

BAN E-WASTE in Landfill



Support legislation for extended producer responsibility



FACT SHEET 2 Electronic waste – Health and environmental Issues

There are many **compelling reasons** to divert electronic waste from landfill. Principal among these include:

- To prevent toxic materials from contaminating ecosystems
- To reuse scarce and valuable non-renewable resources
- To reduce greenhouse emissions
- To reduce the burden on the capacity of landfills.

Toxic components of e-waste

An alarming range of toxic materials can be found in electronics, including lead, cadmium, mercury, brominated flame retardants, polyvinyl chloride (PVC), chromium, arsenic and beryllium.ⁱ It is important to divert these materials from landfill, as they can enter the environment via leakage from landfills, and damage the ecosystem and human health. This toxic legacy can persist for many generations.ⁱⁱ

- **Lead** – causes damage to the nervous system, circulatory system, kidneys and the ecosystem.ⁱⁱⁱ
- **Mercury** – is toxic to human and environmental health, and is a cause of chronic brain damage, heart and renal disease. It has been linked to developmental retardation in foetuses.^{iv}
- **Cadmium** – is toxic to human and environmental health, accumulating in kidney tissue and causing cancer in humans.^v It rapidly degrades soil health, flowing on to affect local ecosystems.^{vi}
- **Beryllium** – exposure to airborne beryllium dust or fumes may cause an acute or chronic pneumonia-like illness, which can be fatal.^{vii}
- **PVC** – hazardous chemicals such as furans, dioxin and phthalates are released when PVC is incinerated or disposed in landfill.^{viii}

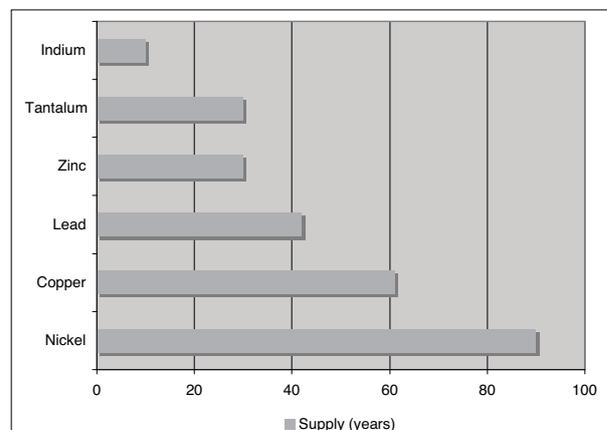
- **Chromium** – short-term exposure to chromium causes skin irritation and stomach ulceration. Long-term exposure can cause liver, renal and nerve damage, and in large doses, even death.^{ix}
- **Arsenic** – is a known carcinogen.^x

Resource recovery through recycling

Electronic materials contain valuable, non-renewable resources. The reserves of some finite materials found in electronic waste can be measured in mere decades, as indicated below and in the following graph.^{xi}

- **Nickel** – estimated to have only 90 years of global supply left.
- **Copper** – only 61 years of global reserves remaining.
- **Lead** – global reserves are estimated to last only 42 years
- **Zinc** – only 30 years of global reserves remain.
- **Tantalum** – expected to last for only another 30 years.
- **Indium** – global reserves may last only 10 years.^{xii}

Graph: Remaining global supply of materials found in e-waste



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Potential natural resource savings from recycling

Recycling of e-waste provides a tremendous opportunity to conserve water and energy as well as reducing greenhouse gas emissions and landfill space. The facts are:

- If 75% of the 1.5 million televisions currently discarded were recycled, it would result in a national saving of 23,000 tonnes of greenhouse gases, 520 mega litres of water, 400,000 gigajoules of energy and 160,000 m³ of landfill space.^{xiii}
- One UN study found that the manufacture of one desktop computer and standard monitor requires at least 240 kilograms of fossil fuels, 22 kilograms of chemicals, and 1,500 kilograms of water – equivalent to that of a mid-sized car.^{xiv}

Underutilisation of current e-waste recycling facilities

Australia currently has six e-waste recycling centres operating. A purpose-built recycling plant in western Sydney, which opened in November 2008, has a recycling capacity of 20,000 tonnes of e-waste annually with a recycling success rate of 98%.^{xv} However, according to its operator, the plant was still operating at only a third of its capacity.^{xvi}

Without government regulation of electronic waste, Australia's e-waste recycling potential remains poor compared with other OECD nations.^{xvii}

Job creation opportunities

Studies in the US have estimated that electronic waste recycling projects have the potential to create approximately 30 jobs per 1,000 tonnes of reused and recycled equipment.^{xviii}

ⁱ K. Brigden, I. Labunska, D. Santillo, & M. Allsopp, *Recycling of Electronic Wastes in China and India: Workplace and Environmental Contamination*, 2005, Greenpeace International, p.50.

ⁱⁱ Total Environment Centre (TEC), *Tipping Point: Australia's E-Waste Crisis*. December 2008, p.4.

ⁱⁱⁱ R.A Goyer, "Lead toxicity: current concerns." *Environmental Health Perspectives*, 1993, 100: 177-187.

^{iv} Commission on Life Sciences, *Toxicological Effects of Methylmercury*, 2000, National Academy Press, Washington, DC., p. 12.

^v Silicon Valley Toxics Coalition, *Poison PCs, Toxic TVs*, 2004, p. 12

^{vi} Total Environment Centre (TEC), *Tipping Point: Australia's E-Waste Crisis*. December 2008, p.7

^{vii} Agency for Toxic Substances & Disease Registry, *Public health statement for Beryllium*, 2007, www.atsdr.cdc.gov, U.S. Department of Health and Human Services, last accessed 07/06/09

^{viii} Silicon Valley Toxics Coalition, *Poison PCs, Toxic TVs*, 2004, p. 12.

^{ix} *Ibid*, Silicon Valley Toxics Coalition, 2004, p. 12.

^x Agency for Toxic Substances & Disease Registry, *Public health statement for Arsenic*, 2007, www.atsdr.cdc.gov, U.S. Department of Health and Human Services, last accessed 07/06/09

^{xi} New Scientist, *Earth's natural wealth: an audit*, 23 May 2007, as cited in Environment Centre (TEC), *Tipping Point: Australia's E-Waste Crisis*. December 2008, p.8.

^{xii} *Ibid*, New Scientist 2007

^{xiii} Environment Protection and Heritage Council, *Statement on End of Life Televisions and Computers*, November 2008.

^{xiv} Williams E. (2004) "Energy intensity of computer manufacturing" *Environmental Science and Technology* 38 (22) 6166 – 6174, cited in Environment Victoria, *Environmental Report Card on Computers – Computer Waste in Australia and the Case for Consumer Responsibility*, 2005.

^{xv} The Hon. Peter Garrett AM MP (pers. comment), Interview, SIMS e-waste Recycling Centre, Villawood, Sydney, 19 November 2008

^{xvi} Sydney Morning Herald, "Toxic Australian e-waste dumped on China", 22 May 2009, last accessed 07/09/2009

^{xvii} Environment Victoria, *Environmental Report Card on Computers – Computer Waste in Australia and the Case for Consumer Responsibility*, 2005, pp. 10-13.

^{xviii} MACREDO (2000) *End of Life Computer & Electronics Recovery: Policy Options for the Mid-Atlantic States*. MACREDO, Philadelphia, cited Meinhardt Infrastructure and Environment, *Computer and Peripherals Material Project*, October 2001.

