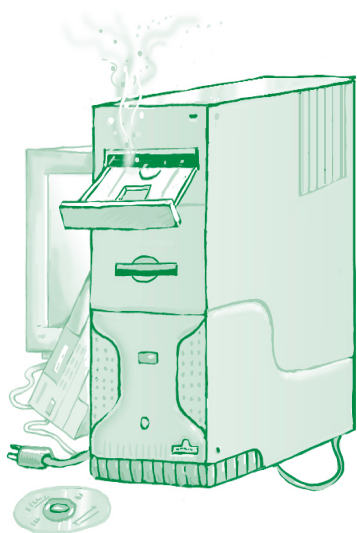


Computers



Computer equipment includes desktop personal computers (PCs), notebooks, monitors and peripherals (i.e., cables, printers, scanners, keyboards and speakers). In 1998, nearly 50% of households in Canada had computers and that number is steadily increasing. (Source: *Dwelling Characteristics and Household Equipment Report, Statistics Canada, 1999*).

Due to technological innovation and market expansion of computer equipment and software, PCs are now becoming obsolete at increasing rates and are globally one of the fastest growing components of municipal waste streams.

- The average first life (the amount of time the PC is useful to its original owner) is now 2-4 years. By the year 2005, a PC's first life is expected to decrease by another year.
- Considering reuse and storage options, the total lifespan (the period from manufacture to disposal) of a PC is estimated at 3-6 years.

(Source: *Electronic Product Recovery and Recycling (EPR2) Baseline Report, US National Safety Council, 1999 and Information Technology (IT) and Telecommunications (Telecom) Waste in Canada, Environment Canada, 2000*)

What materials are found in a typical PC?

Computer components are made of more than 1000 different materials.

- Structural components of the typical desktop PC are made of many materials, including aluminum and steel that together can represent 35% by weight and plastics that can represent 23% by weight.
- Silica represents 25% by weight of a typical desktop PC. Glass panels or cathode ray tubes of monitors can contain a significant amount of lead oxide, cadmium, mercury and barium.
- Circuit boards can contain heavy metals such as antimony, silver, chromium, copper, tin and lead.
- Cables, cords and wires with plastic coverings are often coated with flame-retardant additives. Although it is being phased out, PVC may be a component of old computer cabling.

(Source: *Electronics Industry Environmental Roadmap, Microelectronics and Computer Technology Corporation, 1999 as cited at www.svtc.org/cleancc/eccc.htm*)

- Some materials in computer equipment, such as heavy metals (including lead, mercury, hexavalent chromium, cadmium) and brominated flame retardants, are highly toxic to the environment, wildlife and human health if mismanaged. (Source: Silicon Valley Toxics Coalition, www.svtc.org/cleancc/eccc.htm)

Fast Facts

- Estimated weight of PCs, servers, laptop computers and peripherals disposed in 1999 in Canada: 33,972 tonnes.
(Source: Environment Canada, 2000)
- Estimated weight of PCs, servers, laptop computers and peripherals recycled in 1999 in Canada: 15,592 tonnes
(Source: Environment Canada, 2000)
- PCs and monitors disposed in 1999 in Canada contained an estimated 1,356 tonnes of lead, 2.0 tonnes of cadmium and 0.5 tonnes of mercury.
(Source: Environment Canada, 2000)



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Material Fact Sheet Series
A Waste Reduction Week 2000 Initiative

Reuse and recycling initiatives

Reuse

- As of August 2000, the Computers for Schools Program, a Government of Canada initiative, had refurbished close to 225,000 old computers for schools and libraries nationwide (Source: *Industry Canada*).
- In Kind Canada donated 1092 used computers to charitable organizations in 1999 (Source: *In Kind Canada*).
- reBOOT Canada, a nonprofit charity in Toronto, resold 3000 computers in 1999 (Source: *reBOOT Canada*).

*Contact your municipality to explore local reuse initiatives.

Recycling

- The Regional Municipality of Ottawa-Carleton collects computers as part of its "Take it Back Program". Participating retailers take computers back at no charge and collected computers are sent for recycling.
- Barrie and the County of Simcoe collect old computers as part of their Household Hazardous Waste programs. EPR (Electronic Product Recovery), a recycling company in Mississauga, picks up the old computers from the municipal depots for recycling.
- EPR recycles computers collected at Toronto's Environment Days.

*Contact your municipality to find out if it collects obsolete computer equipment for recycling.

Is it feasible to recycle or reuse old computer equipment?

Between 70 - 90% of the material in scrap computer equipment (by weight) is potentially recyclable or reusable. For instance, materials such as steel, aluminum, copper, glass and some plastics, can be recovered. Obsolete computer equipment that is properly pre-treated (i.e., toxic components removed) and disassembled can promote the conservation of natural resources and prevent hazardous substances from entering the environment.

The costs of dismantling obsolete computers should decrease in the near future through technological innovation, the development and expansion of markets for certain materials and economies of scale. Also, cost efficiencies may improve if computer manufacturers look for ways to redesign their products to facilitate reuse and recycling.

Policy developments in computer recycling

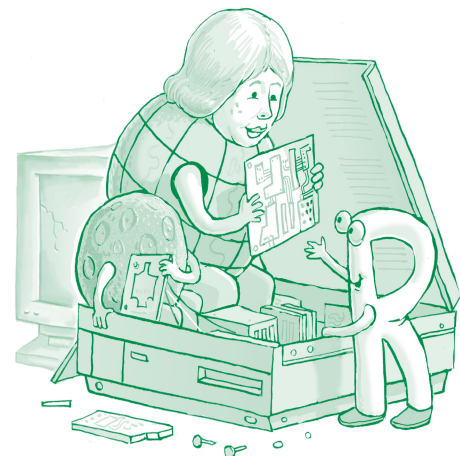
1) Commission of European Communities.

The Commission has proposed the WEEE (Waste Electrical and Electronic Equipment) Directive which includes three proposals.

- The first proposal requires collection systems for WEEE, and that manufacturers and brand owners become legally and financially responsible for the treatment, recovery and environmentally sound disposal of a proportion of electronic waste, including computers.
- The second proposal places a restriction and/or phase-out on the use of certain hazardous substances (such as mercury, lead and cadmium) in electrical and electronic equipment by 2008.
- Currently, a third proposal is being drafted to address the principle of Design for Environment and to provide incentives for producers to take into account the use of hazardous substances and end-of-life product management at the design stage.

2) Canadian Council of Ministers of the Environment (CCME)

- CCME has recently made the issue of electronic waste a priority and is in the process of developing a strategy.



For more information....

- Computers for Schools Program (Government of Canada), www.schoolnet.ca
- Electronic Product Recovery, www.epr.org
- Environment Canada, www.ec.gc.ca
- European Environmental Bureau, www.eeb.org
- InKind Canada, www.inkindcanada.ca
- reBOOT Canada, www.reboot.on.ca
- Recycling Council of Ontario, www.rco.on.ca
- Silicon Valley Toxics Coalition, www.svtc.org
- US National Safety Council, www.nsc.org