



Waste disposal categories - characteristics and thresholds

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We pay respect to Aboriginal Elders, past and present.

As Victoria's environmental regulator, we pay respect to how Country has been protected and cared for by Aboriginal people over many tens of thousands of years. We acknowledge the unique spiritual and cultural significance of land, water and all that is in the environment to Traditional Owners, and recognise their continuing connection to, and aspirations for Country.



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Introduction

In Victoria, waste must be classified to meet waste duties under Part 6.4 (Duties relating to industrial waste) and 6.5 (Duties and controls relating to priority waste) of the *Environment Protection Act 2017*.

The Environment Protection Regulations (the Regulations), Part 4.2 (Industrial Waste and priority waste) specifies the process for classifying waste.

This *Waste disposal categories – characteristics and thresholds* publication, as published by Environment Protection Authority Victoria (EPA) from time to time, is incorporated into the Regulations without modification.

This publication establishes the characteristics and thresholds necessary for complying with the Regulations, specifically, classification of wastes to determine the relevant waste disposal category in accordance with Schedule 6 of the Regulations.

A holder of waste must use the criteria and thresholds in this publication to determine a waste disposal category unless the category is determined by the Regulations.

A classification of priority waste must be consistent with any designation issued by the Authority for that type of priority waste.

How to use this publication

The tables in the following sections list criteria against which certain priority wastes must be assessed to determine which waste disposal category applies.

Table 1 provides hazard characteristics for the assessment of priority waste that are identified as Category A waste in the Regulations. These characteristics must be assessed to determine which category applies to the waste.

Priority waste that is not assigned as Category A waste in the Regulations, and, does not have any of the characteristics in Table 1 must be assessed against the contaminant thresholds in Table 2.

Any reference in this document to soil that contains asbestos does not include soil from which visible asbestos-containing material has been removed, so far as reasonably practicable, from the soil by the person proposing to supply, store, transport, sell, use or re-use the soil. See regulation 217 of the Occupational Health and Safety Regulations 2017 for further information.

Testing requirement

Wherever this publication requires testing to be completed, such as for leachable concentration or total concentration, it is a requirement that testing be undertaken by a National Association of Testing Authorities, Australia (NATA) accredited laboratory.

Definitions

Term	Description of terms
ADG Code	The Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
Fill material	As defined in the Environment Protection Regulations fill material is industrial waste that is soil— (a) with contaminant concentrations not exceeding the upper limits for fill material waste contaminant specified in the document Waste Disposal Categories — Characteristics and Thresholds; and (b) does not contain asbestos. ¹
Leachable concentration	The leachable concentration of a contaminant as determined in accordance with Australian Standards AS 4439.2-1997 and AS 4439.3—1997 and expressed as an ASLP value in the Australian Standard Leaching Procedure.
Priority waste	As defined in the <i>Environment Protection Act 2017</i> priority waste is any waste, including municipal waste and industrial waste, that is prescribed to be priority waste for the purposes of— (a) eliminating or reducing risks of harm to human health or the environment posed by the waste; or (b) ensuring the priority waste is managed in accordance with Part 6.5 of the Act; or (c) facilitating waste reduction, resource recovery and resource efficiency.
Schedule 5 of the Regulations	List of waste codes and classifications under the Regulations.
Schedule 6 of the Regulations	Provides a definition, or criteria-based assessment, for each category of priority waste
TC	Total concentration. This is the total concentration of contaminants.

¹ Note that, in accordance with the Occupational Health and Safety Act 2004, industrial waste that is soil does not contain asbestos if all visible asbestos-containing material (that is, any manufactured material or object that, as part of its design, contains asbestos) has been removed, so far as reasonably practicable, from the soil by the person proposing to supply, store, transport, sell, use or re-use the soil.

Table 1: Specific characteristics

The following table lists and describes the characteristics for the assessment of priority wastes to determine the relevant category.

Characteristic	Definition	Category
Explosive wastes	An explosive waste is a solid waste (or a mixture of wastes), which is in itself capable, by chemical reaction, of producing gas at such a temperature, pressure and speed, as to cause damage to the surroundings. Note: these are wastes classified as 'Class 1' under the ADG Code.	Category A
Flammable solid wastes	Waste solids, other than those classified as explosives, which, under conditions encountered in transport or containment, are readily combustible, or may cause or contribute to fire through friction. Note: these are wastes classified as 'Class 4.1' under the ADG Code.	Category A
Wastes liable to spontaneous combustion	Wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up in contact with air, and liable to catch fire. Note: these are wastes classified as 'Class 4.2' under the ADG Code.	Category A
Wastes which, in contact with water, emit flammable gases	Wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities. Note: these are wastes classified as 'Class 4.3' under the ADG Code.	Category A
Oxidising wastes	Wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other materials. Note: these are wastes classified as 'Class 5.1' under the ADG Code.	Category A
Organic peroxide wastes	Organic wastes which contain the bivalent-O-O-structure and which are thermally unstable and may undergo exothermic self-accelerating decomposition. Note: these are wastes classified as 'Class 5.2' under the ADG Code.	Category A
Infectious wastes	Wastes containing viable microorganisms or their toxins which are known or suspected to cause disease in animals or humans. Note: these include clinical and related wastes as prescribed in the Environment Protection Regulations. These are classified as 'Class 6.2' waste under the ADG Code.	Category A

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Characteristic	Definition	Category
Corrosive wastes	<p>Wastes which, by chemical action, will cause severe damage when in contact with living tissue, or in the case of leakage, will materially damage, or even destroy, other goods or the means of transport or containment. They may also cause other hazards. Where corrosivity testing data is not available, pH may be used to determine if the material is Category A.</p> <ul style="list-style-type: none"> • pH value of 2 or less • pH value of 12.5 or more <p>Note: this includes wastes classified as 'Class 8' under the ADG Code.</p>	Category A
Wastes that liberate toxic gases in contact with air or water	<p>Wastes which, by liberation with air or water, are liable to give off toxic gases in dangerous quantities.</p> <p>Note: these are wastes liable to give off toxic gases that are classified as 'Class 2.3' under the under the ADG Code.</p>	Category A
Wastes capable of yielding another material which possesses any of the characteristics above	<p>Wastes capable, by any means, after containment, of yielding another material, for example, leachate, which possesses any of the characteristics listed above and/or is a flammable liquid.</p>	Category A
Non-corrosive acids and alkaline wastes	<p>Waste that:</p> <p>(a) have a:</p> <ol style="list-style-type: none"> i. pH value of less than 4 and more than 2; or ii. pH value of greater than 10 and less than 12.5. <p>(b) but do not have:</p> <ol style="list-style-type: none"> i. any of the other characteristics listed in this table; or ii. any contaminant concentration that exceed the upper limits for Category C in Table 2; or iii. any leachability concentrations that exceed the upper limits for Category C in Table 2. 	Category C
Soil containing asbestos only	<p>Soil that—</p> <ol style="list-style-type: none"> (a) contains asbestos²; and (b) does not contain any contaminant concentration exceeding the upper limits for fill material contaminant concentrations specified in Table 3. 	Soil containing asbestos only

² Note that, in accordance with the *Occupational Health and Safety Act 2004*, industrial waste that is soil does not contain asbestos if all visible asbestos-containing material (that is, any manufactured material or object that, as part of its design, contains asbestos) has been removed, so far as reasonably practicable, from the soil by the person proposing to supply, store, transport, sell, use or re-use the soil.

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Characteristic	Definition	Category
Packaged waste asbestos	Waste asbestos (other than soil containing asbestos) contained in a manner so as to eliminate the release of airborne asbestos fibres	Packaged waste asbestos

Any priority wastes that is not Category A may be acceptable for disposal to landfill subject to assessment against contaminant thresholds in Table 2.

Table 2 – Waste disposal contamination concentrations and leachable concentrations

Parts 6.4 and 6.5 of the *Environment Protection Act 2017* provide duties for persons managing industrial and priority waste. To adequately understand the risk of waste, appropriate sampling and analysis is required. To determine an appropriate sampling and assessment regime please refer to relevant EPA guidance. Assessment must be for all chemical substances known and reasonably expected to be present in the waste, this may mean that not all contaminants listed in Table 2 are analysed in every waste. For contaminants not listed in Table 2 please contact EPA for further guidance or a designation.

Category ¹	Category D ² / industrial waste upper limit		Category C upper limit		Category B upper limit	
	Contaminant concentration thresholds as dry weight (Units)	Leachable Concentration (mg/L)	TC (mg/kg)	Leachable Concentration ³ (mg/L)	TC ⁴ (mg/kg)	Leachable Concentration (mg/L)
Inorganic species						
Antimony	0.15	75	0.3	75	1.2	300
Arsenic ⁵	0.5	500	1	500	4	2000
Barium	100	6250	200	6250	800	25000
Beryllium	3	100	N/A	100	N/A	400
Boron	200	15000	400	15000	1600	60000
Cadmium	0.1	100	0.2	100	0.8	400
Chromium (VI)	2.5	500	5	500	20	2000
Copper	100	5000	200	5000	800	20000
Lead	0.5	1500	1	1500	4	6000
Mercury	0.05	75	0.1	75	0.4	300
Molybdenum ⁵	2.5	1000	5	1000	20	4000
Nickel	1	3000	2	3000	8	12000
Selenium	0.5	10000	1	10000	4	40000
Silver	5	180	N/A	180	N/A	720
Tributyltin oxide	0.05	2.5	0.1	2.5	0.4	10
Zinc	150	35000	300	35000	1200	140000

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Anions						
Chloride	12500	N/A	25000	N/A	N/A	N/A
Cyanide (amenable)	1.75	300	3.5	300	14	1200
Cyanide (total)	4	2500	8	2500	32	10000
Fluoride ⁵	75	10000	150	10000	600	40000
Iodide	25	N/A	50	N/A	200	N/A
Nitrate	2500	N/A	5000	N/A	20000	N/A
Nitrite	150	N/A	300	N/A	1200	N/A
Organic species						
C6-C9 petroleum hydrocarbons ⁵	N/A	325	N/A	650	N/A	2600
C10-C36 petroleum hydrocarbons ⁵	N/A	5000	N/A	10000	N/A	40000
Di (2 ethylhexyl) phthalate	0.5	40	1	40	4	160
2,4-Dinitrotoluene ⁶	0.065	5.2	0.13	5.2	0.52	21
Ethylene diamine tetra acetic acid (EDTA)	12.5	1000	25	1000	100	4000
Formaldehyde	25	2000	50	2000	200	8000
Methyl ethyl ketone ⁶	100	8000	200	8000	800	32000
Benzene	0.05	4	0.1	4	0.4	16
Toluene	40	3200	80	3200	320	12800
Ethylbenzene	15	1200	30	1200	120	4800
Xylenes (total)	30	2400	60	2400	240	9600
Styrene	1.5	120	3	120	12	480
Nitrobenzene ⁶	1	80	2	80	8	320

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Polycyclic aromatic hydrocarbons (PAH total)	N/A	50	N/A	100	N/A	400
PAH total sum of naphthalene, acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene and pyrene.						
Benzo(a)pyrene ⁷	0.0005	20	0.001	40	0.004	160
2 Chlorophenol	15	1200	30	1200	120	4800
2,4-Dichlorophenol	10	800	20	800	80	3200
2,4,5-Trichlorophenol ⁶	200	16000	400	16000	1600	64000
2,4,6-Trichlorophenol	1	80	2	80	8	320
Phenols (total, non-halogenated)	7	560	14	560	56	2200
Total sum of phenol, 2,4-dimethylphenol, 2,4-dinitrophenol, 2-methyl-4,6-dinitrophenol, 2-nitrophenol, 4-nitrophenol, 2-cyclohexyl-4,6-dinitrophenol and dinoseb.						
Cresol (total) ⁶	100	8000	200	8000	800	32000
Polychlorinated biphenyls ⁸	N/A	2	N/A	50	N/A	Note 6
Hexachlorobutadiene	0.035	2.8	0.07	2.8	0.28	11
Vinyl Chloride	0.015	1.2	0.03	1.2	0.12	4.8
Carbon tetrachloride	0.15	12	0.3	12	1.2	48
Chlorobenzene	15	1200	30	1200	120	4800
Chloroform ⁹	4	240	8	240	32	960
1,2-Dichlorobenzene	75	6000	150	6000	600	24000
1,4-Dichlorobenzene	2	160	4	160	16	640
1,2-Dichloroethane	0.15	12	0.3	12	1.2	48
1,1-Dichloroethene	1.5	120	3	120	12	480
1-2-Dichloroethene	3	240	6	240	24	960
Dichloromethane (methylene chloride)	0.2	16	0.4	16	1.6	64

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1,1,1,2-Tetrachloroethane	5	400	10	400	40	1600
1,1,2,2-Tetrachloroethane	0.65	52	1.3	52	5.2	210
1,1,1-Trichloroethane ⁹	10	1200	20	1200	80	4800
1,1,2-Trichloroethane ⁹	0.25	48	0.5	48	2	190
Trichloroethene ⁹	0.25	20	0.5	20	2	80
Tetrachloroethene	2.5	200	5	200	20	800
Trichlorobenzene (total)	1.5	120	3	120	12	480
Pesticides ¹⁰						
Aldrin + dieldrin	0.015	1.2	0.03	1.2	0.12	4.8
DDT + DDD + DDE	0.45	50	0.9	50	N/A	50
2,4 -D	1.5	120	3	120	12	480
Chlordane	0.1	4	0.2	4	0.8	16
Heptachlor	0.015	1.2	0.03	1.2	0.12	4.8
Other organochlorine pesticides	N/A	10	N/A	10	N/A	50
Total sum of hexachlorobenzene(HCB), alpha BHC, beta BHC, gamma BHC (lindane), delta BHC, endrin, endrin aldehyde, heptachlor epoxide, methoxychlor and endosulfan (includes endosulfan I, endosulfan II and endosulfan sulphate).						

Notes for Table 2.

1. In Table 2, N/A means there is no applicable compliance value for this contaminant and the category will be determined by the available values for the contaminant.
2. Category D upper limits are only applicable to contaminated soils. Waste other than contaminated soils which have contaminant leachable concentration and TC concentrations less than the 'Category D / industrial waste upper limit' are industrial waste.
3. Unless otherwise specified, leachable concentration values are derived from the National Health and Medical Research Council (2011) Australian Drinking Water Guidelines (Version 3.5 updated August 2018).
4. Unless otherwise specified, TC for inorganic species and anions are derived from National Environment Protection Measure on the Assessment of Site Contamination 1999, Health Investigation Level for Commercial/Industrial land.
5. TC based on NSW EPA Waste Classification Guidelines – Part 1: Classifying waste, 2014. Maximum values for specific contaminant concentration when used together with leachable concentration (Table 2)
6. Leachable Concentration based on NSW - Waste Classification Guidelines Part 1: Classifying waste, 2014. Maximum values for leachable concentration when used together with specific contaminant concentration.
7. TC are based on the National Environment Protection (Assessment of Site Contamination) Measure 1999, Sch. B7, health investigation levels at Commercial sites (HIL D) for BaP and carcinogenic PAHs (assessed as BaP TEF). Includes amendments up to National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1).
8. Management of PCBs is based on the Polychlorinated biphenyls management plan (2003, Australian and New Zealand Environment and Conservation Council (ANZECC).
9. Leachable Concentration based on USEPA - 2018 Edition of the Drinking Water Standards and Health Advisories Tables - Maximum Contaminant Level
10. Organochlorine Pesticides (OCP) Waste Management Plan (1999, ANZECC)

Table 3 – Fill material contamination total concentration upper limit

For the purposes of the definition of fill material in the Regulations the total concentration thresholds in Table 3 below are the upper limit for industrial waste that is soil. Soil that exceeds the total concentration threshold of any contaminant in Table 3 is a priority waste unless designated otherwise by EPA. In circumstances that you are aware of known or likely contaminants not included in this table please contact EPA for further guidance or a designation.

Contaminant	Fill material upper limit TC as dry weight (mg/kg)
Inorganic species	
Arsenic	20
Cadmium	3
Chromium (VI)	1
Copper	100
Lead	300
Mercury	1
Molybdenum	40
Nickel	60
Tin	50
Selenium	10
Silver	10
Zinc	200
Anions	
Cyanide	50
Fluoride	450
Organic species	
Phenols (halogenated) ¹	1
Phenols (non-halogenated) ²	60
Monocyclic aromatic hydrocarbons ³	7
Benzene	1
Polycyclic aromatic hydrocarbons ⁴	20
Benzo(a)pyrene	1
C6-C9 petroleum hydrocarbons	100
C10-C36 petroleum hydrocarbons	1000
Polychlorinated biphenyls	2
Chlorinated hydrocarbons ⁵	1
Pesticides	
Organochlorine pesticides ⁶	1

Notes for Table 3.

1. Total sum of 4-chloro-3-methylphenol, 2-chlorophenol, 2,4-dichlorophenol, 2,6-dichlorophenol, pentachlorophenol, 2,3,4,5-tetrachlorophenol, 2,3,4,6-tetrachlorophenol, 2,3,5,6-tetrachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.
2. Total sum of phenol, 2-methylphenol (o-cresol), 3-methylphenol (m-cresol), 4-methylphenol (p-cresol), 2,4-dimethylphenol, 2,4-dinitrophenol, 2-methyl-4,6-dinitrophenol, 2-nitrophenol, 4-nitrophenol, 2-cyclohexyl-4,6-dinitrophenol and dinoseb.
3. Total sum of benzene, toluene, ethyl benzene, xylenes (includes ortho, para and meta xylenes) and styrene.
4. Total sum of naphthalene, acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluorene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene and pyrene.
5. Total sum of carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethene, dichloromethane (methylene chloride), 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethene, tetrachloroethene, vinyl chloride and hexachlorobutadiene.
6. Total sum of aldrin, hexachlorobenzene, alpha BHC, beta BHC, gamma BHC (lindane), delta BHC, chlordane, DDT, DDD, DDE, dieldrin, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, methoxychlor and endosulfan (includes endosulfan I, endosulfan II and endosulfan sulphate).