GLADSTONE INDUSTRY LEADERSHIP GROUP

This table has been developed by the Gladstone Industry Leadership Group. The table highlights the combined pollutants of each of our member companies and through its release demonstrates our member's commitment to transparency.

There are two key considerations to understanding this table, the frequency and concentration of exposure to a contaminant and the health impact of this exposure.

Real time and historical pollutant frequency and concentration exposure for the Gladstone community is monitored by the Clean and Healthy Air for Gladstone project. This data is available at http://www.epa.qld.gov.au/projects/air/

For an understanding of the potential health impacts of these contaminants in Gladstone, please see the Queensland Health report titled "Clean and Healthy Air for Gladstone Project: Interim Report Health Assessment Phase 1: Summary of data analysis from existing health datasets" which is available in the GILG document library or at http://www.epa.qld.gov.au/publications?id=2733

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The Combined National Pollutant Inventory emissions by GILG members

Aggregrated GILG Member NPI data (kilograms per year) [1]

Compound	Threshold Reporting Amount (tonnes per year) [2]	BSL	Cement Australia	NRG	QAL	Yarwun	Total	NPI Haz Score (1 low 6 Hi) [3]	No. GILG Releasers
Chromium (VI) compounds [4]	10			4.30	0.47	1.06	5.82	5.5	3
Oxides of Nitrogen [4]	Burn > 400t fuel/yr	123,000	2,590,000	45,000,000	8,190,000	991,000	56,900,000	4.5	5
Cadmium & compounds [4]	10	0.8	0.4	14.0	4.0	0.1	19.3	4.3	5
Arsenic & compounds [4]	10	0.1	2.6	16.0	23.3	0.9	43.0	4.0	5
Beryllium and compounds [4]	10	0.01	0.57	5.40	0.24	0.23	6.44	4.0	5
Mercury & compounds	0.005	2	5	24	138	5	173	3.7	5
Sulphuric Acid	10			360,000			360,000	3.6	1
Polychlorinated dioxins and furans [4]	Burn > 400t fuel/yr	0.000004	0.000360	0.003600	0.000019	0.000066	0.004048	3.5	5
Selenium & compounds	10		32.2				32.2	3.5	1
Fluoride compounds	10	438,000	153	310,000	511	4,510	753,000	3.3	5
Trichloroethylene [4]	10	31,200					31,200	3.3	1
Chromium (III) compounds [4]	10	1	23	81	148	50	303	3.2	5
Lead & compounds [4]	10		14	120	59	36	229	3.2	4
Cobalt & compounds	10		0.9	61.0	6.1	9.4	77.5	3.0	4
Acetaldehyde [4]	10				14,400		14,400	2.9	1
Carbon Monoxide	10	65,700,000	612,000	1,200,000	1,200,000	72,700	68,700,000	2.8	5
Sulfur dioxide [4]	10	11,800,000	83,800	34,000,000	3,800,000	1,310,000	51,000,000	2.8	5
Zinc [4]	10	23	89	260	600		971	2.8	4
Polycyclic aromatic hydrocarbons [4]	Burn > 400t fuel/yr	3,090		83	4	1	3,170	2.8	4
Chlorine	10			15.0			15.0	2.7	1
Manganese & compounds [4]	10	2	11	1,200	360	76	1,650	2.6	5
Copper & compounds	10	1	823	100	69	15	1,010	2.5	5
Particulate Matter 10.0 um [4]	Burn > 400t fuel/yr	204,000	32,500	520,000	425,000	117,000	1,300,000	2.5	5
Particulate Matter 2.5 um [4]	Burn > 400t fuel/yr	8,460	11,100	290,000	107,000	41,900	459,000	2.5	5
Ammonia [4]	10	8,650		1,500			10,200	2.5	2
Boron and compounds	10			160,000	4,820		165,000	2.5	2
Antimony & compounds	10		0.13				0.13	2.3	1
Xylenes [4]	10			110			110	2.3	1
Hydrochloric acid	10	190	23,600	860,000	759	221	885,000	2.2	5
Nickel & compounds [4]	10	4	9	180	109	32	335	2.2	5
Cumene(1-methylethylbenzene)	10			13.0			13.0	2.2	1
Acetone	10				18,300		18,300	1.8	1
Total Volatile Organic Compounds [4]	25	66,800	3,830	130,000	124,000	249,000	575,000	Unranked	5

NOTE 1:

What is the National Pollutant Inventory (NPI)?

The National Pollutant Inventory (NPI) is a publicly accessible database containing information on the types and amounts of pollutants being emitted to the Australian environment.

Information in the database is supplied by state and territory environment agencies who receive the information from facilities in their jurisdictions. Industry information on the database is updated annually.

The purpose of the inventory is to help assess the nature of pollution in Australia by drawing together information about pollutants being released into the environment. The NPI identifies the sources of emissions and whether they are emitted to air, water or land.

The NPI helps everyone to keep an eye on pollution.

Please note that further information about the approach, definitions and thresholds used in the NPI process and nature of NPI pollutants is available at http://www.npi.gov.au.

Disclaimer

The Australian Government Department of the Environment and Heritage is responsible for the development and ongoing operation of the NPI web site.

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Pollutant exposure factors

The ultimate fate of NPI substances emitted to the environment impacts the effect they have on human health and the environment. The pollution exposure to humans and the environment cannot be determined solely from the NPI. Many additional factors determine whether a pollutant emission is felt as ground level pollution. Examples of additional factors are the:

- height of an emission above the ground (high stacks versus ground level vehicle exhausts)
- nature of receiving environment
- chemical reactivity of the substance
- prevailing weather conditions

Since NPI does not attempt to collect information about these additional factors, NPI data can only reflect pollutant emissions at the emission source.

Further information is available at http://www.npi.gov.au/database/data-explanation.html#toxicity

Please note that a blank cell on the above table does not indicate zero emissions, only that emissions for this facility were below the required NPI reporting threshold.

NOTE 2:

If a facility uses more than 10 tonnes of selected NPI substances, or consumes more than a specified amount of energy, or emits more than a certain amount of total nitrogen or total phosphorus to water, then it is required to estimate and report its emissions. Only those facilities that exceed certain thresholds appear on the NPI.

These are the thresholds beyond which NPI reporting is required by facilities. Further information is available at http://www.npi.gov.au/about/list_of_subst.html

NOTE 3:

Pollutant toxicity

NPI substances have a wide range of toxicities. A small emission may not necessarily be insignificant; 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. As all emission amounts reported here have been rounded, totals may differ from the sum of the individual amounts on these reports.

Further information is available at http://www.npi.gov.au/database/data-explanation.html#toxicity

Total Hazard Score

The Total Hazard Score takes into account both human health and environmental criteria.

The health hazard rating is from 0 to 3. A score of 3 represents a very high hazard to health, 2 represents a medium hazard and 1 is harmful to health.

The environmental rating of 0 to 3. A score of 3 represents a very high hazard to the environment and 0 a negligible hazard.

The Total Hazard Score is the sum of these two scores.

Factors taken into account to obtain this ranking and these scores include the extent of the material's toxic or poisonous nature and/or its lack of toxicity, and the measure of its ability to remain active in the environment and whether it accumulates in living organisms. It does not take into account exposure to the substance.

Further information is available at http://www.npi.gov.au/database/substance-info/profiles/68.html

NOTE 4:

Pollutants of Potential Interest

These compounds have been identified by Queensland Health in the Clean and Healthy Air for Gladstone Project Health Assessment Phase 1 Summary Report as Pollutants of Potential Interest. Further information is available at http://www.epa.qld.gov.au/publications/p02731aa.pdf/Clean_and_healthy_Air_for_Gladstone_Health_Assessment_Phase_1_Summary_Report.pdf

The table below shows the NPI emissions for each GILG member site and the scientific method used to gather this information.

GILG NPI Emissions and the source of NPI data

BSL		
Compound	Air (kg/yr)	Method
Ammonia	8,651	D
Arsenic & compounds	0.14	F
Beryllium and compounds	0.01	F
Cadmium & compounds	0.80	F
Carbon Monoxide	65,660,257	F
Chromium (III) compounds	1.01	F
Copper & compounds	0.66	F
Fluoride compounds	438,265	D, F
Hydrochloric acid	190.27	D
Lead & compounds	0.36	F
Manganese & compounds	2.24	F
Mercury & compounds	1.86	F
Nickel & compounds	4.18	F
Oxides of Nitrogen	122,920	F
Particulate Matter 10.0 um	203,764	D, F
Particulate Matter 2.5 um	8,460	D, F
Polychlorinated dioxins and furans	0.0000035	F
Polycyclic aromatic hydrocarbons	3,086	F
Sulfur dioxide	11,792,391	EC, F
Total Volatile Organic Compounds	66,799	EC, F
Trichloroethylene	31,215	F
Zinc	22.58	F

Cement Australia		
Compound	Air (kg/yr)	Method
Antimony & compounds	0.13	F
Arsenic & compounds	2.63	F
Beryllium and compounds	0.57	F
Boron and compounds	0.23	F
Cadmium & compounds	0.37	F
Carbon Monoxide	611,561	F
Chromium (III) compounds	23	F
Cobalt & compounds	0.89	F
Copper & compounds	823	F
Fluoride compounds	153	F
Hydrochloric acid	23,646	F
Lead & compounds	14.21	F
Manganese & compounds	11.12	F
Mercury & compounds	5.08	F
Nickel & compounds	9.00	F
Oxides of Nitrogen	2,586,353	D,F
Particulate Matter 10.0 um	32,482	F
Particulate Matter 2.5 um	11,079	F
Polychlorinated dioxins and furans	0.000360	F
Polycyclic aromatic hydrocarbons	0.12	F
Selenium & compounds	32	F
Sulfur dioxide	83,837	F
Total Volatile Organic Compounds	3,827	F
Zinc	89	F

NRG		
Compound	Air (kg/yr)	Method
Ammonia	1500	F
Arsenic & compounds	16	F
Beryllium and compounds	5	F
Boron and compounds	160000	F
Cadmium & compounds	14	F
Carbon Monoxide	1200000	F
Chlorine	15	F
Chromium (III) compounds	81	F
Chromium (VI) compounds	4.3	F
Cobalt & compounds	61	F
Copper & compounds	100	F
Cumene(1-methylethylbenzene)	13	F
Fluoride compounds	310000	F
Hydrochloric acid	860000	EC
Lead & compounds	120	F
Manganese & compounds	1200	F
Mercury & compounds	24	F
Nickel & compounds	180	F
Oxides of Nitrogen	45000000	F
Particulate Matter 10.0 um	520000	D,EC
Particulate Matter 2.5 um	290000	D,EC
Polychlorinated dioxins and furans	0.003600	F
Polycyclic aromatic hydrocarbons	83	F
Sulfur dioxide	34000000	F
Sulphuric Acid	360000	F
Total Volatile Organic Compounds	130000	F
Xylenes	110	F
Zinc	260	F

QAL		
Compound	Air (kg/yr)	Method
Acetaldehyde	14,400	D, EC, F
Acetone	18,346	D, EC, F
Arsenic & compounds	23	D, EC, F
Beryllium and compounds	0.2382	D, EC, F
Boron and compounds	4,822	D, EC, F
Cadmium & compounds	3.98	D, EC, F
Carbon Monoxide	1,200,800	D, EC, F
Chromium (III) compounds	148	D, EC, F
Chromium (VI) compounds	0.465	D, EC, F
Cobalt & compounds	6.13	D, EC, F
Copper & compounds	69	D, EC, F
Fluoride compounds	511	D, EC, F
Hydrochloric acid	759	D, EC, F
Lead & compounds	59	D, EC, F
Manganese & compounds	360	D, EC, F
Mercury & compounds	138	EC, F
Nickel & compounds	109	D, EC, F
Oxides of Nitrogen	8,187,760	D, EC, F
Particulate Matter 10.0 um	425,000	D, EC, F
Particulate Matter 2.5 um	107,479	EC, F
Polychlorinated dioxins and furans	0.0000186	D, EC, F
Polycyclic aromatic hydrocarbons	4.09	D, EC, F
Sulfur dioxide	3,800,052	D, EC, F
Total Volatile Organic Compounds	124,230	D, EC, F
Zinc	600	D, EC, F

RTA - Yarwun		
Compound	Air (kg/yr)	Method
Arsenic & compounds	0.88	D, F
Beryllium and compounds	0.23	D, F
Cadmium & compounds	0.13	D, F
Carbon Monoxide	72,664	D, F
Chromium (III) compounds	50	D, F
Chromium (VI) compounds	1.06	D, F
Cobalt & compounds	9	D, F
Copper & compounds	15	D, F
Fluoride compounds	4,515	D, F
Hydrochloric acid	221	D
Lead & compounds	36	D, F
Manganese & compounds	76	D, F
Mercury & compounds	4.51	D, F
Nickel & compounds	32	D, F
Oxides of Nitrogen	990,635	D, F
Particulate Matter 10.0 um	116,576	D, F
Particulate Matter 2.5 um	41,945	D, F
Polychlorinated dioxins and furans	0.000066	D
Polycyclic aromatic hydrocarbons	0.6271	D, F
Sulfur dioxide	1,310,457	D, F
Total Volatile Organic Compounds	248,922	D, F

Legend of Scientific Methods used

D **Direct Measurement**

This data has been collected using real time emissions monitoring equipment or by analysis of physical emissions samples.

F **Emission Factor**

An emission factor is used to estimate emissions to the environment. Emission factors are formulae that relate known emission characteristics to other variables that are easier or more economical to monitor than the pollutants themselves. For the NPI, emission factors generally relate the quantity of substances emitted from a source to the facility's production levels. Emission factors are obtained from US, European, and Australian sources. The NPI Guide contains more detailed information on reporting to the NPI at http://www.npi.gov.au/handbooks/guidetoreporting.html

EC **Engineering Calculation**

This data is based on scientific knowledge of the inputs to a process, chemical reactions that occur and outputs that are produced. Hence, if the inputs and processes are known, the emissions of a process can be calculated.