at 20 megawatts
1,1,2-	Trichloroethane	79-00-5	1	10 tonnes per year
	Trichloroethylene	79-01-6	1	10 tonnes per year
	Vinyl Chloride Monomer	75-01-4	1	10 tonnes per year
	Xylenes (individual or mixed isomers)	1330-20-7	1	10 tonnes per year
	Zinc and compounds	7440-66-6	1	10 tonnes per year