Final

Basel summary report (2020 data)

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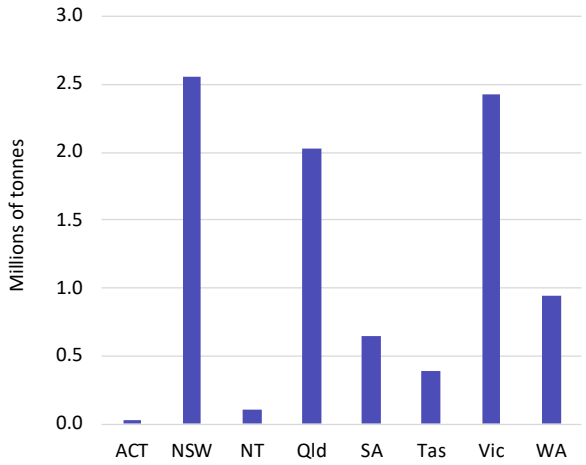
Total hazardous waste generation, Australia 2020

In 2020 Australia generated about 9.2 million tonnes[1] of hazardous waste. This is about 12% of all waste generated[2] and is 4% lower than the tonnage reported to the Basel Secretariat for 2019.

Classified into more than 70 detailed types, these wastes include –

- contaminated soils and asbestos from development and demolition projects
- wastes from the chemicals, manufacturing, resource and mining industries
- emerging PFAS wastes
- a range of hazardous wastes that arise from everyday sources, such as:
  - tyres/oils/oily waters (motor vehicles)
  - grease trap waste (commercial cooking)
  - lead-containing wastes such as lead acid batteries (motor vehicles) and leaded glass (used TVs and computers)
- biosolids, which are not typically classified as hazardous wastes in state and territory data systems, but may contain contaminants such as heavy metals and organic chemicals.

Generation of hazardous waste by state and territory, Australia 2020-21[3]

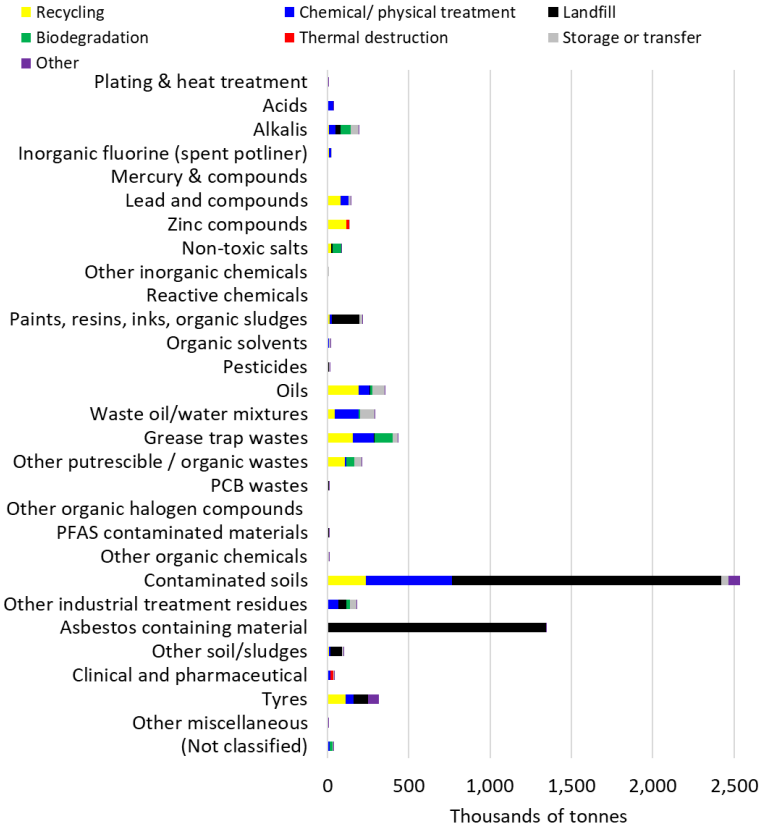


The top 10 wastes produced by weight in 2020, were:

1. Contaminated soils [27%]
2. Industrial residues incl. biosolids [22%]
3. Asbestos [16%]
4. Putrescible wastes incl. grease trap [7%]
5. Tyres [5%]
6. Waste oils [5%]
7. Oil/water mixtures [3%]
8. Lead compounds [3%]
9. Alkalis [3%]
10. Paints, resins, inks, organic sludges [3%]

Excluding biosolids, the majority of these wastes were sent to landfill (51%). Another 22% was recycled, 18% underwent treatment to reduce or remove the hazard, 7% was stored for accumulation and later release into management infrastructure and 2% went to other infrastructure, a large portion of which was tyres going to export markets.

Generation of hazardous waste by type and management, Australia 2020-21[3]



[1] This includes all biosolids, which are included in Australia's report to Basel due to unresolved hazard classification issues.

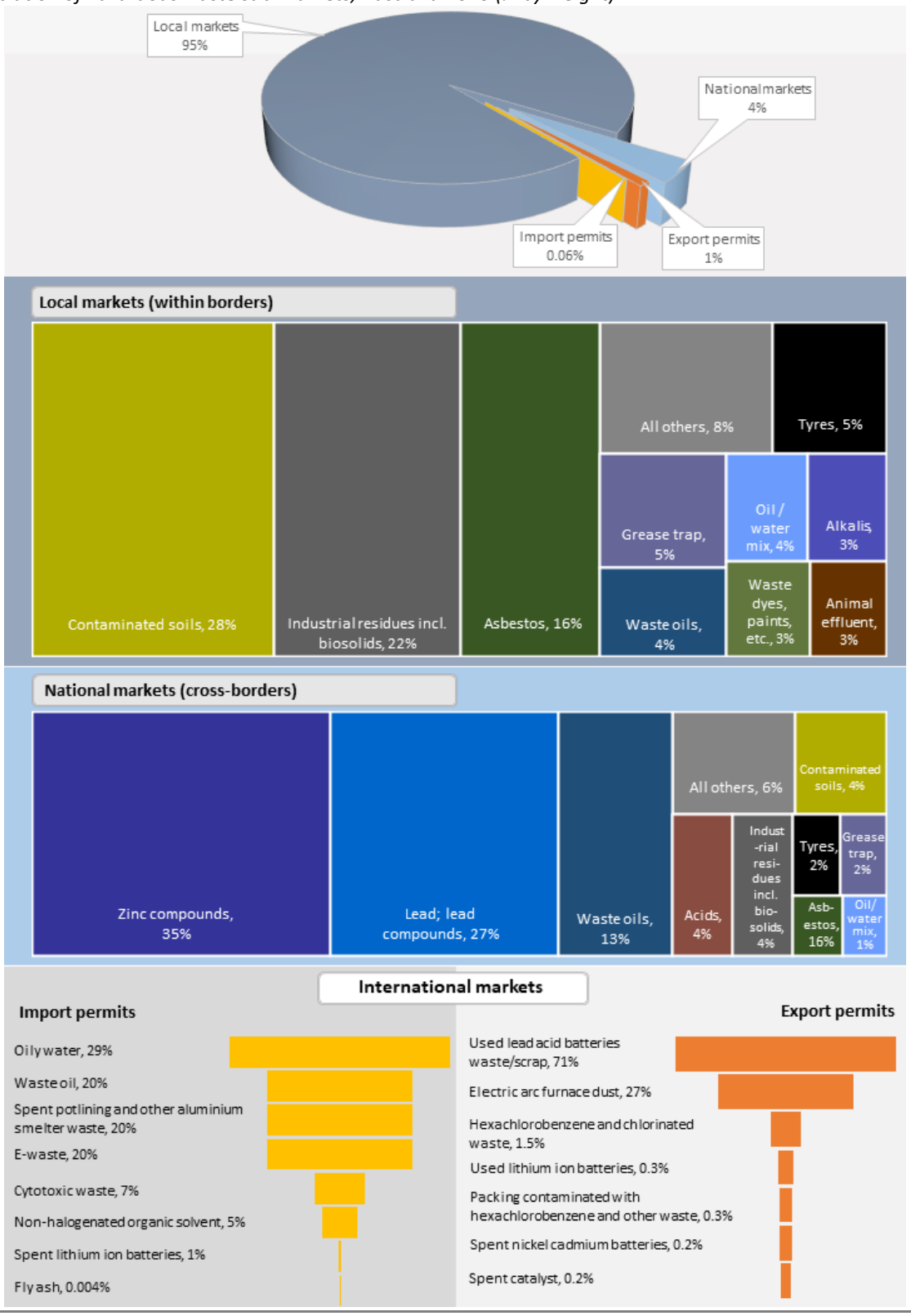
[2] Based on the 74 million tonnes of waste reported as generated in 2018-19 in the *National Waste Report 2020*.

[3] Based on the 2020-21 data year, rather than the 2020 calendar year.

Major hazardous waste flows 2020

Hazardous waste in Australia moves in three sub-markets, each associated with different wastes and with distinct scales and issues of interest: 95% of waste is managed in infrastructure *within the state/territory* where it was generated; 4% crosses *interstate borders*; and a little more than 1% is *exported* to or *imported* from overseas for management in specialised infrastructure unavailable or not viable within the generating jurisdiction (this excludes exports of tyres – see footnote 4).

Illustration of hazardous waste sub-markets, Australia 2020 (% by weight)



Hazardous waste imports into Australia and exports to other countries require approval from the Australian Government under the *Hazardous Waste (Regulation of Exports and Imports) Act 1989.* Approved imports and exports in 2020 are listed below[4]. The proportions are small compared to quantities produced and managed within Australia.

Permits issued for imports and exports of hazardous wastes, Australia 2020

Cross international borders			Tonnes	%
Imports		Oily water	1,500	29%
		Waste oil	1,000	20%
About	5,130	Spent potlining and other aluminium smelter waste	1,000	20%
0.06% of	tonnes	E-waste	1,000	20%
total		Cytotoxic waste	350	7%
hazardous		Non-halogenated organic solvent	250	5%
waste		Spent lithium ion batteries	27	1%
flows		Fly ash	0.2	0.004%
Exports		Used lead acid batteries waste/scrap	79,000	71%
		Electric arc furnace dust	30,000	27%
About 1%	112,000	Hexachlorobenzene and chlorinated waste	1,650	1.5%
of total	tonnes[4]	Used lithium ion batteries	375	0.3%
hazardous		Packing contaminated with hexachlorobenzene and other waste	350	0.3%
waste		Spent nickel cadmium batteries	250	0.2%
flows		Spent catalysts	170	0.2%

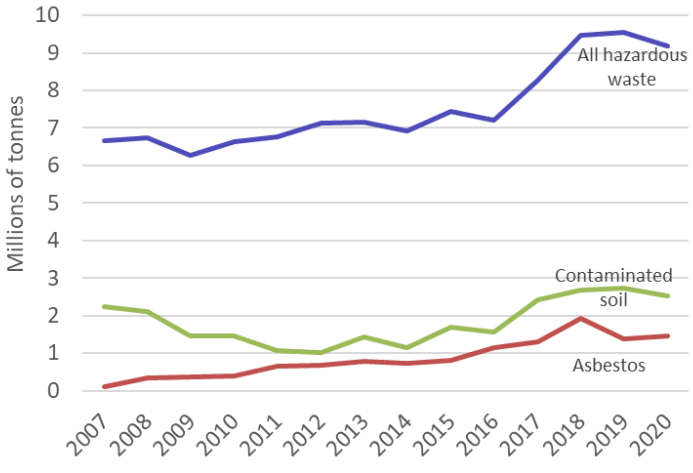
Hazardous waste trends

Hazardous waste generation fell slightly in 2020 from the historically elevated 2019 quantities.

The long-term trend is to growth in hazardous waste generation in Australia, despite the fall in 2020, as portrayed in the chart to the right.

The major contributors to the post-2016 surge were **asbestos** (almost all in NSW) and **contaminated soil** (mostly in Vic and Qld). The trend slowed in 2019 then slightly fell in 2020, due to reduced NSW asbestos volumes and a drop in Qld contaminated soil. Offsetting these 2020 falls was continued growth in Vic, driven by its contaminated soil volumes, on top of an already unprecedented growth period in that waste from around 2015.

Generation of hazardous waste, Australia 2007-2020

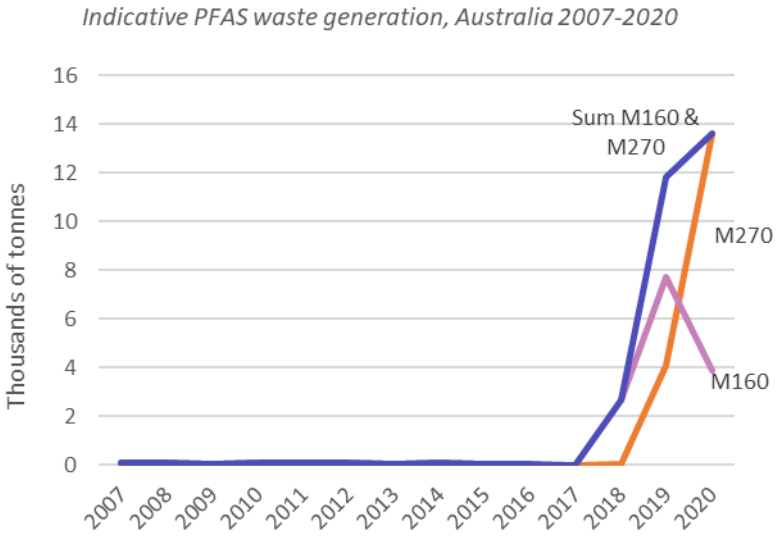


[4] The data excludes end-of-life tyres, which are recognised as a hazardous waste in Australian classification frameworks and are consequently included in domestic hazardous waste data. However, tyres are expressly characterised as not hazardous in the Basel Convention, so their exports, although significant in tonnage terms, are not captured in the export permitting system and are excluded from this table.

Emerging hazardous waste issues

Emerging wastes and issues continue to pose environmental challenges.

PFAS-contaminated waste has risen from near-zero to the tens of thousands of tonnes in the last three years, as shown in the chart to the right[5]. The trend is shown most clearly in Vic and Qld – the states that house the main national infrastructure for managing PFAS waste.



Australia's soil thermal treatment facilities, concentrated in Vic, experienced major growth in demand during 2019-20. We attribute this rise to PFAS contaminated soils. While there is a growing number of options for PFAS management in Australia, there remains a high risk that arisings of PFAS contaminated soil, rubble and concrete over the near term will exceed market capacity.

Additional volumes of **COVID-19** personal protective equipment (PPE) placed a heavy demand on clinical waste infrastructure in Australia in 2020, creating more interstate flows to manage it. Industry sources indicated that facility licences in south-eastern Australia had to be temporarily expanded to cope with the extra load. Operators and regulators appeared to act swiftly and cooperatively, particularly during Vic's Covid second wave, and coped well with the unprecedented volumes and circumstances.

Waste **lithium-ion batteries** are an unresolved problem in Australia, exemplified by increasing incidences of fire in waste management infrastructure. For example, Brisbane City Council suggests that waste lithium-ion batteries from kerbside landfill collection bins caused eight Council garbage truck fires in late 2020 alone[6], while Visy Recycling, which manages the Council's resource recovery centres, said that 'dozens of battery-related fire incidents' had occurred in processing infrastructure throughout 2020. This is likely to be an issue at all Australian landfills, materials recovery facilities and other waste infrastructure that finds itself inadvertently dealing with lithium-ion battery waste.

The economics of lithium-ion battery recycling, as well as safe handling and insurance aspects, have not seen it take shape yet in Australia, at least not in a true value-recovery sense. Valuable cathodic powders are exported offshore for recovery, as evidenced in Basel export permits, which means the value is realised by other countries.

[5] A large Qld datapoint (43 kt) for M160 in 2017 has been removed, since this represents a regulatory reporting inconsistency for PFAS contaminated soil, which is reported as N120 in other jurisdictions.

[6] *The Age* newspaper, February 23 2021, *Household batteries blamed for spate of Brisbane garbage truck fires*, available at: *https://www.theage.com.au/national/queensland/household-batteries-blamed-for-spate-of-brisbane-garbage-truck-fires-20210223-p57519.html*