

WASTES LIKELY TO REQUIRE LONG-TERM CONTAINMENT

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INTRODUCTION

This information bulletin provides an overview of the principal types of hazardous waste likely to require long-term containment and the industries, products and services that generate them. Long-term containment of solid waste is a new approach that will eliminate the current practice of hazardous waste disposal to landfill. Long-term containment will only be used for those wastes that cannot be otherwise avoided, reused, recycled or recovered for energy. Long-term containment will also only be used for solid waste, and any liquids or sludges mentioned in this bulletin will require treatment prior to acceptance for containment.

A wide variety of industry sectors in Victoria generate wastes in the production of every-day goods and services. Certain types of industrial wastes are legally referred to as 'prescribed industrial wastes' – they include waste that may either pose a hazard to human health or the environment, or impact on public amenity (for example odorous wastes). These wastes are closely regulated to ensure they are managed in an appropriate manner.

The detailed analysis of how the wastes in this information bulletin were identified can be found in *Wastes likely to require long-term containment – Technical Appendix* (Publication 947).

BACKGROUND

EPA is supporting the reduction and improved management of hazardous waste in Victoria through implementation of the *Industrial Waste Management Policy (Prescribed Industrial Waste)*. The policy specifies the management requirements for the three hazard categories of prescribed waste.

Category A wastes require a very high level of control and are not able to be sent directly to a long-term containment facility until they are treated to reduce their hazard to category B. Category B wastes are hazardous wastes for which reuse, recycling or energy recovery options do not exist, and are not likely to exist into the foreseeable future, and must be sent to a long-term containment facility.

Category C wastes are low hazard and may be disposed of at either a long-term containment facility or a best practice municipal landfill, although it is expected they will be sent to a best practice municipal landfill. The *Draft Guidelines for Hazard Classification of Solid Prescribed Industrial Wastes* (EPA Publication 922) specify the technical parameters by which waste generators will need to classify their wastes (as category A, B or C) once a long-term containment facility is established.

SOURCES OF WASTE LIKELY TO BE SENT TO CONTAINMENT

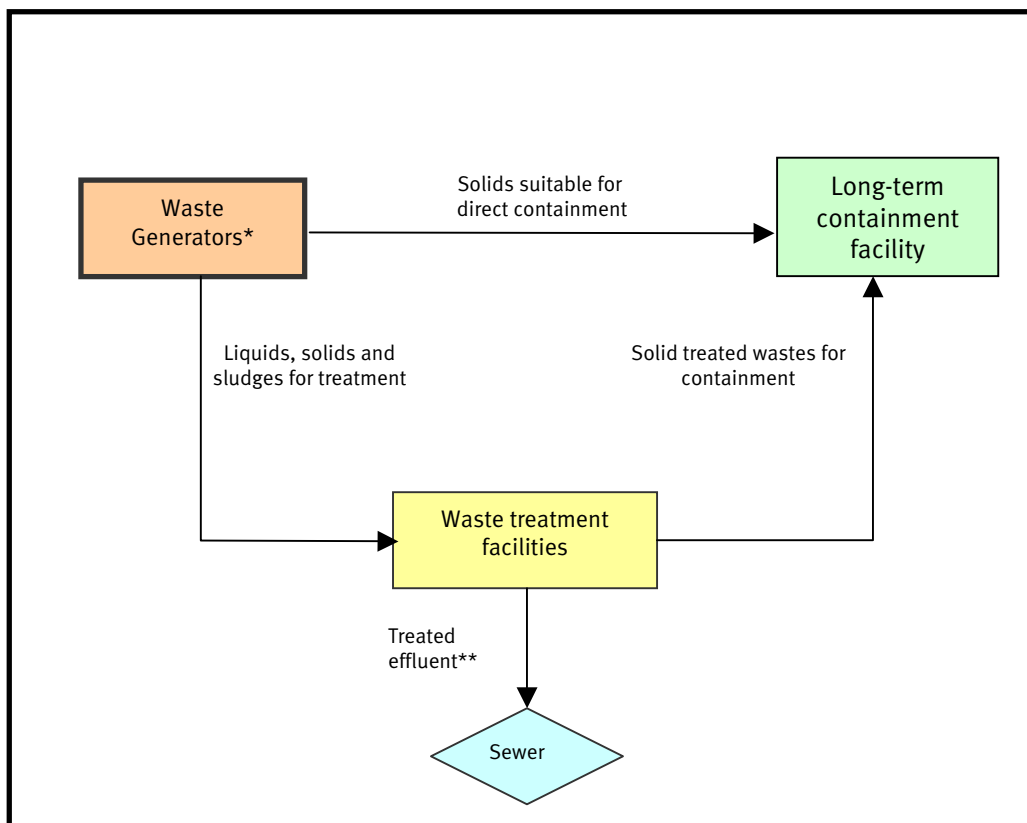
Wastes unsuitable for containment in their current form, such as liquids, sludges or Category A solids,

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must first be treated at either the waste generator's site or a specialist waste treatment facility prior to being accepted for containment. Category B solid wastes may be sent directly to long-term containment. As specified in the *Performance Requirements for Long-Term Containment Facilities* (EPA Publication 941), only solid materials can be accepted at a containment facility. Figure 1 shows the possible sources of waste that may require containment.

The treatment of liquids involves removing or neutralising contaminants, and generally results in a treated liquid that is sent to sewer and a solid residue that may need to be sent to a long-term containment facility (depending on its hazard classification). Solids would be treated, while sludges would be treated and dewatered. Treatment will involve either 'locking up' or removing the contaminants.

Figure 1: Sources of Waste deposited in Long Term Containment Facility (wastes that cannot otherwise be avoided, reused, recycled or recovered for energy)



* Waste generators can generate solid, liquid or sludge Prescribed Industrial Wastes

** Discharged to sewer under trade waste agreement as regulated by trade waste authority

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In order to better understand the types and volumes of waste that may go to a long-term containment facility, a detailed analysis of the waste streams sent to the two hazardous waste landfills in Victoria (Tullamarine and Lyndhurst) during 2002 has been performed. Table 1 shows the major waste streams of the principal industry sectors generating wastes likely to require long-term containment. This table is based on the analysis of 2002 data described in *Wastes likely to require long-term containment – Technical Appendix* (Publication 947), and it is possible that continued programs focused on avoiding, reusing and recycling these wastes may reduce the need for some of the waste types to go to containment.

The table highlights the wide range of industry sectors producing wastes that may require containment. Most of these wastes will require pre-treatment before acceptance at a long-term containment facility. There are a range of other industry sectors such as dry cleaners or automotive repairers, that are not individually listed in the table, but would generate small volumes of hazardous waste that may also require long-term containment.

Irrespective of the source of the waste, any waste accepted at a containment facility will need to meet stringent waste acceptance criteria. These criteria will be specified in its EPA licence and will correspond with EPA's hazard classification framework. The criteria will include maximum contaminant concentration and leachability (how readily contaminants may seep out of waste) thresholds, as well as standards to ensure that waste does not pose other unacceptable characteristics such as explosivity or flammability.

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Table 1: Hazardous wastes from major industry sectors likely to require containment

Industry Sector	Estimated contribution to containment	Typical Products or Services	Wastes likely to require containment (May be solids, liquids or sludges. All liquids, sludges or category A solids must be treated to a solid form prior to containment)*
Copper, Silver, Lead and Zinc Smelting, Refining	11%	Car batteries/recycled metal	Metal and smelting residues (D220)
Waste Disposal Services (minor facilities that specialise in the management of specific waste streams)	10%	Disposal and treatment of industrial waste	Off-spec paints, glues, resins (N180) Waste farm chemicals collected through the ChemCollect program (N170)
Site Preparation Services (property development)	9%	Development or site rehabilitation	High level contaminated soil (N120)
Chemical Product Manufacturing	7%	Polystyrene, latex products (carpet underlay), coatings, colorants	Containers with residues of chemicals (N110) Drying Bed Sludge (N205) Latex washwaters, water-based resins (F110) Residues from filtering contaminated liquids (N190) Plastic granules (N180) Industrial Washwaters (L150)
Automotive Component Manufacturing	6%	Engines, plastic car components, starter motors, automotive parts, brakes, clutches	Drums with paint residues (N100) Paint spray booth washwaters (F120) Waste Oils & Emulsions (J150, J120) Caustic washwaters and sludges (C130)
Petroleum Refining	5%	Petrol, LPG, ethanol, hexane, propane	Caustic solution used to remove odorous sulphurous compounds from gas and oil (C100) Spent catalysts (used to speed up chemical reactions) (N130) Residues from cleaning out storage tanks (J160)
Metal Coating and Finishing	4%	Steel products, metal plated cutlery & kitchenware	Caustic soda/alkaline cleaners (C100) Plating sludge (C130) Waste acid used in the surface treatment of metals (B110) Contaminated raw metal product (D390)
Cement and Lime Manufacturing	3%	Cement and lime for domestic and industrial use	Cement kiln dust containing lime (C140) Waste pigment (D220)
Ceramic Product Manufacturing	2%	Tile coatings, colourings, toilet bowls,	Ceramic granules (N230)

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		basins	Ceramic glaze residues from filtering contaminated liquids (N190) Ceramic sludges (T130)
Fabricated Metal Product	2%	Automotive sealing and anti-vibration systems	Residues from filtering contaminated liquids (N190) Waste acid used in the surface treatment of metals (B110) Waste Oils (J130)
Motor Vehicle Manufacturing	2%	Cars	Base coat paint sludge (N205, T130) Residues from filtering contaminated liquids (C130) Paint spray booth waste (F100)
Nut, Bolt, Screw and Rivet Manufacturing	2%	Construction fasteners	Residues from waste water treatment plant (N205)
Organic Industrial Chemical Manufacturing	2%	Plastics, polyethylene	Coke and Tar (J160) Spent catalysts (used to speed up chemical reactions) (N130) Waste Plastics (N180) Residues from filtering contaminated liquids (N190)
Printing	2%	Printing services (e.g. signs, advertising) cheques, plastic credit cards	Residues from filtering contaminated liquids (N190) Inky residues and sludges (F100) Tins and rags containing ink residues (N110)
Aluminium Smelting	1%	Aluminium ingots for use in manufacture of metal products	Dust collected from air filters (T190) Scrap metal (D400)
Building Construction	1%	Construction materials (e.g. plasterboard)	Ceramic & plaster sludges (T130)
Defence	1%	Ship construction	Paint tins (N110) Sandblasting sand (N120)
Electricity Supply	1%	Power stations, electricity distribution	Used heat resistant bricks from furnaces (D140) Washwaters from cable trenches, excavations (L100)
Iron and Steel Casting and Forging	1%	Steel girders, valves, cast iron products	Metal sludges & scale (N190) Sandblasting dust (N150)
Manufacturing	1%	Speciality chemicals, plasterboard	Caustic Washwaters (C100) Industrial Washwaters (L150)
Paint Manufacturing	1%	Powder coating paint for cars, household and industrial paints	Empty paint tins (N110) Paint residues/ waste (F100)

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Spring and Wire Product Manufacturing	1%	Wire	Metal scale sludge (N190) Oily waters and lubricants (J130)
Storage	1%	Storage services (eg. at ports), off-site oil storage facilities	Waste oils and mixtures (J120) Washwaters (L150) Contaminated water (J130)
Telecommunication Services	1%	Telephone services	Contaminated water from pits (L150)
Oil and Gas Extraction	1%	Crude oil, natural gas	Lead contaminated soil (N120) Waste oils or sludges (J100)
Pulp, Paper and Paperboard Manufacturing	1%	Paper, paper products, newspaper, paperboard packaging (eg. milk cartons)	Drums containing chemical residues (N110) Residues from filtering contaminated liquids (N190)
Timber Resawing and Dressing	1%	Treated pine products	Soil contaminated with Copper Chrome Arsenate (N120)
Other minor volume industry sectors **	20%		

* The code in brackets is the EPA waste type. The regulatory definitions of these codes are available in Publication 395b.

** These industry sectors are listed in Table 3.2 and Table 5.2 of Publication 947 (Wastes likely to require long-term containment – Technical Appendix)

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FURTHER REDUCING THE WASTE

Table 1 provides an indicative list of wastes that are likely to require containment, based on 2002 data. Continued programs to drive the avoidance, reuse, recycling and energy recovery of hazardous waste are expected to further reduce the types, volume and hazard of wastes that may require containment. These programs include the 'Top 30' program (a program run by EPA's Business Sustainability Unit targeting the top 30 producers of prescribed industrial waste) and are supported by the strong statutory framework of the *Industrial Waste Management Policy (Prescribed Industrial Waste) 2000*.

If you wish to obtain further information on this topic, please contact

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FURTHER INFORMATION

Performance requirements for long-term containment facilities, EPA Publication 941 (March 2004)

Draft Performance Requirements for Long-Term Containment Facilities – Explanatory Document, EPA Publication 925 (October 2003)

Draft Guidelines for Hazard Classification of Solid Prescribed Industrial Wastes, EPA Publication 922 (October 2003)

Instructions for completion of Waste Transport Certificates, EPA Publication 395b, (May 2003)

The above documents and further information including broader programs on prescribed industrial waste and overall implementation of the policy are available for download on the EPA website at:
www.epa.vic.gov.au/Waste/