Electronic waste
growing challenge

Electronic waste is an emerging environmental pollution in this IT oriented world. Any electrical or electronic appliance, which is used, updated, unwanted or broken and abandoned by its user, is known as Electronic Waste or E-waste.

E-waste comprises of used televisions, computers, mobile phones, CDs, Floppy disks, copiers, fax machines, scanners, calculators, stereos, products from telecom industry, refrigerator, air conditioners, washing machines, microwave oven... the list is unending.

E-waste is now treated as universal waste. Fast growing technologies, short life expectancy of electronic devices, availability of low cost electronic goods, vague rules and regulations at international level related to the collection and management of discarded electronic goods etc lead to the concentration of E-waste in the environment.

Big hazard

Electrical and electronic equipments are made up of a multitude of components. Some containing toxic substances which can have an adverse impact on human health and the environment if not handled

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properly.

Cathode Ray Tubes (CRTs) have high content of carcinogens like heavy metals. Breaking, recycling or disposing of CRTs in an uncontrolled environment without proper safety precautions can result in harmful side effects for the workers and pollution of the groundwater.

Lead, a hazardous heavy metal mainly found in the form of leaded glass in cathode ray tubes (CRTs) of computer monitors and televisions, can cause irritation of the eyes, nose, and lungs, headache, loss of memory, disturbed sleep, mood and personality changes, decreased fertility in both females and males, birth defects and damages to brain, kidney and nerves. Mercury in many electronic devices can cause irritation of skin and lungs and damage to kidney.

Heavily carcinogenic polychlorinated biphenyls (PCBs) are often found in capacitors, wires and transformers. The PCBs are highly persistent and bioaccumulative chemicals that often show toxic effects like suppression of the immune system, liver damage, cancer, behavioral changes and infertility.

Dioxin, the villain

Dangerous is the process of recycling of components such as halogenated chlorides and

bromides used as flame-retardants in plastics, which form persistent dioxins and furans on combustion at temperatures of 600-800°C. Copper, which is present in printed circuit boards and cables, acts as a catalyst for dioxin formation when flame-retardants are incinerated. The PVC sheathing of wires is highly corrosive when burnt and also induces the formation of dioxins.

Landfilling no solution

Landfilling by the E-waste is one of the most widely used methods of disposal. This creates leachate containing heavy metals. Mercury, Cadmium and Lead are among the most toxic leachates. Mercury, for example, will leach when certain circuit breakers are destroyed.
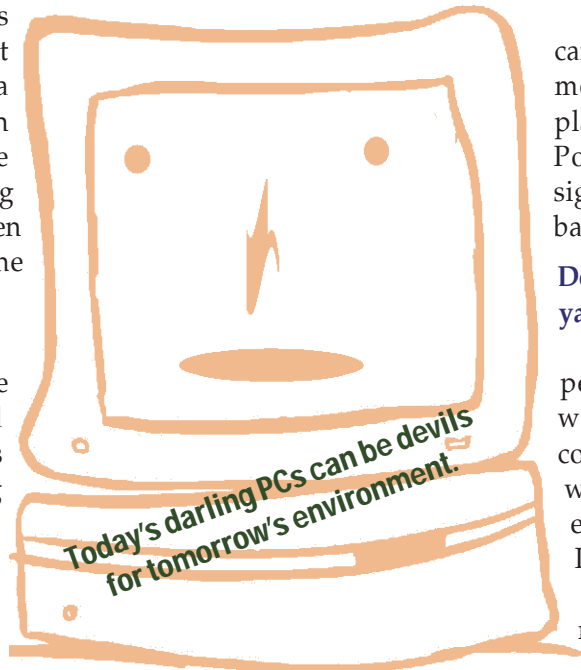
Lead has been found to leach from broken lead-containing glass, such as the cone glass of cathode ray tubes from TVs and monitors. In addition, landfills are also prone to uncontrolled fires which can release toxic fumes.

Desktop computers has a long list of pollutants including plastic, lead, aluminum, germanium, gallium, iron, tin, copper, barium, nickel, zinc, tantalum, indium, vanadium, terbium, beryllium, europium, titanium, ruthenium, cobalt, palladium, manganese, silver, antimony, bismuth, chromium, selenium, niobium, rhodium, platinum, arsenic and silica.

Statistics

It is estimated that India produces approximately 1.5 lakh tons of E-waste per year. After two more years this figure would become 8 lakh tons per year. Topped by Mumbai and Delhi, there are ten cities including

Today's darling PCs can be devils for tomorrow's environment.

The only option available (...) is to implement scientific and environmentally safe recycling. Many leading companies (...) have established the Manufacturer's Recycling Management Company to deal with their E-waste. Environmental activists demand for a 'polluter pays' principle in the case of E-wastes.

Bangalore, Kolkata, Chennai, Ahmedabad, Hyderabad, Pune, Surat and Nagpur that produce most of the E-wastes.

Almost 50 % of the PCs sold in India are products of the secondary market and are re-assembled on old components. The remaining 30% is covered by multinational manufacturers and the rest, native. [Annual report 2003, MAIT]. Over 10,000 tons of electronic waste is being generated daily in Karnataka. An estimated 30,000 computers become obsolete every year from the IT industry in Bangaluru alone.

Proper treatment of E-waste can even recover some precious metals like gold, silver and platinum. The Karnataka State Pollution Control Board has signed a MoU with a Belgium-based firm in this regard.

Developing countries - The dump yards of E-Waste ?

It is reported that developed nations dispose their E-waste in the developing countries. Almost 80% of the e-wastes generated in US is exported to countries like India, Pakistan and China.

Basel convention in 1989 restricted such trade of hazardous e-wastes internationally and the recommendations came into effect from 1992 onwards.

But the lack of implementation of proper environmental and occupational standards and cheap labour available in developing countries still keep the E-waste trade flourishing. Reports showed that around 25,000 workers are engaged in recycling of E-Wastes in Delhi, where approximately 10,000 to 20,000 tons of E-Waste is recycled every year. We can see e-waste scrap yards in other cities in India like Chennai, Meerut, Ferozabad, Bangalore and Mumbai.

Responsible producers

Managing the electronic waste is a Himalayan task in front of the agencies concerned. The only option available in front of them is to implement scientific and environmentally safe recycling. Many leading companies like

Panasonic, Thoshiba, HCL and Sharp Corporation have established the Manufacturer's Recycling Management Company to deal with their E-waste. Environmental activists demand for a 'polluter pays' principle in the case of E-wastes.

Legislations

Among the developing nations, the Government of India has set the ball rolling. The central government has drafted an E-waste (management and Handling rules), 2010 for the effective control of E-waste generation and making the producers responsible for the E-wastes management.

The National E-waste Strategy Group under the Ministry of Environment and Forests has five committees that work in the crosscutting areas of policy and legislation; data and baseline; skills and technologies; industry participation; E-waste Management, awareness and campaigning.

India's first scientific E-Waste recycling unit, 'E-Parisaraa' is established in the outskirts of Bangalore for the scientific management of electronic wastes. Such eco-frindly and scientific initiatives for the management of E-Wastes should be put forward by both public and private sectors.

For the better management of E waste each citizen should follow responsible and reduced use of electronic appliances and wholeheartedly support the initiatives by the companies and the Government.

Perilous job: *A boy dealing with electronic wastes at a dumbyard.*

In Kerala

The State Government of Kerala has recently constituted an expert committee on E-waste management in the State. The committee has recommended the following courses of action:

• Primary collection of e-waste from sources such as households, commercial establishments and major waste generators may be done through Self Help Groups(SHG)/Kudumbashree volunteers or sanitary workers.

• Resource Recovery Centres (RRCs) may be established at appropriate level of local governments and operated by SHGs/Kudumbashree volunteers or authorised agents.

• The RRC may handover the e-waste to approved recyclers only, for ensuring ecofriendly e-waste management.

• The Govt. may fix an indicative minimum cost (selling price) for different components of e-waste.

• Strict conditions should be followed by the proposed agencies to be enlisted as the authorised e-waste recyclers.

• The e-waste recyclers should ensure the environmental safety of their locality.

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A desktop computer and monitor weigh an average of 53 pounds and require 530 pounds of fossil fuels, 50 pounds of chemicals and 3,330 pounds of water to make.

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