

Electronic Equipment & Consumables



Computers

“Printed Circuit Boards contain heavy metals such as antimony, silver, chromium, zinc, lead, tin and copper. According to some estimates there is hardly any other product for which the sum of the environmental impacts of raw material, extraction, industrial, refining and production, use and disposal is so extensive as for printed circuit boards.”

CARE conference, Vienna, 1994

What is the problem?

Electronic waste can come in many forms. Often these materials are plastics and metals found in many types of electronic equipment such as computers, photocopiers, printers, faxes, monitors and batteries. Some of these items can be highly toxic, and environmentally damaging. This form of waste is rapidly growing at over three times that of the general municipal waste stream. This is producing a situation where landfill, now and into the future, will be made increasingly of electronic waste.

Most types of electronic waste contain many valuable resources that are recoverable and reusable. Often much less energy is needed to recover these resources than to produce new materials. There are many opportunities to avoid, reduce, reuse, and recycle electronic waste. It is important that businesses are aware of the nature of electronic waste, so as to reduce further impact on the environment.

Photocopiers/Printers/Faxes

Unused toner in ink cartridges, found in photocopiers, printers and faxes, is often highly toxic and potentially quite damaging to the environment.

In Australia each year we import approximately 7 million cartridges. We throw away up to 1.2 million ink jet cartridges and 250,000 laser cartridges per month! Yet we recycle a mere 15% of them, while in the US they recycle around 30%.

Photocopiers, printers and faxes contain similar material in their printed circuit boards as computers including lead, cadmium, mercury, and hexavalent chromium.

Monitors

Cathode ray tubes contain high levels of lead which have been used as a radiation shield in computer monitors. Unfortunately, lead can leach into landfills and is a very hazardous substance. The very large bulk of monitors are not recycled.



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What is the problem?

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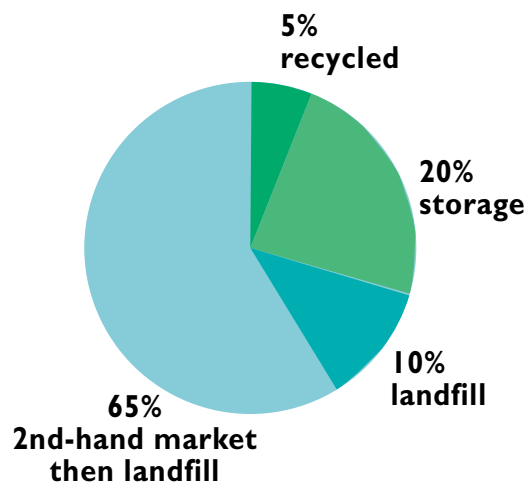
Batteries

There are a variety of batteries now being used for all types of devices and vehicles. Batteries are made of various toxic substances including lead, acids, nickel, cadmium and zinc. Batteries are often recyclable or contain valuable materials that can be retrieved. Leaching of toxins from discarded batteries has a significant environmental impact.

Packaging

An extensive amount of packaging is associated with electronic equipment that can contribute to landfills. The redesign of packaging using more biodegradable materials can decrease the amount of electronic product packaging being held in landfills.

Where do discarded computers go?



SOME FACTS & FIGURES

- *Electronic waste can contain toxic materials such as lead, mercury, cadmium, hexavalent chromium and brominated fire retardants that are hazardous, difficult to dispose of and can be very environmentally damaging.*
- *Two million computers sold last year in Australia alone.*
- *Of the discarded computers only 5% will be recycled, nearly 20% will be put in storage and 10% will go to landfill*
- *The remainder will be reused or filtered back through the second hand market, eventually ending up as scrap and landfill.*
- *Estimations of 200, 000 computers are going to landfills every year causing a dangerous environmental problem that can be prevented.*
- *By 2005, one computer will become obsolete for every new one put on the market.*
- *It is estimated that 1.5 million toner cartridges are used annually in Australia, which leads to 1,500 tonnes of non-biodegradable waste.*
- *In Australia each year we import about 7 million cartridges. We throw away up to 1.2 million ink jet cartridges and 250,000 laser cartridges per month! (Only 15% are recycled.)*

So what is happening in e-waste recycling?

Computers

- Printed circuit boards can be redesigned to use a different base material, which is self-extinguishing, thereby eliminating the need for flame-retardants.
- Metal shields in computer housings are now being used to eliminate the use of halogenated flame-retardants within computers.

Monitors

- There are now operators that can recycle used monitors, and process the cathode ray tubes within the monitor.
- Many monitors are being refurbished and resold by companies.

Printers/Photocopiers/Faxes

- Most forms of ink cartridges can be refilled and generally are completely refurbishable.
- Various operators offer lease service agreements where they retrieve products and consumables and refurbish these for reuse, ie. Kyocera Mita removing the need for users to dispose of redundant equipment through cartridge-free technology.
- Numerous companies are now starting to sell refurbished photocopiers, scanners, faxes and other electronic equipment, and accept old equipment for refurbishment.

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Electronics

- Most forms of common metals used in electronic manufacturing can be recovered using recycling processes.
- Large amounts of plastics can now be recycled.
- There is a range of lead-free solders now available.

Batteries

- Alkaline batteries can now be recharged increasing their product life.
- Most batteries particularly lead-zinc can be completely recycled to make new batteries.
- The marketable products extracted from batteries during the recycling process include:

Nickel – used in the production of stainless steel.

Cadmium – a component used in new batteries.

Plastics – used in furniture.

Gold & Copper in small amounts.



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How do we solve the problems?

Avoid

- If you decide to buy new equipment, ask the equipment manufacturer about reuse and recycling options such as product take back programs.
- To promote the use of reused and recycled products, purchase equipment designed for easy repair and upgrade.
- Buy products that are durable, repairable and have a good warranty.
- Consider leasing equipment that can be returned to the manufacturer when it is no longer needed.
- Reduce packaging waste at the customer/supplier interface.
- Have reuse initiatives, including buy backs and leasing.
- Build environmental criteria into supplier contract conditions.
- Consider installing software that runs on older systems, which will enable the next user to make maximum use of an older computer.
- Engaging service providers who replace and refill components of leased equipment when they have been used.
- Toners and some inks are now being produced with biodegradable oils such as soybean oil, which are much less toxic than petroleum based toners and inks.

References

- www.svtc.org
- www.hmrsydney.com
- www.greenpc.com.au
- www.greenworld.com.au
- www.2ndwave.co.uk
- www.ecorecycle.vic.gov.au
- www.aok.org
- www.exide.co.nz

For further information
call Clean Up Australia on
02 9552 6177

or check out our website at
www.cleanup.com.au



Reuse

- Instead of buying new electronic products, consider repairing or upgrading your current system.
- Consider the item before disposal, can it be used elsewhere.
- Refurbishment of equipment for reuse.
- Many companies that supply toner cartridges for computer printers and photocopiers can now refurbish their cartridges for reuse.
- Many ink cartridges can be refilled with ink for reuse using toner refill kits.
- Many companies accept cartridges for remanufacturing resulting in reuse.
- Alkaline batteries can be recharged.

Recycle

- One way to make recycling electronic products easier is to make wise purchasing decisions.
- Take electrical goods and scrap such as copper wiring to electronic recyclers.
- Set up recycling areas for electronic waste and depots for end-of-life electronic waste.
- Organise pickup arrangements with electronic recyclers.
- Computer and telecommunications can be recycled by de-manufacturing and separation of commodities such as plastic, metal circuit boards, cables, glass, metal from products.
- Cathode ray tubes of televisions and computer screens can be recycled.
- Granulation of copper products where copper wiring from circuit boards and other electronic scrap is reprocessed.
- 98% of lead acid batteries are recyclable.
- Nickel cadmium, nickel metal hydride, lithium sulphur dioxide, lead acid batteries from mobile telephones, laptops, emergency lighting, portable power tools, backup power batteries can all be recycled.