Hazardous Waste Management In Melbourne Today

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A Baseline Report

Abstract

As hazardous and priority waste threatens human health and the environment in Victoria, the definition, classification, transport, treatment, recovery, storage, and disposal of liquid and solid wastes remain important scientific, regulatory, economic, and social issues. Melbourne's population, construction activity, healthcare system, manufacturing, transport, technology consumption, and redevelopment of contaminated land all contribute to complex waste streams.

Victoria's regulatory framework has changed substantially since the original Environment Protection Act 1970. The Environment Protection Act 2017, supported by the Environment Protection Regulations 2021, came fully into effect on 1 July 2021 and introduced a prevention-focused system built around the general environmental duty. The current system distinguishes industrial waste, priority waste, and reportable priority waste and places duties on generators, transporters, receivers, recyclers, and disposers. Although this framework is stronger than the historical system, continuing challenges include contaminated soils and asbestos, electronic waste, combustible recyclable materials, illegal dumping, market volatility, infrastructure capacity, community confidence, and the need to move from disposal toward resource recovery (Environment Protection Authority Victoria [EPA Victoria], 2026).

A Review of the Literature

Australia generates a large quantity of waste relative to its population. During 2022–23, the country generated an estimated 75.6 million tonnes of waste, including approximately 6.5 million tonnes of hazardous waste. This was equivalent to 2.88 tonnes of waste per person. Contaminated soils and asbestos constituted a substantial share of hazardous waste, reflecting urban development, demolition, remediation, and infrastructure activity (Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2025).

Melbourne is a rapidly growing metropolitan area with extensive construction, redevelopment,

transport, healthcare, commercial, and household activity. Population and economic growth do not automatically produce environmental harm, but they increase the importance of waste prevention, accurate classification, suitable infrastructure, transport controls, product stewardship, and lawful disposal. Hazardous-waste management is therefore not merely a landfill problem. It begins with purchasing, product design, material substitution, process control, segregation, recordkeeping, and the investigation of reuse, recovery, and treatment alternatives.

Historical Development

Until the late twentieth century, waste was often managed primarily as sewage, garbage, trade waste, or industrial refuse. Landfill was the dominant response, and the long-term movement of contaminants through soil, groundwater, surface water, air, and food chains was not always understood or adequately regulated. Victoria's Environment Protection Act 1970 created the EPA and provided an early statutory basis for pollution control, licensing, and waste regulation.

Over subsequent decades, Victoria introduced prescribed-industrial-waste classifications, transport certificates, landfill acceptance criteria, industrial-waste policies, and waste-management guidelines. These mechanisms helped establish cradle-to-grave accountability, but the old framework was frequently criticised as complex, reactive, and dependent on proving pollution after harm had occurred.

The Environment Protection Act 2017 replaced the old legislation as the central environmental statute. The current authorised version establishes a duties-based framework for preventing and reducing harm from pollution and waste, backed by permissions, civil remedies, criminal offences, enforcement powers, environmental audits, and compensation orders (Victorian Legislation, 2026). Its most important conceptual change is the general environmental duty: people and businesses undertaking activities that create risks from pollution or waste must eliminate or reduce those risks so far as reasonably practicable.

Current Waste Classification

The older term "prescribed industrial waste" is no longer the principal classification used in Victoria's current system. EPA Victoria now classifies regulated commercial and industrial materials through three cumulative levels:

1. Industrial waste: waste arising from commercial, industrial, trade, or laboratory activities.
2. Priority waste: a subset with greater risks, potential for mismanagement, or significant reuse and recovery value.
3. Reportable priority waste: the highest-control subset, including materials such as solvents, acids, and some contaminated soils.

The person managing or controlling waste must classify it correctly. Duties can apply to those who generate, collect, consign, transport, receive, handle, store, process, recover, or dispose of the material. Industrial waste must be deposited at a place authorised to receive it. Priority waste carries additional obligations, including a duty to investigate alternatives to disposal. Reportable priority waste also requires transaction notification and enhanced transport controls (EPA Victoria, 2026).

The General Environmental Duty

The general environmental duty applies before pollution or waste causes harm. A business must identify foreseeable risks, assess the likelihood and severity of harm, implement reasonably practicable controls, maintain those controls, and review them when circumstances change. The duty is proportionate: the measures expected depend on the nature of the activity, the available knowledge, the suitability and cost of controls, and the potential consequences.

For a waste generator, compliance may include substituting less hazardous materials, preventing spills, segregating incompatible wastes, labelling containers, maintaining secondary containment, training workers, using authorised transporters and receivers, keeping records, preparing emergency procedures, and verifying that downstream contractors are lawful. Outsourcing collection does not necessarily remove the generator's responsibility.

Key Hazardous-Waste Streams

Contaminated Soil And Asbestos

Contaminated soil and asbestos are major components of Australia's hazardous-waste stream. In Melbourne, redevelopment of former industrial land, transport corridors, service stations, factories, and ageing buildings can generate large volumes. The risks depend on contaminant type, concentration, exposure route, site use, dust generation, groundwater movement, and whether the waste is disturbed or transported.

Effective management requires site investigation, sampling, classification, occupational controls, dust suppression, secure transport, lawful receiving facilities, and documentation. Soil should not automatically be sent to landfill; treatment, on-site management, reuse, or recovery may be possible when legal and technical requirements are met. However, transferring contamination to an unsuitable site or falsely describing waste can create serious environmental and legal consequences.

Electronic Waste

Electrical and electronic waste includes computers, televisions, phones, appliances, batteries, cables, lighting equipment, and other products with a plug, battery, or power cord. It contains valuable

metals and components but may also contain lead, mercury, flame retardants, hazardous dusts, and combustible batteries.

Victoria banned all e-waste from landfill from 1 July 2019. Households must not place e-waste in general rubbish or mixed recycling bins; it should be taken to an authorised drop-off or recycling service. Sustainability Victoria states that e-waste is growing around three times faster than other waste streams, increasing the importance of accessible collection, safe battery management, repair, reuse, and responsible processing (Sustainability Victoria, 2025).

Commercial e-waste is regulated as priority waste. Businesses must use lawful storage, transport, and recovery arrangements. Stockpiles can create fire, smoke, water-contamination, and worker-exposure risks, particularly where lithium-ion batteries are damaged, mixed, or poorly stored.

Clinical, Pharmaceutical, And Laboratory Waste

Hospitals, clinics, dental practices, laboratories, aged-care facilities, veterinary practices, and pharmacies generate sharps, infectious materials, pharmaceuticals, chemicals, cytotoxic waste, and other controlled wastes. These streams require segregation at the point of generation, secure containers, staff training, temperature or time controls where relevant, traceable transport, and treatment appropriate to the hazard.

Mixing clinical waste with general waste increases exposure risks for cleaners, waste workers, the public, and recyclers. Conversely, classifying ordinary materials as clinical waste can unnecessarily increase cost and treatment emissions. Accurate segregation is therefore both a safety and efficiency measure.

Solvents, Acids, Oils, And Industrial Chemicals

Manufacturing, automotive, printing, coating, cleaning, construction, and maintenance activities can generate solvents, acids, alkalis, oils, sludges, paint residues, and contaminated absorbents. These materials can be flammable, corrosive, reactive, toxic, or environmentally persistent.

Businesses should keep incompatible substances separated, use suitable containers and bunding, prevent stormwater entry, maintain inventories and safety information, and prepare spill-response arrangements. Recovery of solvents, oils, metals, and other materials may reduce both environmental risk and disposal cost when technically and legally feasible.

Evolving Regulatory And Market Challenges

Traceability And Illegal Disposal

A strong regulatory system depends on accurate information about who generated waste, what it contains, who transported it, where it was received, and how it was treated or disposed of. False classification, cash transactions, unauthorised storage, sham recycling, and illegal dumping can undermine legitimate businesses and transfer risk to communities and future landholders.

Digital tracking of reportable priority waste improves traceability, but data quality and verification remain important. Regulators need intelligence sharing, inspections, audits, laboratory evidence, and proportionate enforcement. Waste producers should conduct due diligence on contractors rather than selecting solely on price.

Infrastructure And Market Capacity

Recovery and treatment facilities require substantial investment, approvals, technical expertise, stable feedstock, markets for recovered products, and community acceptance. Commodity-price changes can make recycling less financially attractive, while landfill levies and product-stewardship schemes may encourage recovery.

However, simply raising disposal costs can produce unintended consequences if legitimate treatment capacity is unavailable. Victoria therefore needs coordinated planning for hazardous-waste treatment, contaminated-soil management, battery recycling, e-waste processing, fire prevention, emergency response, and secure final disposal for residues that cannot be safely recovered.

Combustible Waste And Fire

Stockpiles of tyres, plastics, paper, organic material, e-waste, and batteries can create major fire risks. Waste fires may release smoke, particulates, metals, persistent pollutants, and contaminated firefighting water. They can also disrupt nearby businesses and communities for extended periods.

Operators should control stockpile size and spacing, ignition sources, battery segregation, housekeeping, access for emergency services, fire-detection and suppression systems, contaminated-water containment, and emergency planning. Financial provision for site closure and clean-up may also be necessary for higher-risk facilities.

Community Trust And Environmental Justice

Waste facilities are often proposed or operated in industrial areas where surrounding communities may already experience traffic, noise, odour, dust, pollution, and socioeconomic disadvantage. Legal compliance alone may not produce trust. Operators and regulators should provide accessible

information, respond to complaints, disclose incidents, monitor impacts, and involve communities early in planning.

Environmental justice requires attention to cumulative impacts and to whether the benefits and burdens of waste management are distributed fairly. This is particularly important for communities near landfills, transfer stations, treatment plants, contaminated sites, and transport routes.

Municipal Waste And Melbourne

Hazardous industrial waste should be distinguished from ordinary household waste, but the systems interact. Household batteries, paint, chemicals, gas cylinders, fluorescent lamps, medicines, and e-waste become hazardous when placed in kerbside bins. Public education and convenient collection services are therefore essential.

The City of Melbourne has reported that households send approximately 29,000 tonnes of waste to landfill annually and that contamination affects recycling performance. Victoria's circular-economy policy aims for substantially higher diversion from landfill, but achieving that goal requires correct sorting, organics recovery, reuse, repair, product stewardship, and markets for recycled materials (City of Melbourne, 2025).

Economic And Social Considerations

Waste management imposes costs, but poor management can create much larger liabilities through fires, clean-ups, contaminated land, illness, business interruption, lost resources, and reduced property values. The polluter-pays principle supports placing the costs of prevention and remediation on those responsible rather than on the general community.

Economic incentives should reward waste avoidance, safer design, reuse, repair, remanufacturing, and high-quality recovery. Extended producer responsibility can shift attention upstream by making manufacturers and importers responsible for products at end of life. Procurement standards can create demand for verified recycled products, while grants and finance can support new treatment technology. Incentives must be paired with standards and enforcement so that low-cost operators do not gain advantage by externalising risk.

Performance Assessment

Victoria's present system is more preventive and structured than the framework described in older reports. The current Act, duties, permissions, risk classifications, landfill bans, and digital tracking tools provide stronger legal foundations. It would therefore be inaccurate to describe the state simply as having "failed" to manage hazardous waste.

Nevertheless, good legislation does not guarantee good outcomes. Performance should be assessed through measurable indicators such as:

- waste generation and hazardousness per unit of economic activity;
- rates of avoidance, reuse, treatment, recovery, and disposal;
- illegal dumping and unauthorised stockpiling;
- fires, spills, pollution incidents, and contaminated-site outcomes;
- accuracy and completeness of waste-tracking data;
- availability and geographic distribution of lawful facilities;
- worker and community exposure;
- enforcement timeliness and remediation completion; and
- confidence in recovered materials and recycling claims.

National data show that approximately 6.47 million tonnes of hazardous waste, including tyres, were generated in 2022–23. About 42% was recycled after accounting for treatment outputs, around 1.6% was used for energy recovery, and approximately 56% was disposed of, mostly to landfill. These figures demonstrate both significant recovery activity and continued reliance on disposal.

Recommendations

Victoria and Melbourne should continue to strengthen hazardous-waste management through the following measures:

1. Prevent waste at source: support safer materials, cleaner production, durable products, repair, and process redesign.
2. Improve classification and data: provide sector-specific guidance, auditing, laboratory capacity, and interoperable tracking systems.
3. Expand legitimate treatment infrastructure: plan for batteries, e-waste, contaminated soil, PFAS and other persistent contaminants, clinical waste, and difficult industrial residues.
4. Strengthen product stewardship: require producers and importers to finance collection and responsible recovery of priority products.
5. Control fires and stockpiles: apply risk-based limits, emergency planning, financial assurance, and rapid enforcement.
6. Protect workers and communities: integrate occupational health, transport safety, environmental monitoring, and cumulative-impact assessment.
7. Verify recycling claims: require evidence of lawful destinations and genuine recovery rather than accepting labels such as “recycled” without proof.
8. Improve household collection: maintain convenient services for batteries, paint, chemicals, medicines, lamps, and e-waste.
9. Use procurement and standards: create stable demand for safe, quality-assured recovered products.

10. Publish performance transparently: report incidents, recovery outcomes, enforcement actions, infrastructure gaps, and progress against targets.

Conclusion

Hazardous-waste management in Melbourne today is governed by a prevention-based legal framework rather than the older reactive system. The Environment Protection Act 2017, the Environment Protection Regulations 2021, the general environmental duty, current industrial-waste classifications, traceability requirements, and e-waste landfill ban represent substantial progress.

The central challenge is now implementation. Growing and changing waste streams must be matched by accurate classification, lawful transport, adequate treatment capacity, fire prevention, market development, worker protection, community engagement, and credible data. Hazardous waste cannot be eliminated entirely in an industrial and technological society, but its generation and risks can be reduced. Melbourne's long-term success will depend on moving responsibility upstream, recovering resources where safe, reserving landfill for unavoidable residues, and ensuring that the costs of pollution are not transferred to future communities (Victorian Legislation, 2026; EPA Victoria, 2026).

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