E-Waste Fact Sheet

What is E- Waste?

E-waste includes a broad and growing range of electronic devices ranging from large household appliances to MP3 players, refrigerators, air conditioners, mobile phones, stereos and computers – just to name a few. Basically, if you have to plug it in or power it in some way, it will one day end up as e-waste.

Ever year in Australia over 17 million computers, televisions and other electronic products are thrown away and only 4% of this e-waste is recycled[1]. To date, roughly 37 million computers, 56 million mobile phones and over 17 million TVs have gone to landfill in Australia[2].

Around the world the amount of e-waste is growing exponentially. In Europe e-waste contributes up to 6 million tons of solid waste per annum and is growing at a threefold rate. Globally, an estimated 20 to 50 million tons of e-waste is generated each year[3] – or to put it another way, enough to fill all the containers of a train that stretches right around the whole world.

> Up to 80% of e-waste collected for recycling in the US is exported to developing nations such as China, India and Pakistan
> – Basel Action Network

E-waste contains a multitude of different metals, chemicals and plastics, some of which are hazardous substances (such as lead and cadmium) and many of which are valuable resources (such as copper and gold)[4]. When electronic products end up in landfill, not only are they an environmental problem, but they also create an economic issue as valuable resources are lost. It is cheaper to extract gold from 1 ton of used mobile phones than it is to extract the same amount from a ton of gold ore.

The Problems with E-Waste

How many mobile phones and computers have you had in your life? What have you done with them when they no longer work, or you have upgraded? Most likely you have thrown them in the bin, donated them to a charity, put them out for curb-side clean up…or they are collecting dust in your house somewhere.

[1] Angle, Jeff. 2008, *Tipping Point: Australia's E-Waste Crises,* Total Environment Centre, online: http://www.tec.org.au/images/e-waste%20report%20updated.pdf
[2] As above
[3] Schwarzer, S., A. D. Bono et al. 2005, *E-waste, the hidden side of IT equipment's manufacturing and use*, UNEP Early Warning on Emerging Environmental Threats No. 5
[4] Slade, G. 2006, *Made to Break: technology and obsolescence in America,* Harvard University Press, England

When e-waste ends up in landfill it can leach toxic substances into the natural environment. Toxins can also become airborne, posing risks to humans and other species.

The Wall Street Journal has referred to e-waste as: *"the world's fastest growing and potentially most dangerous waste problem".*

The recent introductions of regulations such as Waste Electronic and Electrical Equipment (WEEE) and RoHS (Restriction of Hazardous Substances, see product stewardship fact sheet) in Europe and in other countries has helped to reduce the amount of e-waste going to landfill. However, there are growing concerns over the trafficking of e-waste from industrialised nations (such as Australia and the U.S.) to non-industrialised countries (such as China and India) for processing.

This practice has raised many environmental, ethical and social concerns. One of the reasons it happens is because it is more economically viable for waste to be disassembled and recycled in countries where wages are low. Unfortunately in these non-industrialized countries the environmental and health standards are also low. Much of the world's exported e-waste ends up in China – so much so that one southern town called Guiyu is currently known as the world's most polluted town. A recent article in the *Sydney Morning Herald* stated: *"A United Nations report released in December recorded potentially deadly levels of mercury and other toxins in Guiyu's water and soil."*[5]

Worker in Guiyu sorting e-waste - image source : www.time.com

The practice of exporting e-waste offshore *"stifles the innovation needed to actually solve the problem at its source – upstream at the point of design and manufacture."* [6]

In late 2009 the Australian Government made a commitment to introduce an extended producer responsibility program which would make producers and retailers responsible for collecting and recycling e-waste in Australia.[7] According to a government report, it will "*…develop and implement requirements under the National Product Stewardship Framework to ensure that manufacturers and importers of televisions and computers establish an efficient and effective national scheme (or schemes) for collecting and recycling their end of life products."*[8]

How much waste is in 500 million computers?[6]

Plastic	6.32 Billion Pounds
Lead	1.58 Billion Pounds
Cadmium	3 Million Pounds
Chromium	1.9 Million Pounds
Mercury	632.000 Pounds

[5] Cubby, Ben. 2009, in Sydney Morning Herald, *Toxic Australian e-waste dumped on China,* online: http://www.smh.com.au/environment/toxic-australian-ewaste-dumped-on-china-20090521-bh6f.html
[6] The Basel Action Network (BAN), 2002, *Exporting Harm – The High Tech Trashing of Asia,* online: www.ban.org/E-waste/technotrashfinalcomp.pdf
[7] Environment Victoria, 2010, *An Afterlife for E-waste*, available online: http://www.environmentvictoria.org.au/content/reborn-afterlife-e-waste
[8] Environment Protection and Heritage Council. 2009, *Decision Regulatory Impact Statement: Televisions and Computers*, online: http://www.ephc.gov.au/taxonomy/term/51

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- Environment Protection and Heritage Council, 2009, "Decision Regulatory Impact Statement: Televisions and Computers", available online at: http://www.ephc.gov.au/taxonomy/term/51
- Greenpeace USA, "Where does e-waste go?", available online at: http://www.greenpeace.org/usa/campaigns/toxics/hi-tech-highly-toxic/e-waste-goes

Discussion and Research

1. Watch

1.1 Media Matters http://www.youtube.com/watch?v=-gdN0i6IRlU
1.2 E-Waste in India http://video.google.com/videoplay?docid=5944615355863607664
1.3 Ethical e-waste recycling http://video.google.com/videoplay?docid=-740086066354236494#
1.4 E-waste in China http://www.dailymotion.com/video/x6k5q9_ewaste-in-ghana_tech

2. Discuss

2.1 How will the proposed product stewardship policy affect the electronics industry in Australia?
2.2 What can designers do to help reduce e-waste?

3. Research

3.1 You have been asked to design an alarm clock for export to the European Union. What materials can you *not* use in the product?
3.2 Check out the website www.step-initiative.org/taskforces/tf2.php and review the note on eco-design for electronic goods.
3.3 What models exists for dealing with e-waste around the world?

4. More Resources

4.1 The Natural Edge Project has developed very useful teaching resources on E-waste. There is a course for high school students and one for university students and can be accessed from: http://www.naturaledgeproject.net/EWasteHome.aspx
4.2 Time Magazine online has a really good pictorial report on e-waste processing in Asia: http://www.time.com/time/photogallery/0,29307,1870162_1822150,00.html