

Update to Air Pollutant Design Criteria used in the Environmental Impact Assessment Process

Purpose and Scope

This Board Statement clarifies how the EPA Board uses and implements the *Environment Protection Policy (Air Quality) 2004* (Air EPP) during the environmental impact assessment (EIA) process and provides important updates to air pollutant design criteria. Some criteria for air pollutants in the Air EPP derive from the *National Environmental Protection (Ambient Air Quality) Measure 1998* (Air NEPM) standards that have since been varied. The Air NEPM variations, relating to three criteria, prevail as they derive from the more contemporary policy document.

In addition, the Director, EPA has determined 19 supplementary air pollutant design criteria that are not currently in the Air EPP. The Director has determined these criteria based on new standards in the Air NEPM, on health advice and/or from other jurisdictions. They include criteria for air pollutants important for emerging industrial processes. These supplementary design criteria are determined according to Clause 11(1)(e) of the Air EPP, which states that if Schedule 2 does not contain the criteria for a pollutant of concern, then the regulatory authority should request that the Director determine appropriate design criteria.

The varied NEPM standards, the supplementary design criteria and the existing air pollutant design criteria in the Air EPP that are considered in the EIA process are provided in Table 1 in this Board Statement.

Principles applied in the Environmental Impact Assessment Process

When a proposal to develop and undertake a scheduled activity is submitted to the EPA Board for an EIA under the EMPC Act, the EPA Board is guided by the principles and provisions of the Air EPP in assessing the risk of environmental harm or nuisance from air pollutant emissions emanating from the activity.

If the emission of air pollutants is likely to cause environmental harm or nuisance the EPA Board requires the proponent to undertake atmospheric dispersion modelling to determine likely ground level concentrations at or beyond the boundary of the land on which the activity is situated. The Air EPP lists the ground level concentrations, or design criteria, that should not be exceeded for both known air pollutants and an unknown mixture of air pollutants causing odour, in Schedule 2 and Schedule 3 respectively.

Design Criteria for known pollutants

The design criteria in Schedule 2 for known pollutants were based on the *National Environmental Protection (Ambient Air Quality) Measure 1998* (Air NEPM) standards and design criteria from other jurisdictions. Some of the standards in the Air NEPM have been recently varied. In addition, supplementary air pollutant design criteria have been determined by the Director.

Therefore, the design criteria to be complied with and used in the EIA process are provided in Table 1 in this Board Statement. It should be noted that in-stack concentrations in Schedule 1 remain unchanged.

Design Criterion for a mixture of unknown pollutants causing odour

The design criterion for odour in Schedule 3 remains at 2 odour units (2 OU). The 2 OU concentration is chosen as the boundary criterion because this odour concentration level is above the defined 1 OU limit of odour detection that would be expected to be perceivable by most people. If the odour concentration is 2 OU or less at the boundary then it would be unlikely for the odour to be perceived at the nearest residences or businesses.

The assessment and management of odour emissions is complex. Odour can be transient and changeable when mixed with other chemicals in the atmosphere. The perception of odour is also likely to depend on several factors including nature and strength of the source, distance from the source as well as terrain and site-specific meteorological conditions.

For this reason, the EPA Board consider a range of industry-specific and site-specific factors in their determination. Best Practice Environmental Management and Accepted Modern Technology should be applied in all development proposals.

Process of consideration for risk of environmental harm or nuisance

If atmospheric dispersion modelling results indicate that either known pollutants, or odour concentrations could exceed the design criteria at or beyond the boundary of the premises, the proponent is asked to either improve the design of the technology to reduce the impact of emissions or make a case for why this exceedance is unlikely to cause environmental nuisance or provide details of how the risk of environmental harm or nuisance would be reduced and managed during operations.

The required process for a proponent to follow is based on principles of the Air EPP. These are:

1. The application of Best Practice Environmental Management and Accepted Modern Technology to avoid or minimise air pollutant emissions from the facility.
2. Design of the facility with appropriate management and control systems of air pollutant emissions so as to demonstrate that the activity will not compromise the environmental values of the Air EPP (provided in clause 6 of the Air EPP) and will not pose a risk of environmental harm or nuisance to surrounding receptors.
3. Calculation of potential impact of air pollutant emissions from the activity based on air dispersion modelling, using methodologies approved by the Director, EPA.
4. The application of the most appropriate air pollutant management options and monitoring systems to address the potential emissions to air and minimise the environmental risk posed by them.
5. Commitment to build the equipment and infrastructure and operate the activity as approved in the EIA process to ensure the air pollutant emissions will not pose a risk of environmental harm or nuisance.

These principles are in line with principles set out in clause 9 of the Air EPP and other provisions in the Air EPP that deal with the assessment of air pollutants from point sources.

Subsequent regulation and management of air pollutants

Once an activity has received approval to operate and environmental permit conditions have been set, it is likely that ongoing air pollutant management measures will be required. This is particularly true if anything on site changes (with the approval of the Director, EPA). For example, any changes to the technology, operational processes, location of potential pollutant sources, etc. may result in increased air emissions. For this reason, or following environmental nuisance complaints, it may be necessary for the proponent to undertake a process similar to that outlined in steps 1 to 5 in the above-mentioned EIA process.

Relevant Legislation and supporting Policy Documents

- *Environmental Management and Pollution Control Act 1994*
- *Environment Protection Policy (Air Quality) 2004*, EPA Tasmania

Definitions

Definitions in this policy are consistent with the definitions in the *Environmental Management and Pollution Control Act 1994* (EMPC Act) and the *Environment Protection Policy (Air Quality) 2004*.

Table 1: Air Pollutant Design Criteria to be used in the Tasmanian Environmental Impact Assessment process

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Acetaldehyde ^o	75-07-0	0.042	0.076	
Acetic acid ^o	64-19-7	0.2	0.5	
Acetone ^o	67-64-1	20	48	
Acrolein ^t	107-02-8	0.0033	0.0083	
Acrylic acid ^o	79-10-7	0.094		
Acrylonitrile ^t	107-13-1	0.067	0.15	
Alpha chlorinated toluenes and Benzoyl chloride ^c			0.017	Supplementary
Ammonia ^t	7664-41-7	0.83	0.6	
Aniline ^t	62-53-3	0.17	0.63	
Antimony and compounds ^t			0.017	Supplementary
Arsenic and compounds ^t			0.00017	Supplementary
Asbestos ^t			33 000 fibres/m ³	
Asphalt fume ^t			0.17	
Barium (soluble compounds) ^t			0.017	
Benzene ^c	71-43-2	0.033	0.1	
Benzo(a)pyrene as a marker for polycyclic aromatic hydrocarbons ^c			0.00073	Supplementary
Benzyl chloride ^o		0.0094	0.047	
Beryllium ^t			0.00007	
Biphenyl ^t	92-52-4	0.0067	0.033	
Bromochloromethane ^t	74-97-5	6.7	35	
Bromoform	75-25-2	0.017	0.17	
Bromotrifluoromethane ^t	75-63-8	33	203	
1,3-Butadiene ^c	106-99-0	0.45	1	
n-Butanol ^o	71-36-3	0.3	0.9	
n-Butyl acetate ^o	123-86-4	0.4	1.9	Supplementary
Butyl acrylate ^o	141-32-2	0.034	0.18	Supplementary
Butyl mercaptan ^o	109-79-5	0.004	0.012	
Cadmium and cadmium compounds ^c			0.000033	Supplementary
Carbon black ^t			0.1	
Carbon disulphide ^o	75-15-0	0.042	0.13	
Carbon monoxide (8-hour average) ^t	630-08-0	9		

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Carbon tetrachloride ^t	56-23-5	0.17	1.1	
Chlorine ^t	7782-50-5	0.033	0.1	
Chlorine dioxide ^t	10049-04-4	0.003	0.01	
Chlorobenzene ^o	108-90-7	0.042	0.2	
Chloroform ^t	67-66-3	0.33	1.59	
Chloromethane ^t	74-87-3	3.3	7	
Chromic acid and chromates, as CrO ₃ ^c	7738-94-5		0.0017	
Chromium, soluble chromic and chromous salts as Cr ^t			0.017	
Copper: fume ^t	7440-50-8		0.0067	
Copper: dust and mist ^t			0.033	
Cotton dust (raw) ^t			0.0067	
Crotonaldehyde ^t	4170-30-3	0.067	0.2	
Cumene ^o	98-82-8	0.008	0.039	
Cyanide as CN ^t	57-12-5		0.2	
Cyclohexane ^t	110-82-7	10	35	
Cyclohexanol ^t	108-93-0	1.7	6.7	
Cyclohexanone ^o	108-94-1	0.12	0.48	
Diacetone alcohol ^o	123-42-2	0.28	1.3	
o-Dichlorobenzene ^t	95-50-1	1.7	10	
1,2-Dichloroethane ^t	107-06-2	1.7	6.7	
1,2-Dichloroethylene ^t	540-59-0	6.7	26.3	
Dichlorvos ^t	62-73-7	0.0033	0.033	
Diethylamine ^o	109-89-7	0.02	0.06	
Dimethylamine ^o	124-40-3	0.0094	0.017	
Dinitrobenzene (all isomers) ^t		0.005	0.033	
Dinitrotoluene ^t	602-01-7		0.05	
Dioxins and furans (as TCDD I-TEQs) ^{t,l}	1746-01-6		3.7E-09	
Diphenyl ether ^o	101-84-8	0.02	0.14	
Diphenylmethane-di-isocyanate (MDI) ^t	101-68-8	0.0007	0.007	
Epichlorhydrin ^t	106-89-8	0.067	0.25	

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Ethanedinitrile	460-19-5	0.09	0.19	Supplementary
Ethanol ^o	64-17-5	2	3.8	
Ethanolamine ^t	141-43-5	0.1	0.2	
Ethyl acetate ^o	141-78-6	6.3	22.1	
Ethyl acrylate ^o	140-88-5	0.0002	0.0008	
Ethylbenzene ^t	100-41-4	3.3	14.5	
Ethyl butyl ketone ^t	106-35-4	1.7	7.7	
Ethyl chloride ^t	75-00-3	33.3	86.6	
Ethylene glycol (vapour) ^t	107-21-1	3.3	8.7	
Ethylene oxide ^t	75-21-8	0.03	0.05	
Fluoride ^t	16984-48-8			
1-day average		0.0034	0.0029	
7-day average		0.002	0.0017	
90-day average		0.00059	0.0005	
Fluorine ^t	7782-41-4	0.033	0.067	
Formaldehyde ^t	50-00-0	0.033	0.05	
n-Hexane ^t	110-54-3	1.67	6	
2-Hexanone ^t	591-78-6	0.83	3.3	
Hydrogen chloride ^t	7647-01-0	0.2	0.2	
Hydrogen cyanide ^t	74-90-8	0.3	0.4	
Hydrogen sulphide ^{o,2}	7783-06-4	0.0001	0.00014	
Iron oxide fume ^t			0.17	
Lead ^t				
90-day average			0.0015	
1-year average			0.0005	Supplementary
Magnesium oxide fume ^t			0.33	
Maleic anhydride ^t	108-31-6	0.0083	0.033	
Manganese and compounds ^t			0.033	Supplementary
Mercury (inorganic) ^t	7439-97-6		0.017	
Mercury (organic) ^t		0.00003	0.0003	

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Methanol ^o	67-56-1	4.26	5.5	
Methyl acrylate ^t	96-33-3	0.33	1.2	
Methylamine ^o	74-89-5	0.0042	0.005	
Methyl bromide ^t	74-87-9	0.055	0.21	Supplementary
Methylene chloride ^t	75-09-2	3.3	12	
Methyl ethyl ketone ^o	78-93-3	2	5.9	
Methyl isobutyl ketone ^o	108-10-1	0.1	0.41	
Methyl mercaptan ^{o,2}	74-93-1	0.00042	0.00084	
Methyl methacrylate ^o	80-62-6	0.05	0.21	
Methyl styrene ^o		0.052	0.25	
Nickel and nickel compounds ^c			0.00033	Supplementary
Nickel carbonyl ^f		0.0017	0.012	
Nitric acid ^t	7697-37-2	0.067	0.17	
Nitrobenzene ^o	98-95-3	0.00094	0.0047	
Nitrogen dioxide ^t	10102-44-0			
		1-hour average	0.08	Varied NEPM
1-year average		0.015	Supplementary	
Particulate matter (as PM ₁₀) ^t				
		24-hour average	0.05	Varied NEPM
1-year average		0.025	Supplementary	
Particulate matter (as PM _{2.5}) ^t				
		24-hour average	0.025	Supplementary
1-year average		0.008	Supplementary	
Pentachlorophenol ^t	87-86-5		0.017	
n-Pentane ^t	109-66-0	20	60	
2-Pentanone ^t	107-87-9	6.7	23.3	
Perchloroethylene ^o	127-18-4	0.94	6.3	
Phenol ^o	108-95-2	0.0094	0.036	
Phosgene ^t	75-44-5	0.0033	0.013	

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Phosphine ^o	7803-51-2	0.0042	0.0056	
Photochemical oxidants (as ozone, 8 hour average) ^t		0.065		Supplementary
Phthalic anhydride ^t	85-44-9	0.033	0.2	
n-Propanol ^o	71-23-8	0.03	0.075	
Propylene glycol monomethyl ether ^t	107-98-2	3.3	12	
Propylene oxide ^t	75-56-9	3.3	8	
Pyridine ^o	110-86-1	0.0042	0.013	
Respirable crystalline silica – inhaled in the form of quartz or cristobalite (measured as PM2.5) ^c			0.0033	Supplementary
Silver, metal and soluble compounds (as Ag) ^t			0.00033	
Styrene (monomer) ^o	100-42-5	0.05	0.21	
Sulfur dioxide ^t	7446-09-5			
		1-hour average	0.1	Varied NEPM
		24-hour average	0.02	Supplementary
Sulfuric acid ^t	7664-93-9		0.033	
Toluene ^o	108-88-3	0.17	0.65	
Toluene-2,4-di-isocyanate ^t	584-84-9	0.0007	0.005	
Total reduced sulphur ^{o,3}			0.0015	
1,1,1-Trichloroethane ^t	71-55-6	11.7	63.3	
1,1,2-Trichloroethane ^t	79-00-5	0.33	1.5	
Trichloroethylene ^t	79-01-6	1.67	9	
Trichlorofluoromethane ^t	75-69-4	33.3	187	
Triethylamine ^o	121-44-8	0.09	0.36	
Trimethylbenzene (mixed isomers) ^t		0.83	4	
Vinyl chloride ^t	75-01-4	0.033	0.1	
Vinyl toluene ^t		3.3	16	
Welding fume (total particulate) ^t			0.17	
Wood dust			0.17	

Pollutant	CAS No.	Design Criteria 3-minute average unless otherwise specified		Criteria Source*
		ppm	mg/m ³ (25°C, 1 atm)	
Xylene ^o		0.08	0.35	
Zinc chloride fume ^t	7646-85-7		0.033	
Zinc oxide fume ^t	1314-13-2		0.17	

Key:

*	All design criteria are from the current Tasmanian Air EPP, except where noted as 'Supplementary' or 'Varied NEPM'
c	Carcinogen
o	Based on odour properties
t	Based on toxic properties
1	TCDD I-TEQs means 2,3,7,8-tetrachloro-dibenzodioxin as international toxic equivalents
2	Does not apply to bleached eucalypt kraft pulp mills
3	Applies only to bleached eucalypt kraft pulp mills
Supplementary	Supplementary design criteria as determined by the Director under clause 11(1)(e) of the Air EPP
Varied NEPM	National Environment Protection (Ambient Air Quality) Measure as varied in 2021

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