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| Waste disposal categories: characteristics and thresholds |



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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—   1. with contaminant concentrations not exceeding the upper limits for fill material waste contaminant specified in the document Waste Disposal Categories — Characteristics and Thresholds; and 2. does not contain asbestos.[[1]](#footnote-2) |
| 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 *Environment Protection Act 2017* priority waste is any waste, including municipal waste and industrial waste, that is prescribed to be priority waste for the purposes of—   1. eliminating or reducing risks of harm to human health or the environment posed by the waste; or 2. ensuring the priority waste is managed in accordance with Part 6.5 of the Act; or 3. 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. |

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 |

# Waste disposal categories: characteristics and thresholds

|  |  |  |
| --- | --- | --- |
| Characteristic | Definition | Category |
| Corrosive wastes | 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.   * pH value of 2 or less * pH value of 12.5 or more   Note: this includes wastes classified as ‘Class 8’ under the ADG Code. | Category  A |
| Wastes that liberate toxic gases in contact with air or water | Wastes which, by liberation with air or water, are liable to give off toxic gases in dangerous quantities.  Note: these are wastes liable to give off toxic gases that are classified as ‘Class 2.3’ under the under the ADG Code. | Category  A |
| Wastes capable of yielding another material which possesses any of the characteristics above | 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. | Category  A |
| Non-corrosive acids and alkaline wastes | Waste that:   1. have a:    1. pH value of less than 4 and more than 2; or    2. pH value of greater than 10 and less than 12.5. 2. but do not have:    1. any of the other characteristics listed in this table; or    2. any contaminant concentration that exceed the upper limits for Category C in Table 2; or    3. any leachability concentrations that exceed the upper limits for Category C in Table 2. | Category C |
| Soil containing asbestos only | Soil that –   1. contains asbestos[[2]](#footnote-3); and 2. does not contain any contaminant concentration exceeding the upper limits for fill material contaminant concentrations specified in Table 3. | Soil containing asbestos only |
| 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 waste 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.

| **Category1** | **Category D2 / 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**  **Concentration3 (mg/L)** | **TC4 (mg/kg)** | **Leachable**  **Concentration (mg/L)** | **TC (mg/kg)** |
| **Inorganic species** |  | |  | |  | |
| Antimony | 0.15 | 75 | 0.3 | 75 | 1.2 | 300 |
| Arsenic5 | 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 |
| Molybdenum5 | 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 |
| **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 |
| Fluoride5 | 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 hydrocarbons5 | N/A | 325 | N/A | 650 | N/A | 2600 |
| C10-C36 petroleum hydrocarbons5 | N/A | 5000 | N/A | 10000 | N/A | 40000 |
| Di (2 ethylhexyl) phthalate | 0.5 | 40 | 1 | 40 | 4 | 160 |
| 2,4-Dinitrotoluene6 | 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 ketone6 | 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 |
| Nitrobenzene6 | 1 | 80 | 2 | 80 | 8 | 320 |
| 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)pyrene7 | 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-Trichlorophenol6 | 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 biphenyls8 | 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 |
| Chloroform9 | 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 |
| 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-Trichloroethane9 | 10 | 1200 | 20 | 1200 | 80 | 4800 |
| 1,1,2-Trichloroethane9 | 0.25 | 48 | 0.5 | 48 | 2 | 190 |
| Trichloroethene9 | 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 |
| PFOS + PFHxS  (Perfluorooctanesulfonic acid + Perfluorohexanesulfonic acid) | 0.00007 | 1 | 0.0007 | 20 | 0.007 | 50 |
| Perfluorooctanoic acid (PFOA) | 0.00056 | 10 | 0.0056 | 50 | 0.056 | 50 |
| **Pesticides10** | | | | | | |
| 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).

1. Management of PCBs is based on the Polychlorinated biphenyls management plan (2003, Australian and New Zealand Environment and Conservation Council (ANZECC).
2. Leachable Concentration based on USEPA - 2018 Edition of the Drinking Water Standards and Health Advisories Tables - Maximum Contaminant Level.
3. 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 hydrocarbons3 | | 7 | |
| Benzene | | 1 | |
| Polycyclic aromatic hydrocarbons4 | | 20 | |
| Benzo(a)pyrene | | 1 | |
| C6-C9 petroleum hydrocarbons | | 100 | |
| C10-C36 petroleum hydrocarbons | | 1000 | |
| Polychlorinated biphenyls | | 2 | |
| Chlorinated hydrocarbons5 | | 1 |
| Perfluorooctanesulfonic acid (PFOS) | | 0.002 |
| Perfluorohexanesulfonic acid (PFHxS) | | 0.001 |
| Perfluorooctanoic acid (PFOA) | | 0.001 |
| Pesticides | |  | |
| Organochlorine pesticides6 | | 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, 2cyclohexyl-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).

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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. [↑](#footnote-ref-2)
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. [↑](#footnote-ref-3)