



Electronic Waste

“E-waste” is the term for obsolete electronic products. It includes computers, printers, toner cartridges, monitors, mobile phones, televisions and fax machines, as well as smaller items such as batteries, cables and disks.

E-waste is one of the fastest growing and most toxic waste streams in most countries.

Did you know?

- It takes up to an estimated 450 years for a printer cartridge to decompose.
- The typical useful lifespan of a computer has decreased from five years to two years.
- Up to 50% of computers sent for recycling in the U.S. are in good, working order.
- Less than 10% of outdated computer products are refurbished or recycled.
- Estimates from India indicate that 1 million computers will be disposed of each year from now on.
- A recent study in Australia estimated that only 26% of used computers were eventually reused.
- The environmental issues associated with the manufacture and disposal of mobile phones are mainly with the batteries, silicon chips and plastic casings.

The Issues

The disposal of photocopiers, printers, fax machines and toner cartridges has the potential to damage the environment through the hazardous toxins they contain.

Manufacture of computers and hardware uses more than 1,000 materials, many of which are highly toxic:

Computer circuit boards – lead and cadmium

Switches and flat screens – mercury

Printed circuit boards and plastic cabling – brominated flame-retardants

Computer monitors – cathode ray tubes contain lead oxide and barium

Mobile phones – arsenic, copper beryllium, lead, and zinc

Batteries – lithium, nickel-cadmium

In older computers certain metals were recyclable.

Many new manufacturing processes substitute a mixture of plastics for metals. Technology is currently unavailable to recycle many of these complex plastics.

Environmental Problems

Solvents and oils used in manufacturing can contaminate waterways if not treated and disposed of correctly.

If the recycling of components is not carried out in a safe manner, toxic chemicals are released into the air, soil and water.

If hardware is not broken up for recycling, the toxic components of computers that end up in landfills become hazardous over time.

Lead and barium, as well as carbon from toner cartridges, can seep into riverbanks, contaminating the water and making it undrinkable, even after boiling.

The environmental contamination harms both wildlife and communities living near the landfills that depend on the water supply.

Growth of E-waste

E-waste is increasing rapidly in developed and developing countries alike, as technology, mobile phone usage and computer use becomes more commonplace in business and in the home.

The growth of e-waste is increasing as new technology is released in shorter intervals and becomes more affordable.

Approaching E-waste Disposal

The re-use and recycling of e-waste should be part of an integrated approach to reduce the environmental impact of this growing amount of waste.



Re-Use and Recycling

With many of the problems associated with the components of e-waste, the main avenue for action is in redevelopment and re-use.

Some sellers of products such as cartridges or mobile phones provide a service for consumers to send back the used or outdated products.

The company will then clean, inspect, reassemble into an "as new" product, check and test the product for resale.

Some not-for-profit organisations have been instrumental in the recovery of old computers for re-use by disadvantaged members of the community.

This extends the life of each product as well as creating employment opportunities and making technology available to those who cannot afford new computers and technology.

The non-reusable components of electronic products should be recycled, where possible. The plastic in mouldings may be recycled and the metal components recovered for reuse.

Current Initiatives

Due to economic pressure some developing countries have accepted e-waste, without the ability to properly dispose of the materials.

Most developed nations have now signed **the Basel Action Network (BAN) Agreement**. This agreement identifies e-waste as hazardous and prohibits the shipment of waste from richer to poorer countries for disposal.

An initiative in the USA that began in 2001 is a Computer Take Back Campaign. This promotes the concept of **Extended Producer Responsibility (EPR)**.

EPR requires companies to take full financial and physical responsibility throughout the lifecycle of the products, including end-of-life recycling, re-use or disposal. Other countries such as Australia are also using this model.

Many countries such as Belgium, Japan, The Netherlands, Norway, and Sweden are operating **Take Back Systems** where, when new electronic equipment is purchased, the supplier takes back the old equipment to be refurbished, reused or recycled.

Moving On

Current debate concerns who is responsible for finding and implementing solutions.

Consumers, businesses, producers, waste management organisations and governments all need to recognise that it is in their best interests to find solutions.

Products should be designed so that they can easily be rebuilt and with components that can be re-used and recycled.

Research into the safe disposal of components is also necessary.

Further Information

Clean Up the World

www.cleanuptheworld.org

Clean Up Australia

www.cleanup.com.au

1st 4 Recycled Computers

www.1st4recycledcomputers.com

Basel Action Network

www.ban.org

Computer Aid International

www.computeraid.org

Computer Take Back Campaign

www.computertakeback.com

Realise Network

www.realisenetwork.co.uk

Silicon Valley Toxics Coalition

www.svtc.org

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