

Earth Day 2011

TAKING CHARGE OF ELECTRONIC WASTE



*Make it safe...
and take it back!*



In an ideal world, everything we buy and use would be made of safe, sustainable material that can be easily recycled. But in today's world, that's rarely the case.



Like other wealthy nations, Canadians buy and throw away a lot of consumer products every year. Much of this ends up in landfills. The fastest growing type of waste is electronic waste, more commonly called e-waste.

Last year alone, Canadians spent \$11.5 billion dollars on consumer electronics, not including cell phones and video games. Here's a taste of what we're buying:

- Television sales (mostly large flat panel types) rose 19 per cent
- Computer notebook sales jumped 17 per cent.

Every year new electronics products hit the market often new versions of existing products or increasingly new formats for devices that still work quite well. For example, BlueRay is replacing DVD, which replaced VCR.

How we communicate is also being redefined by new social media. Many want to be on the cutting edge, wanting the latest technology. The desire for instant communications means the market is flooded with new mobile devices from smartphones to e-readers. This partly explains why the average consumer keeps their mobile device for two years. That's a lot of phones to recycle when you consider 71 per cent of Canadians own a cell phone or plan to buy one.

All of these choices however come with a cost, often hidden, and well beyond the retail sticker price. When we choose to consume in great quantities, when we choose to dispose of products — when they're still fully functional, we contribute to hazardous electronic waste. Fortunately we also have lots of options for improvement. We can make informed choices. We can decide not to buy electronics we don't really need. And we can press both producers and lawmakers for best practices and laws which protect our environment, our health and which promote safe, sustainable products and processes.



Wired for sound, not for health.

Thinking about what things are made of and how they are made is just as important to our health and the health of the planet as thinking about our energy sources. Many of the things we use every day contain substances which have the potential to create harmful exposures for workers making and disposing of these products and for the environment around them. Even consumers like us, who use the products, can be exposed.

Electronic devices for example are made of hundreds of different materials, many of them toxic. The average cell phone alone contains 500 to 1,000 components.

The production of electronics involves the use of heavy metals and certain chemicals that do not easily break down. As a result, they can persist or remain in both the environment and our bodies for a long time. Environmental Defense, a non-profit advocacy group, has conducted tests that reveal Canadians have chemicals like lead, flame retardants, pesticides and stain repellents in their bodies in levels that are not healthy. Some children tested had very high levels of chemicals that were banned before they were born.

Here are some chemicals of concern found in consumer electronics:

Material	Use	Health effects
Lead	cathode ray tubes used in TV's, older computer monitors	bioaccumulates, neurotoxin
Brominated flame retardants	circuit boards, plastic casings	long-term exposure can lead impaired learning, memory functions
Cadmium	rechargeable computer batteries contact and switches, old CRT's	toxic to kidneys, bones bioaccumulates in environment
Mercury	lighting devices for flat screen displays	neurotoxin (especially to kids)
Chromium	metal housings	toxic and cancer causing

High tech trash.

Not all waste is created equal. Some is more hazardous than others, especially e-waste.



Our trail of toxic e-waste is growing every year. According to the United Nations Environment Program (UNEP), close to 50 million tons of e-waste is produced worldwide each year. That's enough to fill a line of garbage trucks that stretches halfway around the world. Not surprising when a single laptop computer alone generates 4,000 times its weight in waste!

Canadians are contributing their share too. According to a 2009 Statistics Canada survey of households and the environment:

- more than one-third of Canadians had unwanted electronic devices like cell phone, computer monitors, televisions to dispose of
- In the end, even the best recycling programs will fall short. They can divert hazardous waste but they do little to eliminate it. And with most recycling programs, the public still ends up paying the price.

Stats Canada also tells us recycling rates are generally on the rise in Canada. That's good but it too comes with a price that continues to rise. Local governments spent \$2.6 billion dollars on waste management in 2008, up from \$2.1 billion in 2006. The waste stream with the greatest increase was electronics.

The Canadian Wireless Communications Association, through its Recycle my Cell program, collected 345,694 cell phones in 2009. That's a great start. However, only 12 per cent of used mobile devices in Canada are currently recycled even though 96 per cent of materials in most mobile devices are recyclable.

There is no Canada-wide standard or program for recycling e-waste but many provinces have enacted laws to address this issue including British Columbia, Alberta, Saskatchewan, Ontario, Nova Scotia and Prince Edward Island. Although they vary in approach Alberta's program is most typical. It imposes a fee on consumers at time of purchase to help pay

for recycling costs. Ontario, instead of charging consumers, collects fees from manufacturers, importers and assemblers of electronic products. These fund non-profit recycling collection depots.

Good recycling programs can help divert hazardous waste from landfills but when local governments face competing pressures to keep taxes low and provide other critical public services, recycling programs can end up in the waste heap too.

Exporting the problem. Follow the toxic trail.

Recycling and reusing e-waste poses special challenges. For instance, when toxic materials are attached to non-toxic materials it's more difficult to safely disassemble and recycle these items.

The huge volume and potential value of e-waste trade has created opportunities for abuse. Despite attempts to legislate a solution, there is a large, **illegal trade in shipments of e-waste** to developing countries like China, India, Pakistan and parts of Africa. This is driven in part by the valuable metals found in many electronics. For instance, almost 20 per cent of the weight of a cell phone consists of copper, a metal in great demand and selling at record prices. Consumer demand for appliances and automobiles in fast growing economies like China and India are also spurring the trade in metals.



Some U.S. states choose to recycle e-waste at home by sending it to American prisons for processing by inmates. Without protection against hazardous exposures, workers whether here or abroad are still at risk.

Attempts to address the export of hazardous waste have been on the books for decades. The most significant initiative is the **Basel Convention** on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Negotiated in 1989, the agreement came into effect in 1992. It aims to stop the illegal export and trade of hazardous waste, often shipped from wealthy nations to less developed ones. Canada was among the first 170 nations to sign the convention. The U.S. has never signed on. A 1995 amendment to the Convention which strengthened the ban to end the illegal dumping of hazardous waste onto poor nations was never ratified by Canada.

When we drop an old cell phone or computer at a recycling depot we want assurances that good health, safety and environmental practices are in place to prevent unnecessary exposures and that the hazardous waste is not

being illegally shipped overseas. Some have fought for standards to ensure e-waste is handled safely and responsibly. Here's one example:

- **E-Stewards**, founded by Basel Action Network and 14 leading recyclers, offers an accredited, independently audited certification program for electronics recyclers in developed countries. Learn more at www.e-Stewards.org.

In the end, even the best recycling programs will fall short because they while they may divert hazardous waste they do little to eliminate it. And with most recycling programs, the public still ends up paying the price.

Make it safe....and take it back.

Reducing household waste is important but even if households recycled their products and materials, it would only reduce the entire waste stream by one or two per cent.

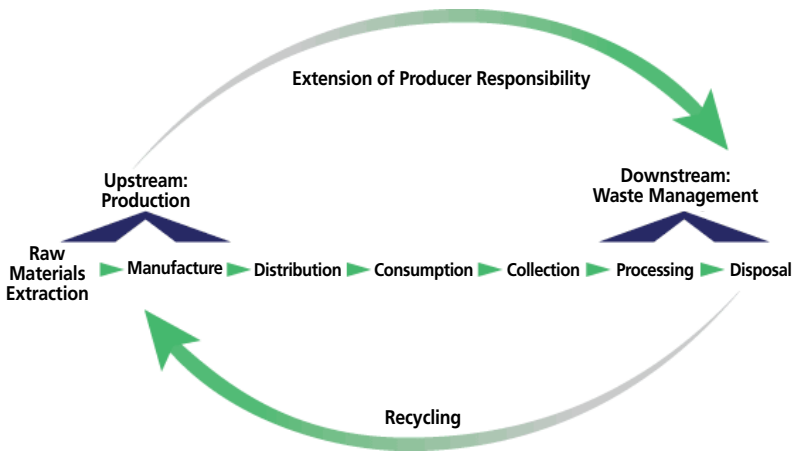
Canadians seem to agree, more needs to be done. A poll conducted by Environics Research Group for Community Foundations Canada surveyed Canadians about quality of life in their communities with regard to the environment, sustainability and responsibility for both. It found:

- Canadians top local environmental concern was waste management (landfills and incinerators)
- Two-thirds said **government was most responsible** to address environmental issues while 54 per cent said citizens should also play a role.



Where we really need to reduce waste is upstream in factories or workplaces. Using safer, sustainable materials reduces harmful exposures and produces products that can be more readily recycled and reused.

Producer Take-back or Extended Producer Responsibility (EPR), is the best approach. Here's why. It shifts the burden for recycling products from the public sector back to the manufacturer who is responsible for the environmental impacts of their products throughout the product's lifecycle. Some call this a "polluter pays" system because costs for the impact of the product are borne by the producer not by local governments or the consumer.



Benefits of EPR

First legislated twenty years ago in Germany as a way to reduce product packaging in the face of a landfill shortage, EPR now has many supporters. The benefits are many including:

- Clarifies responsibility
- Conserves resources
- Promotes better product design
- Reduces taxpayers burden
- Improves worker health
- Improves community health
- Improves ecosystem health
- Maintains and creates jobs
- Supports social justice.

Taken to its logical conclusion EPR would see manufacturers repairing or remanufacturing their products much like the manufacturers of Xerox copiers do. This system offers many benefits—resource, energy and water consumption are reduced and worker skill levels are considerably increased. Remanufacturing is not capital intensive, but it is labour intensive.

Two prominent examples of EPR are the European Union’s (EU) legislation both for electronic and electrical equipment waste and automobiles. In place since 2003, the EU’s **Waste from Electronic and Electrical Equipment directive** addresses collection and recycling of e-waste by requiring companies to take back and recycle their equipment. Despite recycling targets, only about one-third of e-waste is collected and safely treated across Europe.

Many are now pressing for a refinement of EPR by calling for greater individual producer responsibility rather than collective responsibility among producers. This would encourage greater competition between companies about handling end-of-life product waste, drive technological and business innovations and further reduce environmental impacts.

Many ask, “If manufacturers can meet Europe’s EPR requirements, why not ask them to do the same here in North America?” Unfortunately in North America these kinds of programs are mostly voluntary and few and far between. California is an exception where several jurisdictions have passed EPR resolutions and the California Integrated Waste Management Board has adopted EPR directives as part of its core mission.

In Canada the most visible producer product-take back measures are limited to bottle return programs. The Canadian Auto Workers (CAW) have been among those who view EPR as one of the most important means to achieve new, sustainable and clean or ‘green’ jobs. For more than a decade the CAW has been lobbying the federal government for EPR laws in Canada.



Making it green and clean.

If we're ever going to seriously tackle toxic waste we need to start thinking about toxic use. Reducing or eliminating toxics not only protects workers potentially exposed during manufacturing and recycling but also reduces the risk of environmental contamination. Products with fewer hazardous chemicals benefit consumers too.

Europe's take the lead on this too. Hand-in-hand with its e-waste laws the EU's **Restriction of Hazardous Substances directive (RoHS)** sets out to restrict the use of certain dangerous substances commonly used in electronic and electrical equipment. The regulation restricts the use of lead, cadmium, hexavalent chromium, and two brominated flame retardants (polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE), in electrical and electronic equipment sold in Europe after July 1, 2006.

Ontario has inched in this direction with the passage of Canada's first **Toxics Reduction Act**. These kinds of laws attempt to account for and eventually reduce the amount of toxics used. Ontario's law obligates companies to:

- track, quantify and report annually on the toxic substances they use, make, release, dispose or transfer
- develop plans to reduce the use and creation of toxic substances.



The first reports are due this year however many have fought to strengthen the law. Currently the reduction plans are mandatory but their implementation is not.

Fortunately, thanks to progressive European laws we are seeing green machines in North America too. For example, some major computer manufacturers are producing products without chlorine and bromine, chemicals commonly used in flame retardants and plastics. Some companies have chosen to restrict the use of all substances which might contain bromine and chlorine. Choosing to restrict use of a group of chemicals rather than identify and eliminate individual substances is known as the elemental approach. On a grand scale this approach is called **green chemistry**. It seeks solutions at the design phase which promote safer, sustainable materials and processes. Some key principles of green chemistry include:

- Prevent waste rather than clean or recycle it
- Produce non-toxic instead of toxic substances
- Eliminate byproducts, or at least produce harmless ones
- Use as little energy as possible
- Use renewable materials

The state of Michigan recently passed green chemistry legislation as part of its economic development plan and will encourage such initiatives through grants and tax credits to participating businesses.

Closer to home, the Ontario and Canadian federal governments provide funds for **GreenCentre Canada**. It operates out of Queen's University in Kingston and conducts research into green chemistry and engineering and hopes to support new start-up companies which promote these technologies.

Here are some examples of green chemistry at work:

- Ford's use of soybean-based foam car seats
- PPG's use of lobster, crab and shrimp shells to improve automotive paint (replaces a formaldehyde-based chemical that is a suspected carcinogen)
- Coke and Pepsi using vegetable-based materials to make bottles (avoids use of petroleum-based chemicals used in plastic bottle production)
- Computer displays moving from lead-containing cathode ray tubes (CRT) and mercury containing flat panel displays to light-emitting diodes (LED) which are mercury-free.

Taking Action

Tackling our growing e-waste stream will require many solutions and the commitment of us all. Clearly much still needs to be done. EPR is an approach that works. Pressing for EPR laws is just one of many ways that students, consumers and citizens, can demand action.

We can make better **consumer choices**. We can:

- Upgrade existing equipment, or buy refurbished products
- Choose products built to last and that are energy efficient
- Donate used electronics to approved groups and charitable organizations
- Educate yourself about green electronics choices
 - ✓ Electronic Product Environmental Assessment Tool (EPEAT) provides a tool to help purchasers evaluate, compare and select desktops, laptops/notebooks, workstations, displays
 - ✓ Greenpeace Guide to Greener Electronics

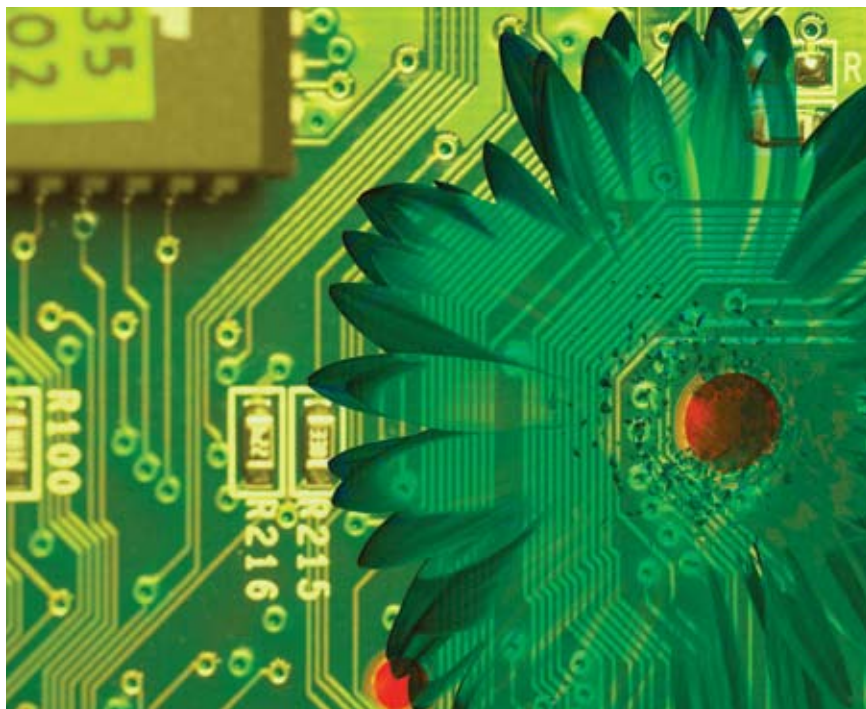
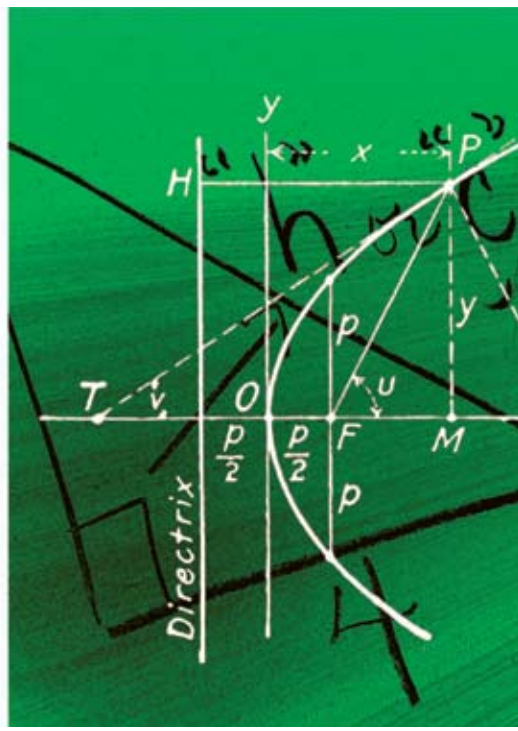
You can get involved in your **school and local community**. Start by asking some questions:

- Does your school have a policy to purchase only energy efficient, green electronics?
- Is there an e-waste recycling policy or program at your school or within your school board?
- Does your family know how to dispose of used electronics?

Good news is, each of us has far more power than we think. Every time we buy or discard something, speak out or remain silent, we're shaping our future. Fortunately, the ever-growing options for greener, products, processes and jobs make it a lot easier for us to put the environment first. By starting to taking charge of electronic waste we're also taking charge of our future.



***It's your call.
Will you answer?***



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EPR

Clean Production (EPR tools)

<http://www.cleanproduction.org/Home.php>

Electronics Product Stewardship Canada

<http://www.epsc.ca/>

Clean Car Campaign

<http://www.cleancarcampaign.org/>

Canadian Provincial Stewardship programs

Ontario Environmental Stewardship

<http://www.recycleyouelectronics.ca/>

Electronics Stewardship Association of British Columbia

<http://www.esabc.ca/cfm/index.cfm>

Alberta Recycling Management Authority

<http://www.albertarecycling.ca/>

Green Manitoba

<http://www.greenmanitoba.ca/cim/1001.dhtm>

Atlantic Canada Electronics Stewardship

<http://www.acestewardship.ca>

Recyc-Quebec

<http://www.recyc-quebec.gouv.qc.ca/client/fr/accueil.asp>

Saskatchewan Waste Electronics Equipment Program

<http://www.sweepit.ca/>

Electronics (Green guides, consumer guides)

Greenpeace: Guide to Greener Electronics

<http://www.greenpeace.org/international/en/campaigns/toxics/electronics/Guide-to-Greener-Electronics/>

Electronic Product Environmental Assessment Tool (EPEAT)

<http://www.epeat.net/>

Center for Environmental Health

http://www.ceh.org/index.php?option=com_content&task=view&id=465&Itemid=294

Specific Electronics Recycling Programs

Recycle My Cell

<http://www.recyclemycell.ca/>

Toronto Zoo cell phone recycling program

<http://www.torontozoo.com/conservation/PhoneApes.asp>

Computers for Schools

<http://www.ic.gc.ca/eic/site/cfs-ope.nsf/eng/home>

Advocacy on Electronics and E-waste

Electronics Take-back Coalition

<http://www.electronicstakeback.com/home/>

Basel Action Network

<http://www.ban.org>

Fair trade in electronics

<http://makeitfair.org/>

Good Electronics

<http://goodelectronics.org/>

Student Action Plan for recycling electronics

<http://files.earthday.net/actionplanspdf/E-cycling%20Student%20Action%20PlanFF.pdf>



The Canadian Auto Workers Union represents more than 200,000 workers across Canada. We build cars, planes and trains. We work in the transportation industry, including trucking, busing, rail and airlines. We also work in the fishing industry, hospitals, hotels and restaurants. As worker representatives we are well positioned to help achieve measures necessary for economic sustainability. But we are citizens and parents too. In this capacity we are equally concerned with the education of our children. Moreover, we understand the power that young people possess to change our world if given the opportunity. For our future and our children's future then, the CAW is committed to delivering our Earth Day program. To learn more about the CAW visit www.caw.ca.



The Workers Health & Safety Centre (WHSC) is unique among the organizations funded by Ontario's Workplace Safety & Insurance Board. As the systems only "training centre" we offer training and information services to workplace representatives in every sector of the economy and every region of the province. All focus on controlling, or better yet eliminating, occupational hazards at their source. All are also delivered using the WHSC's participant-centred and "workers training workers" approach. For more than a decade the WHSC has also proudly offered health, safety and environmental awareness programs aimed at young workers. To learn more about the WHSC visit www.whsc.on.ca.

Paper matters too

Four out of every 10 of all trees cut down are used to create paper. And since 1937, about half of the Earth's forests have been sacrificed to the paper pursuit. Pages for this booklet were produced by unionized workers at the Cascade paper mill in Saint Jerome, Quebec. The paper, known as Rolland Enviro 100, is made from completely recycled, post-consumer waste. No harmful chlorine was used to bleach this paper stock. Better yet, the mill making it is powered with biogas piped from a nearby landfill. So this booklet itself is another example of what we call "Green Jobs" — jobs that are safer and healthier for workers, their families, their communities and you.



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