



EXTENDED PRODUCER RESPONSIBILITY

A waste management strategy that cuts waste,
creates a cleaner environment and saves taxpayers money

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We wrote this manual to explain and promote Extended Producer Responsibility as a policy tool for product waste, at a time when this term is being misused and misunderstood. We show how corporations are shouldering their responsibility to take back discarded products in other countries. We demonstrate how Extended Producer Responsibility goes beyond traditional forms of recycling and is encouraging producers to design safer products by phasing out hazardous chemicals and reduce material use.

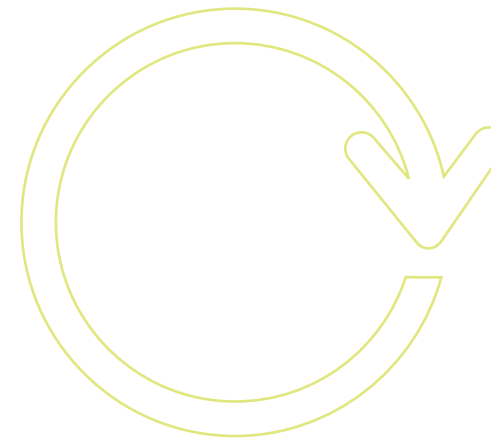
We believe the public needs to understand and get involved in the current debate round product waste recycling in the USA and Canada, since they are currently paying for inefficient and often costly recycling programs. In both countries the increasing problem of hazardous waste from electronic products, not to mention waste from automobiles and other priority waste streams, is forcing government officials to realize something must be done. Hopefully this booklet and the attached CD will support those campaigners working to advance EPR in North America and chart the way forward for waste managers and state government officials.

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A Waste Management Strategy that Cuts Waste, Creates a Cleaner Environment and Saves Taxpayers Money

A new waste management policy is gaining popularity because it saves taxpayers money and is significantly better for the environment and public health than current waste management practices.

Extended Producer Responsibility (EPR) (also called “Producer Takeback”) is a product and waste management system in which manufacturers – not the consumer or government – take responsibility for the environmentally safe management of their product when it is no longer useful or discarded.

When manufacturers take responsibility for the recycling of their own products they:

- Use environmentally safer materials in the production process
- Consume fewer materials in the production process
- Design the product to last longer and be more useful
- Create safer recycling systems
- Are motivated to keep waste costs down
- No longer pass the cost of disposal to the government and the taxpayer

Many industries have embraced Producer Takeback and are lobbying for direct responsibility of their own brand name products including Sony, Hewlett Packard, Braun and Electrolux who have set up their own individual recycling group in Europe. Some countries have also implemented Producer Takeback programs. Japan and Europe have passed comprehensive EPR legislation for both electronic and electrical equipment waste and automobiles. EPR has been slower to get off

the ground in North America for a variety of reasons, yet Producer Takeback for priority waste streams in the United States is now an urgent priority.

Americans generate a full 50 percent of the world’s solid waste though we make up only 5 percent of the world’s population.¹ We are a dangerous model for the rest of the world. Our landfills are leaking hazardous chemicals into surrounding soil and water while our incinerators continue to emit dioxins and other toxic compounds into the air and into ash.

Recycling programs, as they currently exist, can handle only a part of our waste streams and will never reverse our growing consumption of materials nor will they ever be able to solve the problem of waste from hazardous products.

We need a radical new direction in waste management and we need to put the focus on products and producers. Only producers can clean up the products they manufacture and design them for recycling and reuse.



IN NORTH AMERICA, WE HAVE TRADITIONALLY RELIED ON LANDFILLS AND INCINERATORS FOR WASTE DISPOSAL AND, MORE RECENTLY, RECYCLING. EVIDENCE IS MOUNTING THAT LANDFILLS AND INCINERATORS ARE CREATING ADVERSE HEALTH EFFECTS, AND AS WASTE STREAMS INCREASE AND GROW MORE COSTLY, RECYCLING IS PROVING INADEQUATE TO THE TASK.

OUR TRASH IS BECOMING MORE DANGEROUS

Waste generation in North America is out of control and is costing us dearly in terms of tax dollars and health costs. North Americans throw out more garbage than any other people on earth.² The products we buy become obsolete quicker and our recycling programs are not keeping up with the problem. As a result, the tonnage of product waste landfilled and incinerated has grown by 19.2 million tons since 1980.³

North America still has a lot of space in which to dump garbage, but our landfills are filling up rapidly and there is evidence that our waste is becoming more hazardous.

Landfills leak toxic liquids into surrounding water and landfills that contain household waste produce the same kind of toxic leachate (liquid) as found in hazardous waste landfills.⁴ A study conducted by the New York State Department of Health reports that women living near landfills have a four-fold increased probability of developing leukemia or bladder cancer.⁵ And this is only the latest in a number of studies that show a correlation between cancer rates and living near waste dumps.⁶

Incineration of household and hazardous waste, a technology that came into vogue in the 1980s as a way of dealing with waste, is now recognized as the leading source of dioxins and other hazardous chemicals into the environment.⁷ This is why incinerator proposals face stiff public opposition when new facilities are proposed as waste management technologies. Incinerators also do not make waste disappear; they simply transform household waste into hazardous air emissions and contaminated ash residues, which must then be landfilled.

LOW-INCOME PEOPLE AND OTHER COUNTRIES AFFECTED THE MOST

Many studies have shown low-income communities are disproportionately affected by waste handling facilities.⁸ We sometimes pay to have our garbage trucked to other states, but this practice is also facing rising public opposition. We even truck our waste from one country to another. The city of Toronto, Canada today faces increasing public outcry over its trucking of garbage into the state of Michigan.

The city of Philadelphia acquired worldwide notoriety when a million tons of its toxic incineration ash was shipped abroad in 1986 for dumping in less developed countries, but this was rejected by a series of countries. It was later revealed in 1992 that the crew eventually dumped its unwanted, toxic cargo into the Indian Ocean.⁹

However, slags, sludges, and even dusts captured on pollution control filters continue to be bagged up and shipped abroad. And it's not just unrecognizable waste that we continue to export. Informed recycling industry sources estimate that between 50 to 80 percent of the electronic waste collected for recycling is not recycled domestically at all, but quickly placed on container ships bound for destinations such as China.

A recent expose of computer waste dumped in China¹⁰ revealed how scrapped computers from the U.S. are contaminating local villages, waterways and damaging the health of villagers. Villagers worked with no protection burning off polyvinyl chloride (PVC) plastic to melt down copper wiring and hammering apart cathode ray tubes for lead solder. Spot samples revealed lead levels 2,400 times higher than World Health Organization drinking water guidelines while other heavy metal levels in surrounding soil and water were exceedingly high.

Americans generate half of the world's solid waste even though we make up only 5 percent of the world's population.

NOT ENOUGH DEMAND FOR RECYCLED MATERIALS

So what is the answer to this rising waste dilemma? Traditionally, cities have used recycling to offset landfill fees and some cities have set high recycling targets. The majority of material collected in cities with high recycling rates is composed of organic matter, paper, some plastics and tins although some communities will also collect white goods (refrigerators, washing machines and other large appliances), steel, other plastics, ferrous metals and materials not traditionally collected.

But recycling only pays if there is a market for the collected discards. Composted materials can be a money generator for communities, as can mixed paper waste, but finding a market for other materials can be problematic. Many types of plastics, polycoated paper and electronic waste, particularly brown goods to name just a few, have proven difficult to recycle and markets are often hard to locate.

Communities wishing to recover these materials often must ship them to distant markets and deal with fluctuating prices.¹¹ Often communities contract with a private recycler who takes the collected discards off their hands but it is usually unknown where the waste ends up, what happens to it and who gets exposed.

According to the United States Environmental Protection Agency, the rate of recycling has stagnated at 27 percent¹² since 1997 and for some materials the rate is extremely low. Plastics recycling still only accounts for less than five percent.¹³

MORE DISPOSABLE MATERIALS AND ELECTRONICS CREATING TOO MUCH WASTE

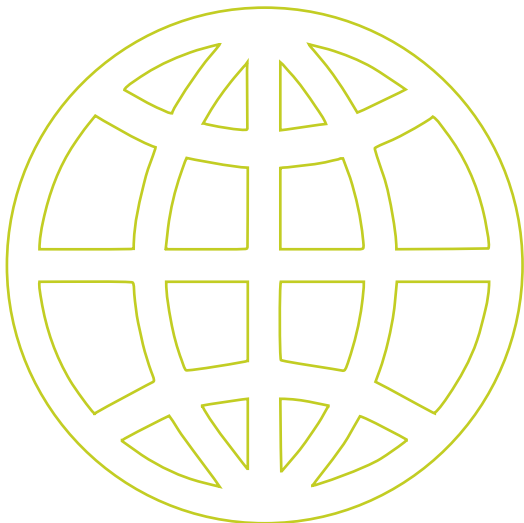
Part of the problem is that products are designed for increasing obsolescence: the average life-span of a computer has dropped from 10 years in the 1960s to two years for today's laptops. Community recycling, which collect old computers for reuse and recycling, find they are left with a disposal problem because nobody wants them. A national spokesperson for Goodwill said because so few people buy refurbished computers, Goodwill loses \$25 to \$30 on each donated computer it has to recycle.

"Nonprofit organizations are essentially acting as agents of the state for the benefit of the community and should not have to bear the financial burden of proper e-waste disposal," said Christine Bragale, national spokesperson for Goodwill.¹⁴

Waste from electronic and electrical equipment is growing three times faster than total municipal waste. And it isn't just computers piling up. Other end-of-life electronic products include video cassette recorders, DVD players, vacuum cleaners, radios, televisions, washing machines, electric toothbrushes, etc.

TVS AND COMPUTERS EXEMPLIFY THE NEED FOR EPR

With the rapid advancement in technology, obsolete electronic products are one of the largest growing sources of municipal and hazardous waste. According to the Environmental Protection Agency, in 2002, discarded computers and television cathode ray tubes outnumbered those sold. Between 1997 and 2006 nearly 500 million computers will become obsolete. In 2006 TVs will move to digital transmission and it will be the most dramatic change for consumer products since the switch from radio to television. Consumers will have to buy a 'conversion box' or they will simply throw out their old TV adding to the increasing electronic waste stream. Since many computer components are not designed for economical reuse or recycling in the United States, a large percentage of the electroscrap ends up in landfills and incinerators or is shipped overseas for so-called "dirty recycling"--contaminating people, water supplies and the environment in developing countries. Research found electronic waste, sometimes referred to as e-waste, to be growing three times faster than other domestic waste and presenting a significant source of dioxins and heavy metal contamination in incinerators and landfills. Recycling rates for electroscrap are particularly poor. Materials such as plastics, which make up 20 percent of the e-waste, are not recycled due to the presence of hazardous flame retardant chemicals in the plastic and the cheap price of virgin materials.



**HAZARDOUS FLAME RETARDANT
CHEMICALS (PBDES) ARE INCREASING
IN HUMAN BREAST MILK FROM
CANADA AND THE USA**

**Because so few people buy refurbished computers,
Goodwill loses \$25 to \$30 on each donated computer
it has to recycle.**

Cell phone waste is growing rapidly as well. By 2005 about 200 million cell phones will be in use in the U.S.¹⁵ Plastic bags and batteries proliferate. Companies have increased the weight of their packaging, shifting from reusable to disposable products, and have increased the costs of recycling by adding pigments to milk jugs and adhesives to labels that are incompatible with recycling processes. Recycling of glass bottles declined in 1997 and total container recycling fell 7.6 percent.¹⁶

HAZARDOUS WASTES ARE ENTERING OUR BODIES

In many respects, recycling hazardous materials is the worst thing that could happen. Brominated flame retardants (BFRs) in plastic computer and TV housings, vehicles, upholstery and carpets, are a case in point. Levels of brominated chemicals have increased in the environment and in our bodies at a rapid rate paralleling the increase in computer and television use. These chemicals, which are known to be reproductive hazards, have doubled in breast milk every five years since, creating the worrying situation that North American women now have the highest body burdens of these chemicals than anywhere else in the world.¹⁷

Some of the first evidence that BFRs were accumulating in human tissue was a study on computer recyclers in Sweden that found elevated body contaminant levels. To continually process plastics with BFRs in them releases more chemicals into the environment from dust particles. In fact, the potential danger of handling e-waste impregnated with BFRs is one reason why there is such a low rate of e-waste recycling in Europe. Yes safer alternatives exist.

Some materials are just too difficult and costly to be recycled. Vinyl or polyvinyl chloride (PVC) plastic has too many different additives, stabilizers and softeners to collect and recycle in bulk. For this reason, PVC has a recycling rate of less than one percent in the U.S., and recycling programs avoid all PVC plastic. Another danger is that one PVC bottle in a vat of polyethylene terephthalate (PET) plastic bottles will contaminate the entire mix.

As a result, PVC is often land filled where it poses the risk of hazardous leachate, or the creation of dioxin from landfill fires. If the waste is incinerated the chlorine content in PVC will create dioxin-contaminated ash and probable dioxins in the air. Dioxin is a known human carcinogen. The presence of long-life PVC material used in the 1960s and 1970s for vinyl siding, pipes, flooring and furniture is starting to become waste. There is currently no feasible and safe way to deal with this complex material, yet by the year 2005 a total of 300 million tons of PVC waste will begin to enter waste streams round the world.¹⁸ A European Union study on this impending waste problem predicts that mechanical recycling can at best handle only 18 percent of this waste by 2020.¹⁹

HANDLING WASTE IS EXPENSIVE

As though our escalating waste problem is not bad enough, local governments in the USA currently spend an estimated \$43.5 billion per year managing product waste.²⁰ At the same time, state and local governments are facing deficits of an unprecedented scale – deeper than any time in the last half-century.

States are in trouble:

- States are facing budget deficits in the range of \$70 billion to \$85 billion for state fiscal year 2004. The deficits represent between 14.5 percent and 18 percent of all state expenditures.
- These new deficits are on top of the \$50 billion in deficits that states closed when they enacted their fiscal year 2003 budgets.
- The new deficits for fiscal year 2004 are also on top of at least \$17.5 billion in additional deficits that have opened up in 2003 budgets since those budgets were enacted.²¹

Given the magnitude of the deficits, state actions are highly likely to cut basic services such as health care and education, or impose new tax burdens on low- and middle-income families. Such actions are already being taken as states slash health insurance programs, cut deeply into budgets for elementary and secondary education and child care, and force double digit tuition increases at state colleges and universities. For instance the city of Cleveland recently announced that they are abandoning their curbside recycling program due to budget cutbacks.²²

So what is the answer to our rising waste generation? A new practice has appeared in the last decade. Referred to sometimes as Extended Producer Responsibility (EPR) or Producer Takeback, it requires manufacturers to be responsible for environmentally friendly management of their product when it reaches the end of its productive life.

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“PRODUCER RESPONSIBILITY FOR THE POST CONSUMER STAGE OF A PRODUCT’S LIFECYCLE DOES NOT INTERNALIZE ALL ENVIRONMENTAL EXTERNALITIES, BUT IT DOES INTERNALIZE ACTUAL WASTE MANAGEMENT COSTS INTO PRODUCT PRICES AND THUS IS A STEP IN THE DIRECTION OF SUSTAINABILITY.”

Bette Fishbein. *What is EPR and Where is it Headed?*
INFORM 1998

HOW PRODUCER TAKEBACK CAN HELP SOLVE THE WASTE PROBLEM

When Extended Producer Responsibility (EPR) (also called “Producer Takeback”) policies are in place, manufacturers take responsibility for the environmental and social impacts of their products throughout a product’s entire lifecycle – production, use and disposal. EPR makes sense because it puts the party with the greatest ability to impact the design of the product in charge of its disposal and creates an incentive – lower waste disposal costs – for doing so.

Traditionally, producers only considered themselves responsible for the quality of the product. Today industries are increasingly accountable for their choice of materials through the supply chain, as well as the environmental impacts of their production processes on workers on the shop floor. By focusing on end-of-life products, EPR takes manufacturer responsibility one more step.

EPR started in Europe in response to Europe’s growing hazardous waste and limited land-fill space and has been endorsed by a wide range of international bodies.

The Organization for Economic Cooperation and Development (OECD) has embraced the idea of producer responsibility as an economically efficient way to internalize the cost of product waste and offered guidance on how to implement EPR policies round the world. The OECD is a group of 30 member countries, including the USA, with a commitment to democratic government and the market economy, and it exists to identify policies that work within the globalized economy.

Benefits of Producer Takeback identified by the OECD include:²³

- Reducing the number of landfills and incinerators and their accompanying environmental impact;
- Motivating the efficient use of natural resources;
- Reducing the burden of municipalities for the physical and or financial requirements of waste management;
- Fostering recycling, reuse and recovery of products or parts thereof;
- Improving the ease of disassembly of products for recycling or reuse;
- Eliminating potentially hazardous components;
- Promoting cleaner production and products;
- Improving relations between communities and firms;
- Encouraging more efficient and competitive manufacturing;
- Encouraging more integrated management of the environment by placing an emphasis on the life cycle of a product; and
- Improving materials management.

EPR INCORPORATES THE COST OF WASTE MANAGEMENT INTO THE PRODUCT PRICE

When producers take responsibility for managing their discarded products, the cost of recycling (or other disposal methods) is reflected in the product price either visibly as a separate line on the price tag, or invisibly. In this way, the consumer who uses products that are difficult or costly to dispose of also helps pay for that disposal. By paying for the recycling costs when a product is bought, the consumer can rest assured that his or her product will be taken care of when it is thrown out.

“We should recycle, but it is not the first thing we should do, it is the last. Redesign first, then reduce, reuse and finally recycle, if there is no other alternative.”

Bill McDonough, Co-Author of *Cradle to Cradle*

This approach changes our traditional system, in which the taxpayer is responsible for all product disposal, into a fairer system where those who use and produce products are responsible for paying their true costs. For example, taxpayers who own only one computer or one television are disproportionately responsible – through their taxes – for the disposal costs of products from other residents who have chosen to buy more of these products.

Even when producers attach an invisible or visible fee onto the price of the product, to cover all or part of the waste management costs, these costs often don’t reflect the full cost of collecting waste, transporting it from households to the collection point, or advertising the program to consumers. In some countries, producers cover any shortfall, while in other countries local municipalities and retailers pay part of the costs of collecting the waste from consumers and advertising the program.

EPR CAN REDUCE OUR CONSUMPTION OF MATERIALS

Germany, with one of the longest track records for a broad-based EPR program for packaging, has shown that **EPR can reduce consumption**. The German Packaging Ordinance, which originated in 1990, is sometimes known as the original Green Dot system.

The German Packaging Ordinance has resulted in:

- An increase in the use of reusable packaging
- Reduction in the use of composite and plastic packaging
- Significant design changes in packaging
- Major reductions in volume and weight by changing container shapes and sizes
- New technologies for recycling of packaging materials

For example, the use of composites was reduced by 50 percent and plastics use in packaging fell from 40 percent (by volume) to 27 percent in favour of paper/carton and tinplate. There were also shifts within the plastic packaging sector away from Polyvinyl chloride plastic (PVC) to Polyethylene (PE) and Polypropylene (PP), which is easier to recycle. According to the German government, the high refillable rates for beverage containers is cutting waste by 1.2m tonnes annually and reducing greenhouse gas emissions.²⁵

The German Packaging Ordinance has also stimulated new technologies for recycling of packaging materials. Existing technologies for glass and paper have been refined to increase recycling potential and create new markets for secondary materials such as the development of high quality paper for drink cartons. New technologies, both for sorting and recycling of plastics, have been developed to meet the recycling mandate, and Germany is now seen as a leader in packaging recycling technology.

HOW MUCH WILL PRODUCER TAKEBACK COST THE CONSUMER?

The following fees have been calculated to cover Producer Takeback costs for electronic products:

- From its trade-in promotion Apple has established the cost of recycling IT waste at around 80 cents per kg.²⁴
- In European countries with national EPR programs for electronic waste, visible or advanced recycling fees (ARFs) for a personal computer range from around US\$7 in Switzerland to US\$14 in the Netherlands.
- For televisions, the ARF in Sweden is in the range of US\$3-8; in the Netherlands US\$4.40-\$15 and in Switzerland US\$12-42.

In total between 1991 and 1997, the German Green Dot system achieved a three percent annual reduction in packaging, which clearly reversed the previous two to four percent increase per year trend prior to this legislation. Total packaging has been reduced by one million tons, a per capita reduction of 15 kg.²⁶ The extra cost to consumers for recycling aluminum drink cans was less than half a cent per can.²⁷

For comparison, between 1991 and 1995, German Green Dot packaging decreased 14 percent while during the same period in the USA packaging increased 13 percent.

PRODUCER TAKEBACK CAN PROVIDE COMPETITIVE EDGE AND RESULT IN LOWER COSTS, BETTER PRODUCT DESIGN

Producers that are required to pay for the recycling or disposal of their products have an incentive to make less wasteful and more economically recyclable products. And, the producer is in the best position to make decisions and changes that will result in a better product and a better plan for disposal.

- Only the producer can decide what materials to use in the product's design.
- Only the producer can affect design changes to improve recyclability, ease of disassembly and reuse, and choose the use of non-toxic materials.
- Only the producer can minimize the consumer costs of the product by redesigning it to be efficiently reused and recycled.

IN TODAY'S COMPETITIVE MARKET, EPR IS A BUSINESS OPPORTUNITY

Many companies see Extended Producer Responsibility (EPR) as an opportunity to be more competitive. In 2001 a number of major electronic manufacturers in Europe released joint statements in support of the Directive on Waste from Electrical and Electronic Equipment (WEEE).

Producer responsibility for WEEE was established because hazardous waste from electronics was on the rise in Europe. After a few countries passed EPR legislation to deal with the problem, the European Union passed two directives to harmonize the laws and help the electronics industry operate efficiently--WEEE and Restriction on Hazardous Substances (ROHS).

The WEEE Directive allows for individual responsibility. In other words, it allows corporations to take direct responsibility for recycling their own brand name products. Individual responsibility has been more effective and resulted in better design than collective responsibility, which involved producers sharing the costs of managing end-of-life products regardless of brand name and based on market share.

Some of the companies in Europe which supported the push for financial responsibility for recycling to encourage design for the environment within the WEEE Directive include:

- | | |
|--|------------|
| • American Electronics Association in Europe | • Nokia |
| • Apple Europe | • Gillette |
| • Hewlett Packard | • Intel |
| • Sony Europe | • Sanyo |

It is useful for government officials, and environmental and community advocates in North America to be aware of EPR programs underway around the world where companies operating in the United States and Canada not only comply with regulations, but also actively advocate for individual financial responsibility.

MAKING PRODUCERS RESPONSIBLE IS AN INCENTIVE TO IMPROVE PRODUCT DESIGN

Manufacturers that take responsibility for their product waste, or end-of-life products, have a greater incentive to design out the toxics in their products and make them easily recyclable. The cleaner the product comes back to them, the easier and safer it is for them to handle it. And, the more recyclable the product, the cheaper it is to process and reuse.

“One of the objectives of introducing producer responsibility is to create incentives for producers to improve the design of their products with a view to enhancing their environmental performance. We support this ambition.”²⁹

Statement by industry coalition in Europe including American Electronics Association (Europe), IBM, Hewlett Packard, Sony, Gillette Group Europe, Apple Europe, Intel, Nokia, Sanyo

Experience has shown that producers improve the design of their products when given clear and enforced recycling targets. Such design changes include moving to less hazardous materials (since hazardous substances in products hamper recycling and increase its costs), use of more recyclable materials and design for easier disassembly. In fact, interviews with companies in Europe and Japan found that EPR legislation was a primary motive to design better products.³⁰

A survey of automakers in Sweden and Japan, where EPR for end-of-life autos exists, reveals that in order to increase the recyclability of the plastic portion of the car, some manufacturers, such as Nissan, have reduced the variety of plastics used for different parts of the car. Toyota succeeded in developing specific plastics that can be recycled for exactly the same purpose without degrading the quality. One of the Swedish manufacturers sent its design personnel to dismantling plants so that issues regarding the end-of-life management could be directly communicated.

EPR SAVES TAXPAYERS' DOLLARS

EPR policies make precious taxpayer dollars go further. As the Organization for Economic Cooperation and Development (OECD), a group of 30 member countries, including the U.S. that exists to identify policies that work within the globalized economy, points out: “A primary function of EPR is the transfer of the costs and/or physical responsibility (full or partial) of waste management away from local government authorities and the general taxpayer to that of the producer.”

Nowhere is this better understood than by local governments who are facing an ‘unfunded mandate’ to handle e-waste. So far, more than 135 cities in Massachusetts support the state’s Computer Takeback Bill.

As one local government official explained: “The city of Quincy, Massachusetts is responsible for recycling an excess of 25,000 tons per year of computer monitors and televisions, costing the taxpayers more than \$50,000,” said Kevin Coughlin, Quincy City Councillor. “That money would have saved the teacher we needed to preserve the elementary music program and a high school security person who were both cut from the budget last year.”

CASE STUDY: ELECTROLUX

Electrolux was actively involved in the process that led to the adoption by the European Union’s Waste from Electrical and Electronic Equipment (WEEE) Directive in late 2002. Electrolux joined the World Wildlife Fund, the European Consumers Organisation (BEUC) and other environmental organizations to argue that collective responsibility would not establish one of the main objectives of the WEEE Directive - encouraging investment in environmental improvements - since any cost savings gained through improved design and product development would be shared among all manufacturers. They applauded the fact that: “By choosing individual producer responsibility, EU decision makers made a wise decision that will harness the power of market forces to fuel the growth of an efficient recycling industry throughout Europe, and at the same time give manufacturers incentives to improve product design.”

“THE CITY OF QUINCY, MASSACHUSETTS IS RESPONSIBLE FOR RECYCLING AN EXCESS OF 25,000 TONS PER YEAR OF COMPUTER MONITORS AND TELEVISIONS, COSTING THE TAXPAYERS MORE THAN \$50,000. THAT MONEY WOULD HAVE SAVED THE TEACHER WE NEEDED TO PRESERVE THE ELEMENTARY MUSIC PROGRAM AND A HIGH SCHOOL SECURITY PERSON WHO WERE BOTH CUT FROM THE BUDGET LAST YEAR.”

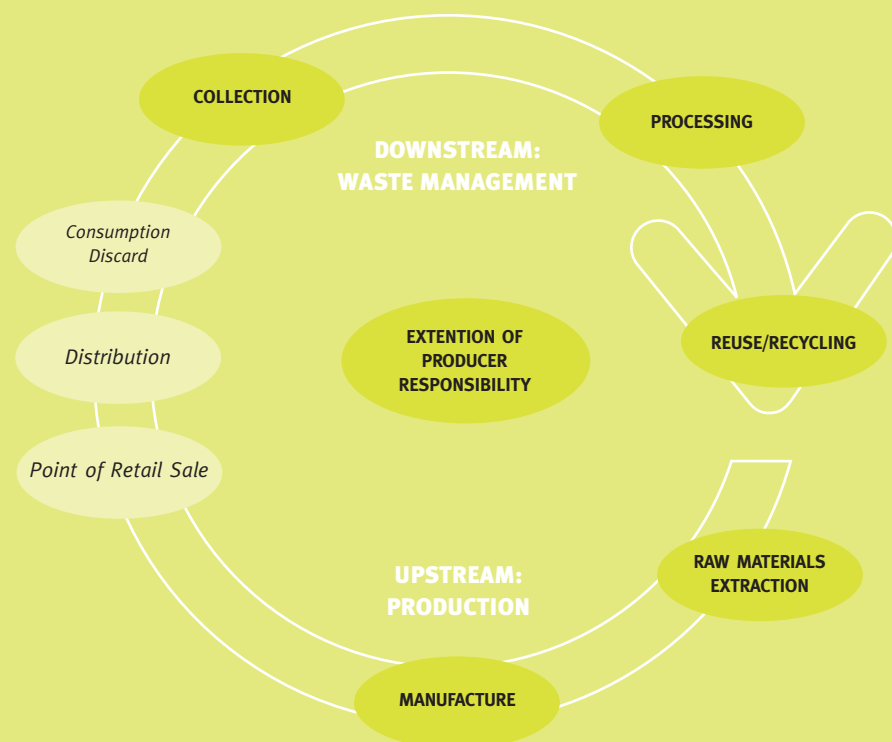
Kevin Coughlin, Quincy City Councillor

John McNabb of Clean Water Action said of the situation, “Local governments are subsidizing the inefficient design practices of computer manufacturers, whose products are toxic and costly to recycle. Massachusetts cities and towns pay \$6 to \$21 million per year to collect and recycle used cathode ray tubes (CRT’s) and computers. The state spends about \$400,000 a year on programs to help the cities and towns with this waste. Computer manufacturers in Massachusetts, like their counterparts in Europe, should be required to pay for the collection and recycling of their products, to take this ‘unfunded mandate’ off the backs of local government.”

Many Massachusetts’ towns and cities have quantified how much they spend on handling e-waste and what they could use the money for instead.³¹ For example:

- The city of Salem notes that “due to budget cuts, hazardous collection day will not be held this year in our city and our local budget is strained and cannot bear the high costs for computer collection and recycling.”
- The town of Oxford notes that “last year the town paid approximately \$11,800 to collect and recycle our residents’ computers and this money could have been better spent on services for the town in light of the state’s current budget deficit.”
- The town of Amherst notes that the town “financially supports over a dozen recycling programs and the recycling of electronics has become one of our largest and most expensive programs. A less expensive and more direct method would be for the computer companies or the retail stores to shoulder the responsibility for the reuse/recycling of computers and other electronics.”

EPR ENCOMPASSES BOTH THE UPSTREAM AND DOWNSTREAM STAGES OF A PRODUCT’S LIFE CYCLE.



THE MOST EFFECTIVE EPR TAKEBACK PROGRAMS ARE GOVERNMENT REGULATIONS THAT MANDATE INDIVIDUAL FINANCIAL AND PHYSICAL TAKE BACK OF THE PRODUCT, BUT ALSO SET INCENTIVES FOR CLEAN PRODUCT DESIGN.

To create a strong, long-lasting Extended Producer Responsibility (EPR) program, the following elements should be included in the program design.

INDIVIDUAL RESPONSIBILITY

Individual responsibility is practiced when a producer takes responsibility for the end-of-life management of his/her own-brand products, whereas collective responsibility involves producers sharing the costs of managing end-of-life products regardless of the brand name based on market share.

Companies that have phased out many hazardous materials, redesigned their products to facilitate durability, repair, reuse, disassembly or recycling will want to reap the benefits of this redesign through individual responsibility – which is why progressive companies actively lobbied for this in the Directive on Waste from Electrical and Electronic Equipment (WEEE). Recently passed in 2003, by the European Union, the WEEE Directive requires all producers to be responsible for end-of-life management of their products after 2005. Sony, HP, Braun and Electrolux have recently set up their own group to ensure they reap the benefits of their own product take-back through lower recycling costs.³²

However, some waste product streams are highly mixed, such as post-consumer packaging waste, and this makes it impractical to allocate individual responsibility. Here, the establishment of a Producer Responsibility Organization (PRO) can handle different brand name waste but the system should still attempt to reward producers who pursue more sustainable product design. This can be done, by setting weight-based fees, which vary according to material type, as was done under the German packaging take-back system (for more information see Case Study on German Packaging Ordinance in Appendix).

Government-Mandated Participation

The most effective EPR takeback programs are government regulations that mandate universal participation in the take-back program. This stops ‘free riders’ from abusing the take-back program. Free riders are companies that use the collection and recycling facilities offered by the takeback program, but whose products carry no advanced recycling fees (ARFs), and thus do not pay into the collective takeback system run by the PRO.

“A producer, as well as an importer, should assume financial responsibility for the recycling of the products intended for households. This will encourage design for the environment in product development, as well as competition in the waste/recycling industry.” Electrolux, Hewlett Packard, Ericsson, ICL, Nokia, IBM, Gillette,

Sun Microsystems, Intel and Agilent Technologies (May 23, 2001)

THE COSTS OF DEALING WITH HISTORIC ELECTRONIC WASTE IN EUROPE WILL BE COVERED BY ALLOWING PRODUCERS TO IMPOSE A SEPARATE 'VISIBLE FEE' ON NEW PRODUCTS, WHICH IS TO BE EARMARKED FOR DEALING WITH THIS WASTE.

Advanced recycling fees are fees included in the cost of a product that are used to fund the recycling of the product once it's discarded.

To avoid the implementation of regulatory EPR mandates, some manufacturers in the United States have started to set up voluntary takeback programs that charge an end-of-life fee to consumers. For example, major electronic manufacturers, such as Dell, Hewlett Packard and IBM have set up voluntary programs where they charge consumers a \$20 to \$30 fee for taking back the product. These programs are not a comprehensive solution to rising e-waste because consumers can avoid the fee by disposing of electronics in the trash bin, thus passing the end-of-life management costs onto municipal waste authorities.

ACCOUNTABILITY FOR HISTORIC AND ORPHAN WASTE

EPR programs need to account for orphan (products still in circulation but whose producers no longer exist) and historic waste, as well as current end-of-life product waste. Years ago product designers did not design for reuse or recyclability. However, this waste must be dealt with. The responsibility for financing the management of historic waste can be shared proportionally according to each producer's current or historic respective share of the market. The problem of orphan waste in the future can be solved by having companies pay into an insurance fund to assure their product costs are covered in the future regardless if these companies still exist or not.

Reuse and Recycling Requirements

Minimum reuse and material recycling targets need to be established to provide incentives to achieve full recovery, reuse and recycling. These have proved to be a major driver for design change. Incineration or combustion of end-of-life products even with energy recovery should not be considered 'recycling.' This was clearly stated in European legislation when defining recycling for automobile and e-waste.

“We can support the European Parliament’s conclusion that if companies are obliged to finance the recycling of historic products, the cost should: a) be proportionate to the market share of producers active on the market when the cost occurs and b) it should be possible, but never mandatory, for companies to show the cost for historic waste recycling during a 10 year period.”

IBM, Electrolux, Hewlett Packard, Ericsson, ICL, Nokia, IBM, Gillette, Sun Microsystems, Intel and Agilent Technologies.

Environmental Standards for Recycling Facilities

End-of-life facilities should ensure safe, clean recycling processes for workers and nearby communities. Producer liability for end-of-life treatment often leads to state-of-the-art facilities.

Material Restrictions

EPR programs need to include material restrictions for highly problematic materials, such as heavy metals and carcinogenic materials. These restrictions have proven a major driver for design change. As a result, leading companies are finding safer alternatives for the hazardous materials used in their products.

Labelling, Consumer Notification and Free Takeback

For consumers and end-of-life managers, manufacturers must clearly label products with the following information:

- The brand name
- Hazardous materials contained in the product
- Requirements not to dispose of the product in landfills, incinerators or any other means not approved as part of the program
- A toll-free phone number and/or Website where consumers can obtain information and instructions about how to dispose of the item

It is important that consumers can take back their product free of charge. This ensures high collection rates. It is also important that the consumers are clear about the collection system and know how to get rid of their end of life products, eg. by giving them to a retailer, having them collected by curbside pickup or taking the end-of-life products themselves to a collection point.

Landfill and Incinerator Bans

EPR programs should specify a phase out plan for all product waste going to landfills, incinerators or combustion facilities to ensure that collected waste products are reused or recycled.

Export Bans

EPR programs should prohibit the export of end-of-life product waste to other countries. Waste is not a commodity. Currently most of product waste generated in the United States is sent to developing countries under the pretext of recycling. Environmental groups have traced the dumping of electronic waste to Asia where local communities are exposed to ongoing highly hazardous chemicals generated from junked computers.³³

Defined Government Oversight

A designated government agency needs to be responsible for overseeing the EPR programs to insure that all producers comply with the requirements and have some kind of reporting system. Penalties should be levied if producers fail to meet the requirements. Full public access to this information is important.

A REPORT RECENTLY PUBLISHED BY RAYMOND COMMUNICATIONS FINDS THAT EPR PROGRAMS CAN DO A MORE EFFICIENT JOB. ACCORDING TO THE REPORT, COUNTRIES WITH MANDATED INDUSTRY-RUN COLLECTION SYSTEMS FOR OLD ELECTRONICS APPEAR TO BE REACHING HIGHER RECOVERY RATES THAN THOSE WITH GOVERNMENT RUN SYSTEMS IN PLACE.³⁹

REPORTED RECYCLING RATES IN THE US AND GERMANY, 1997

	US TOTAL PACKAGING	GERMANY SALE PACKAGING
Glass	28%	89%
Steel/Tinplate	61%	84%
Aluminum	48%	86%
Plastics	9%	69%
Paper/Paperboard	54%	93%
Composites	NA	78%
TOTAL	39%	86%

US data is for all packaging, German data excludes transport and secondary packaging.

(Source. INFORM. Extended Producer Responsibility: A Materials Policy for the 21st Century. 2000)

FINANCING EPR PROGRAMS

Producers have used the following financial mechanisms to finance mandatory end of life management of their products:

- **Invisible Advance Disposal Fees** pay for the recycling of the product and are included in the overall price of the product and so the consumer is not aware that the fee exists. An invisible fee leads to efforts by producers to reduce the costs for end-of-life management so that the final price of the products is as low as possible. Some companies, such as the IT companies in the Netherlands, prefer and use this system. In Europe all companies will have to use invisible fees for electronic products put on the market after August 2005.
- **Visible Advance Disposal Fees** are added as a separate line item to the price of the product, so the consumer knows that a designated amount of money is going toward end-of-life waste management for recycling the product. If this fee is a Flat Fee, or the same for all brand names, it does not give any signal to the consumers as to which products are more recyclable or less environmentally harmful at the end of their lives. In Europe electronic equipment producers will be allowed to use visible fees until 2011 to pay for historic waste, after which all recycling costs will be internalized into the product price.
- **Future Financial Guarantees.** Here the future costs to recycle new products are 'guaranteed' to be paid by producers. Producers can do this by participating in a Producer Responsibility Organization, paying recycling insurance, or setting up a special bank account for this purpose. This has been done by the car industry in Europe.
- **License Fees** are managed by an industry-funded, third party nonprofit organization that handles collection and recycling responsibilities for a collective group of brand owners. Manufacturers will pass the license fee costs onto the consumer in the price of the product.
- **Deposit/refund** systems charge a deposit at the time of purchase to encourage the return of the product to the producer (commonly used with beverage containers). Since they generate no revenues, deposit/refund regimes are used solely to induce correct consumer behavior.
- **Last Owner Pays System.** Here, the last owner pays for the price of recycling at the time of product discard and is used in Japan for electronic equipment. However this could result in illegal dumping or in some cases putting the discarded product into the common municipal waste pickup, so this type of fee has not been widely used in other countries.

USING THIRD PARTY ORGANIZATIONS TO IMPLEMENT EPR

To create the most powerful incentives, EPR should give producers responsibility for the products they actually produce. However, this is impractical for many product sectors, such as packaging.

For example, it would not be economically feasible for every company that makes breakfast cereal to take back its own boxes. For this reason, Producer Responsibility

Organizations (PROs) are often used to manage takeback of a particular end-of-life product stream collectively for all producers. PROs, sometimes referred to as Third Party Organizations, are often funded by a system that charges a fee on each item put on the market.

It is important that the PRO fees reward design changes that reduce materials use or facilitate recycling. In a packaging takeback system, for instance, a fee that is based on the type of package material and weight reflects the actual costs of recycling and thereby creates an incentive to reduce packaging and or change the packaging material to facilitate recycling. A standard fee based on the volume of the package contents, however, creates no such incentive.

To read about an EPR program that reduced packaging in Germany by one million tons since 1990, refer to the German Packaging Ordinance case study in Appendix.

WORKING WITH COMMUNITY-BASED RECYCLING PROGRAMS

One concern voiced by community groups is that current recycling jobs will be jeopardized under an EPR system. Community-based recycling groups in Europe were initially fearful when the Waste from Electronic and Electrical Equipment Directive (WEEE) was passed by the European Union (EU). However, they now see the EPR law as an opportunity that enables them to fill the 'reuse' niche.

Now, when recycling groups sign contracts with local authorities, they are:

- Helping to achieve the reuse/recycling targets set by the EPR law
- Guaranteed a stream of appliances to repair
- Ensured regular revenues to invest in professionalizing and expanding their services

As a result of EPR, many community-based groups in the UK are developing additional services (paid for by producers) such as pre-treatment of waste electrical and electronic products – another requirement of the EU law.

However, recyclers who do not meet the safety and environmental criteria stipulated under an EPR scheme should not be allowed to operate.

UNDERSTANDING THE LIMITATIONS OF GOVERNMENT-RUN RECYCLING PROGRAMS

Government-run recycling systems typically do not require any information flow between the recycler and the manufacturer. Connecting the recycler to the manufacturer is not only critical to encouraging better design practices, but it is also essential to recycle products safely.

Today, recyclers receive products with little knowledge about the chemicals that are contained in the product and how they should be treated. As a result, employees working in recycling facilities and communities living near by can be exposed to chemicals released during recycling process, as was discovered in Sweden in 2000 with personnel at an electronics-dismantling plant.³⁴ Workers there were contaminated with brominated flame retardant chemicals and this led to Sweden and later the European Union banning the use of certain chemicals in new electronic products

The amount of product waste land filled and incinerated in the USA has grown by 19.2 million tons since 1980 and the rate of recycling has stagnated at 27 percent since 1997.

When the WEEE Directive was being drafted the following companies lobbied extensively for financial responsibility: Electrolux, Hewlett Packard, Ericsson, ICL, Nokia, IBM, Gillette, Sun Microsystems, Intel and Agilent Technologies. They stated in a letter dated May 23, 2001 that “A producer, as well as an importer, should assume financial responsibility for the recycling of the products intended for households. This will encourage design for the environment in product development, as well as competition in the waste/recycling industry.”

A joint press statement from The American Electronics Association (Europe) along with Apple Europe, HP, Intel, Nokia, Sanyo, Sony and others also advocated for individual producer responsibility.

CASE STUDY: CALIFORNIA'S RECENT COMPUTER WASTE RECYCLING BILL SB20: NOT QUITE EPR

In California, IBM and the television manufacturers formed a powerful coalition that succeeded in replacing the Computer Takeback Campaign's model EPR legislation with a bill that sets up a government run recycling program. The Bill, SB20, places an advanced recycling fee (ARF) on TV monitors and computer displays of between \$6 and \$10 based on device size and will be effective April 1, 2004. The fee may be adjusted in the future based on the actual cost of collecting and recycling the devices. The money will be collected by a state run organization and then used to pay a centralized waste management firm. In effect it is a traditional government-run recycling system but financed by a fee paid by consumers. Unlike electronic take-back systems in Japan and Europe, the bill sets no recycling targets, and because producers are not directly involved in the waste management of their products, there will be no information flow between producer and recycler to encourage better product design. The scope is also limited and does not cover other computer waste or electrical equipment waste.

Contrary to the strong lobby by IBM, Sony and others for producer responsibility in European legislation, most of these same companies successfully avoided similar responsibility in California. However a recent survey of state recycling managers found only a small minority of these officials thought government should handle the whole system using fees.³⁸ In Europe and Japan, these companies recognized that it does not make sense economically for the burden of end of life management to fall on governments who do not have the authority to change the design of the product to insure that end of life costs are minimized.

What is more, taxpayers in California may still have to foot some of the bill for recycling. Advanced recycling fees may fall short of covering the full costs of collection, transportation, recycling etc. For example, in Japan producers have the responsibility to recycle their electronic products either themselves or delegate their responsibility to a third party. Consumers pay the recycling fee by purchasing a recycling ticket either at the retailers or at post offices. These fees are then transferred on a monthly basis to the producers. Air conditioners are between 24-31 euros; TV sets 19-25 euros; refrigerators 32-39 euros and washing machines 17-23 euros (one euro is about 1.12 USD). However the level of the fee is considerably lower than actual recycling costs and Japanese manufacturers absorb the difference between revenues from the fees paid by their consumers and the actual costs of recycling.³⁹

Without working with manufacturers to understand the chemical content of particular product models, it is unrealistic to expect recyclers to be able to safely recycle and dispose of these products.

Cars, for example have a well-established recycling infrastructure, yet it is far from clean and safe. Auto dismantlers have been recycling and disposing of cars for decades with little to no information about the materials they are being exposed to or the pollutants that are being released into the environment. As a result, many auto-dismantling yards are now declared superfund sites.³⁵ Communities located near auto yards are potentially subject to contaminated drinking water and exposure to heavy metals and other materials of concern.

With no built-in producer responsibility incentives to encourage better design, the volume and toxicity of product waste is likely to rise further. This has already been apparent under the current system, whereby the amount of product waste land filled and incinerated in the USA has grown by 19.2 million tons since 1980³⁶ and the rate of recycling has stagnated at 27 percent³⁷ since 1997. If we are to increase recycling rates and make recycling safer in this country we need producer take-back systems for packaging, autos, electrical and electronic waste, batteries and a host of other priority waste streams.

EPR PROGRAMS WORKING IN NORTH AMERICA

EPR policies are not new to North America. Bottle bills, common in many states, are one form of producer takeback, since the producer is responsible for collection, washing and reuse of bottles.

Some companies have practiced takeback for a few years. Examples of these North American leaders include Xerox, the British Columbia government, the state of Maine and Canadian Auto Workers.

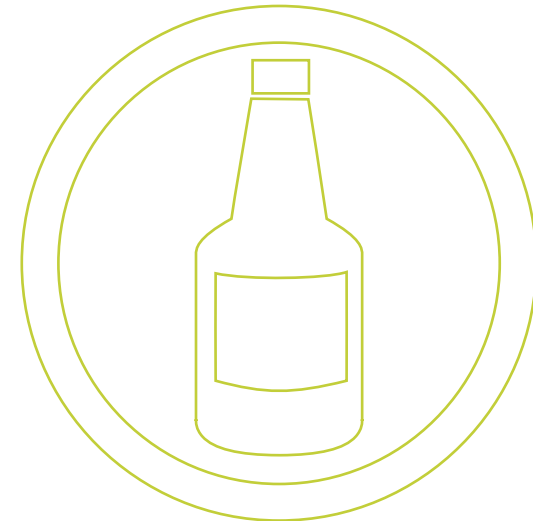
Xerox Saves More Than \$2 Billion Through Takeback Programs

Through its leasing program in the U.S., Xerox takes back at least 75 percent of the equipment it sells and often accepts trade-ins on products that are not leased. To increase the economic value of end-of-life materials and parts, Xerox implemented the Asset Recycling Management Program (ARMP) to identify design options that optimized the use of materials that can be safely recycled into new products. By focusing on materials that are beneficial throughout the life cycle, Xerox is working to have waste-free products and waste-free production facilities. Xerox has also taken steps to design out hazardous materials such as brominated flame retardants, lead and mercury.

Xerox estimates that its efforts to design environmentally friendly products has saved the company more than \$2 billion in addition to keeping 1.2 billion pounds of electronic waste out of landfills.⁴⁰

British Columbia Makes Producers Responsible for Hazardous Household Waste

During the 1980's, citizens of British Columbia (BC) in Canada expressed concerns about the environmental and health impacts associated with the disposal of household hazardous waste (HHW). Commonly used products, such as paints, pesticides, pharmaceuticals, tires, lead acid batteries and lubricating oils were contaminating land, air and water. The local government was spending \$1.4 million per year on collection sites that only served 0.5 percent of all BC households.⁴¹ Recognizing the costly inadequacies of the



waste management system, the provincial government adopted producer responsibility programs for over 90 percent of the household hazardous waste products. As part of their Waste Management plan for 2004, the aim of the provincial government is to increase industry product stewardship for other waste streams.⁴²

Maine Sets the Precedent for Taking Back Mercury in Cars

In January 2003, the state of Maine enacted a precedent-setting EPR bill to hold automakers accountable for taking back mercury switches when vehicles are scrapped. As of 1993, Sweden banned the use of mercury switches in vehicles, which influenced the entire European market. Despite the availability of steel based alternatives, U.S. automakers continued to use the switches through 2002 on many car models.

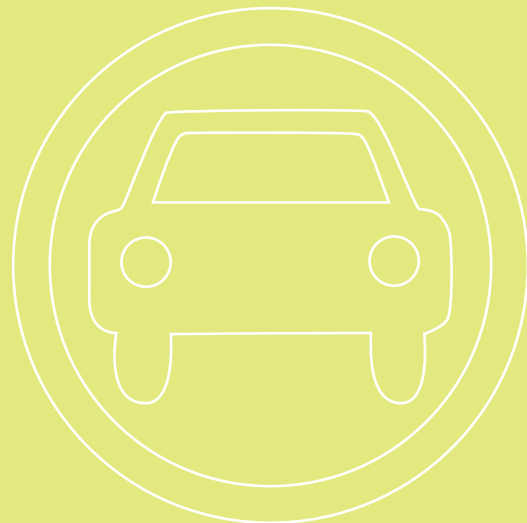
The ME legislation requires automakers (who used mercury switches) to establish a compliance plan and contract with a third party to collect switches and arrange for their recycling, as well as pay a bounty of \$1 for each switch, to encourage their collection. Auto dismantlers must provide information on make, model and vehicle identification number (VIN) to allow for cost allocation among manufacturers. Two locations in the state are available for drop-off. Automakers have challenged the law in federal court as a violation of commercial protections, but a recent opinion from the court has rejected the automakers' arguments.

The success of this legislative initiative was the direct result of an unusual alliance between environmental organizations and auto and steel recycling associations. The steel and auto recyclers—both burdened with liability for mercury pollution—looked to producer responsibility as a policy model to shift liability onto the producer who could make the choice to substitute the mercury switch with a safer alternative.

Maine's new law set an important precedent for manufacturer responsibility in the U.S. Other states are now looking to Maine for guidance on how to implement EPR as a tool to reduce mercury contamination.⁴³

Canadian Auto Workers Lobby for Safer Disposal of Vehicles

The Canadian Auto Workers union (CAW) is petitioning their federal government to implement EPR for entire vehicles in Canada. The CAW's Windsor Regional Environment Council has initiated a campaign, which has been adopted by the national CAW, petitioning the federal government to adopt EPR for vehicles. The CAW believes that EPR programs will provide more jobs as well as create incentives for the auto manufacturers to design cleaner, safer vehicles.⁴⁴



PRODUCER RESPONSIBILITY BY ANY OTHER NAME?

To avoid producer responsibility policies in the United States, product manufacturers have been successful in pushing voluntary product stewardship as an alternative model to producer responsibility. They have also been successful in avoiding the term producer responsibility. Instead reference is made to Product Stewardship⁴⁵, also referred to as 'extended product responsibility,' or 'shared product responsibility'. Product stewardship is explained as all parties who have a role in producing, selling or using a product also have a role in managing it at the end of its useful life.⁴⁶ However allocating responsibility among all the different parties involved with a product -- brand-owners, distributors, retailers, consumers and local governments can lead to confusion over who exactly is most responsible. Minnesota is the first state in the USA to implement a product stewardship policy. They define the party most responsible as "those with the greatest influence over the environmental impacts of the product" and call on "manufacturers to share in the financial and physical responsibility for recovering and recycling products when people are done using them."⁴⁷ To date, no producer responsibility systems have been set up for electronic, automobile waste or other priority waste streams in the USA.

Instead, some of the major original equipment manufacturers (OEMs) are using their political leverage at the state level to counter legislative proposals for producer responsibility. Consumer-funded, government-run recycling programs for obsolete electronic products have now been proposed at both the national and state level.⁴⁹ These programs are a step in the wrong direction because they will not lead to better and safer product design nor will they lead to the phase out of hazardous chemicals in the product. It is crucial that producers are held responsible for the design of safe products and the reuse and recycling system for these products once the consumer discards them. Of course consumers will have to pay these costs in the product price and do their civic duty by discarding waste into the proper system. Similarly retailers must be an active partner in the collection of waste and government must establish high standards within a clear framework and ensure free riders do not take advantage of the system.

**A CHECKLIST FOR DECISION
MAKERS, ZERO WASTE ADVOCATES AND
WASTE MANAGERS**

Understand how much money is currently being spent to manage waste from priority waste streams such as packaging, all electronic waste (not just computer waste), auto waste, hazardous waste, tires, batteries, building waste, plastic, etc.

- Identify what waste streams are not sufficiently handled by current recycling programs.
- Resolve any legal problems that may hinder direct producer takeback legislation. In particular check into liability issues companies might encounter in implementing take-back programs, particularly for products with hazardous or toxic constituents. Also, antitrust laws impose additional constraints on cooperation and consensus among competing companies in the management of end-of-life products. Ensure these are not insurmountable barriers to any product takeback system while still ensuring a monopoly does not evolve.
- Bring stakeholders to the table, including environmental justice advocates, industry leaders, government financial managers, recyclers and local community members.
- Ensure you are aware of the extent of EPR programs in other countries. Many major companies may be operating takeback systems in these countries and can share their experiences (*see Appendix and the CD ROM for examples from Europe and Japan*).
- If you are a local government official, sign a resolution in support of a state EPR bill. Review the experiences of cities in Massachusetts to promote EPR legislation.
- If you are a waste activist or community-recycling advocate, work with government officials to implement EPR systems and identify the role of your group within the system. Contact the UK Community Recycling Network for more information about its programs.
- Use your market power. If you are a procurement officer, demand EPR for your end-of-life products. Due to the high expense associated with disposing of end-of-life electronic equipment, many public and private purchasing entities have been including takeback and product design requirements in their procurement contracts. For example, the Western States Purchasing Alliance (purchasing millions of dollars worth of electronics for schools and other government entities) recently included takeback requirements in their purchasing requirements. Major health care providers are working with the Computer Takeback Campaign and Health Care Without Harm to rewrite their contracts to include design specifications, i.e. elimination of certain hazardous substances, as well as producer takeback commitments.

For more information on what should be included in a procurement contract, please see the Healthcare Without Harm and the Computer Takeback Campaign's procurement guidelines included in the tool kit CD-ROM.

- Find out from your brand name manufacturers what their policy is on post-consumer takeback practices. Find out if they comply with EPR requirements in Europe or elsewhere. If they do, ask them why they have no similar practices here.
- Hold your elected officials accountable to implementing EPR programs. Tell them you don't want your taxpayer money being used for waste management programs that could otherwise be paid for by producer responsibility programs.

- Finally insert the attached CD for more information on how industry and governments have implemented good EPR legislation round the world. The CD covers the following issues:

HOW TO IMPLEMENT GOOD EPR LEGISLATION

1. Establish your goal of waste prevention through sustainable product design.
2. Establish a comprehensive scope of the legislation.
3. Make sure your program is mandatory.
4. Establish the phase out of certain hazardous materials and a process to review and add further materials.
5. Ensure the producer is clearly defined.
6. Is the responsibility allocated individually or collectively? Design the system to allow as much feedback to the producer as possible.
7. Ensure the producer is financially and/or physically responsible for recycling costs.
8. Ensure producers are responsible for historic waste.
9. Make sure the roles of government, local authorities, retailers and consumers are clearly defined.
10. Ensure the producer supplies adequate information to workers, recyclers and consumers.
11. Mandate clear collection targets with deadlines.
12. Encourage reuse of whole appliances and components.
13. Clarify what recycling means and ensure the program has clear recycling targets with deadlines.
14. Encourage the use of recycled content in new products to stimulate the market for secondary materials.
15. Plan for effective enforcement of the targets.
16. Establish responsible and safe standards of recycling for workers and communities.
17. Ensure that waste trade is banned for recycled materials.

SUMMARY OF ADDITIONAL RESOURCES ON THE CD:

- INFORM Factsheets
- European Legislation
- Industry Lobby Letters
- Matrix of EPR Round the World
- EPR and Design Change
- Recyclers' Pledge
- Citizen's Guide to EPR
- Procurement Guidelines



ELECTRONICS

In response to growing pressure from consumers and some regulators dealing with increasing levels of electronic waste, manufactures, such as Hewlett Packard, IBM and Best Buy have all initiated limited electronic takeback programs. Most of these programs charge the consumer a fee when the used electronic product is brought to the collection site. The Silicon Valley Toxics Coalition is working with a coalition of groups on a Computer Takeback Campaign to implement EPR for electronic waste. The campaign is particularly active in the states of Washington, Massachusetts, Maine, Texas, California, New York, Vermont and Wisconsin. Visit: www.computertakeback.com for more information.

In addition to advocating for EPR legislation, the Computer Takeback Campaign also has a corporate campaign asking Dell to take responsibility for their electronic waste. Dell has consistently scored poorly on the Silicon Valley Toxic Coalition's report card, which annually compares the environmental impacts of products of different electronic manufacturers. To get involved, visit www.toxicdude.org.

The Basel Action Network is particularly active in exposing the dangers of waste exports overseas. Contact them at www.ban.org.

VEHICLES

The Clean Car Campaign is currently campaigning for automakers to take responsibility for the collection and management of mercury and lead-containing components in cars, and to phase out the use of these substances altogether. Ultimately, the aim is for manufacturers to take responsibility for all of the waste products from end-of-life vehicles. The Clean Car Campaign is also working to establish standards for sustainable design practices in the automobile industry whereby the use of highly hazardous materials would be phased out, and the reusability and recyclability of materials is significantly increased. Visit www.cleancarcampaign.org for more information.

In Canada, the Canadian Auto Workers are pushing EPR for end of life vehicles. Contact them at www.caw.ca/whatwedo/health&safety/index.asp

MERCURY PRODUCTS

Due to wide scale mercury contamination, EPR legislation is pending or has been introduced in many of the New England states in the United States. Legislators believe that manufacturers of mercury containing products should be responsible for collection and safe disposal of the products at the end-of-life. In addition to producer takeback programs, legislators have also mandated that mercury be phased out of products over a certain period of time. For the most recent information on the status of the mercury EPR bills in New England, visit the Mercury Policy Project's website www.mercurypolicy.org.

BEVERAGE CONTAINERS

The Grassroots Recycling Network is working to implement strong EPR legislation for beverage containers. Visit: www.grrn.org/beverage/index.html for more information.

EXAMPLE I

THE EUROPEAN UNION DEALS WITH ELECTRONIC WASTE

Because waste from electronic equipment was on the rise in Europe, a few countries such as Netherlands, Austria, Switzerland, and Sweden passed EPR legislation. To harmonize these laws and enable industry to operate efficiently, The European Union adopted two EPR directives: The Waste From Electrical and Electronic Equipment (WEEE) and the Restriction on Hazardous Substances (ROHS). A key achievement of the legislation was establishing *individual* responsibility for all products put on the market after 2005. Individual responsibility requires that producers handle their own brand waste by closing the feedback loop between front-end design decisions and end-of-life problems—thus promoting a greater incentive for greener design. The Directives cover a broad range of electronic products ranging from computers to hair dryers, refrigerators and electronic toys.

Key Components of the Initiative:

Financing of electronic waste equipment: Consumers can return e-waste to collection points free of charge. Individual producers bear the costs of re-use, recycling and disposal of all products they put on the market after 2005. Prior to 2005, producers will be collectively responsible for taking back historic waste. Producers can charge consumers an additional front-end fee to cover the cost of managing historic waste, which will vary depending on the particular product.

Labeling: Producers must clearly label their products to allow for identification of materials to facilitate recycling and to inform consumers that e-waste is banned from municipal waste and must be handled separately.

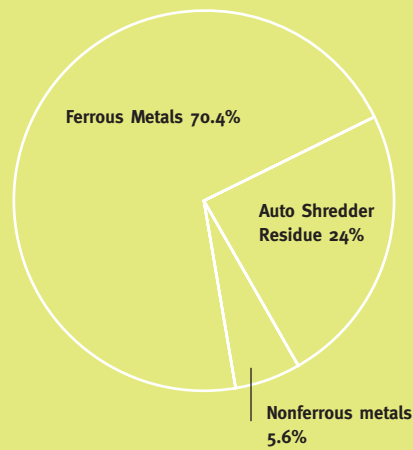
Product Design: The WEEE Directive mandates that products must be designed for dismantling and recovery. By 2006, industry will have to recycle or reuse between 50% and 75% of the old equipment on the market, depending on the product category. The Directive specifies that recycling rates will increase over time.

Ban on Hazardous Substances: The use of substances such as lead, cadmium, mercury, hexavalent chromium and certain brominated flame retardants (PBBs, Penta-BDE, Octa-BDE, and Deca-BDE) must be phased out by July 1, 2006.

Collection and Recovery of Waste Equipment: The EU member states have until 2005 to introduce takeback systems and collection facilities for all electrical and electronic equipment. These recycling systems must be environmentally safe and state of the art. By this time, member states, that do not currently have their own previous EPR system, must ensure that there are systems in place, financed by producers for e-waste to be collected separately. Manufacturers must meet a collection rate of four kilograms (8.8 lbs) per person per year. The WEEE Directive is unclear on who should pay for collecting the waste from households and delivering it to central collection facilities. There is currently a debate in some countries between local authorities, retailers and industry on how to resolve this outstanding issue.

EVERY YEAR 10-14 MILLION CARS ARE DISCARDED IN THE U.S.

Only 75% by weight of a car is recycled leaving over 5 million tons of hazardous shredder residue contaminated with brominated flame retardants, PVC and heavy metals which currently goes to landfills round the country.



EXAMPLE II THE EUROPEAN UNION ESTABLISHES PRODUCER TAKEBACK FOR OLD CARS

Because car waste is on the increase and automobile scrap is particularly hazardous as shredded auto waste the EU adopted the End of Life Vehicle (ELV) Directive in 2000 and this requires producers to take back and manage obsolete vehicles. The directive establishes recycling targets which increase with time and phases out the use of certain heavy metals (lead, cadmium, mercury and hexavalent chromium) in vehicles.

Key Components:

- From July 2002, automakers are responsible for covering the costs of free take-back and recycling of all vehicles on the market after this date. From January 2007, automakers will become liable for the costs of recycling cars put on the market before July 2002.
- As of July 2003 (with some exemptions) specified heavy metals have to be phased out of the vehicles.
- As of January 2006, reuse and recovery rates of end-of-life vehicles must be 85% by weight, and recycling and reuse rates must be 80% by weight.
- As of January 2015, the reuse and recovery rate must be increased to 95% by weight and recycling and reuse must be 85% by weight.
- Recycling and de-pollution must be done by authorized, state of the art, facilities.

EXAMPLE III JAPAN FOLLOWS EU'S LEAD TO MAINTAIN A COMPETITIVE EDGE

Japan has also been busy passing EPR legislation for electronic equipment and cars. In fact Japanese companies acted quickly to gain competitive market advantage by researching substitutes for all the restricted hazardous material listed on the European RoHS Directive. Japan passed its own EPR legislation for large TV sets, washing machines,

In September 2000, the EU adopted the End of Life Vehicle (ELV) Directive that requires producers to take back and manage obsolete vehicles. The directive establishes recycling targets which increase with time and phases out the use of certain heavy metals (lead, cadmium, mercury and hexavalent chromium) in vehicles.

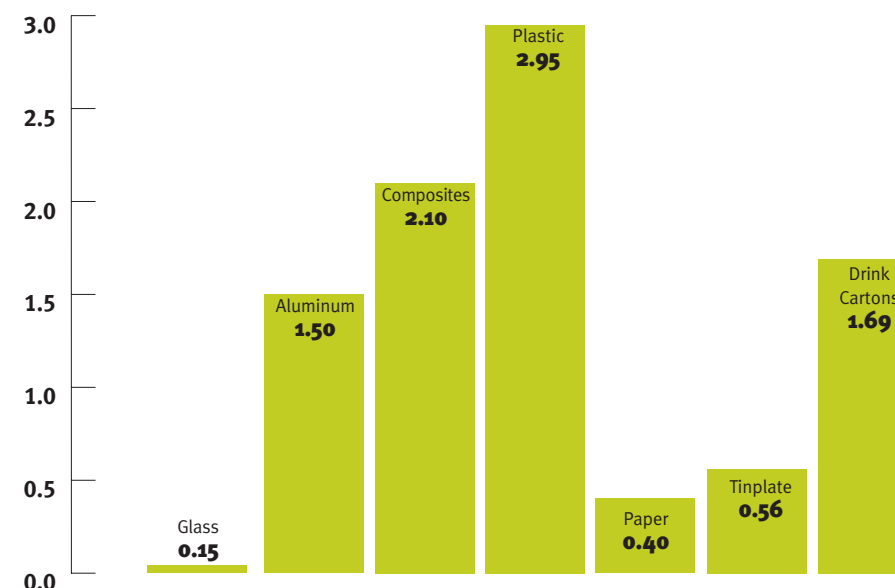
air conditioners and refrigerators in 2001 and in 2003 added computers. Retailers must accept any old for new appliance. Municipalities and retailers bring old appliances to regional collection stations set up by the producers. Producers then take the waste either to a collective recycling plant or to their own recycling plant. In Japan the end users pay for collection and recycling at time of disposal by purchasing a recycling ticket either at the retailer or at post offices. This fee ranges from 17 to 70 Euro depending on the product but even then the recycling fee is actually more so manufacturers have chosen to absorb the difference and work to improve their recycling technology to reduce the cost.

Similarly Japanese car companies began to set up their own recycling plants when EPR legislation for end of life autos was first discussed and have been in the forefront of design change to increase recycling such as developing a plastic that can be recycled with no loss of quality. Other car companies have established a network for repair parts. As with electronic waste, the Japanese companies are complying with the European EPR legislation on phase out of hazardous materials in cars.

EXAMPLE IV GERMAN PACKAGING ORDINANCE REDUCES PACKAGING BY ONE MILLION TONS IN 10 YEARS

One of the first EPR programs to be established was the German Packaging Ordinance of 1990. Since it is impractical to identify and return packaging to individual producers, the German Packaging Ordinance allows for the creation of a non-profit Producer Responsibility Organisation (PRO) to assume responsibility for collection, sorting and recycling of packaging waste. The PRO created in Germany was the Duales System Deutschland (DSD),

LICENSE FEE FOR GREEN DOT PAID BY FILLERS ACCORDING TO WEIGHT AND MATERIAL TYPE

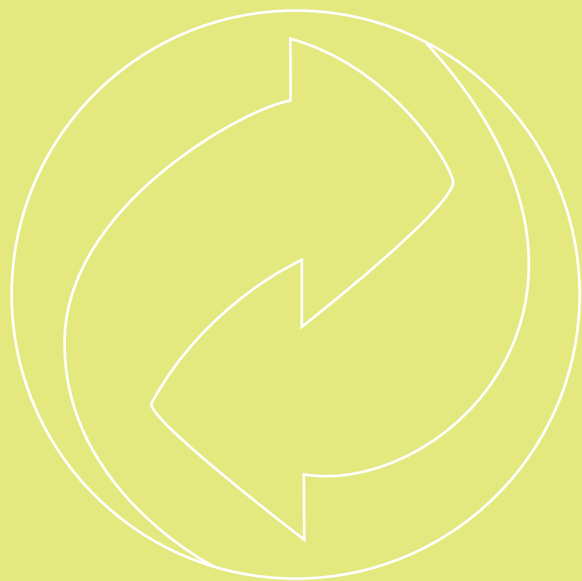


Weight-based fee: DM (Deutsche Marks)/kg as of October 1994 with no increase anticipated through 2000.

a not-for-profit consortium initially made up of 600 companies but by 1998 numbering 17,000. The DSD started operating in January 1993.

All products licensed by DSD carry a Green Dot. Producers and distributors pay an annual licence fee to DSD based on the amount and type of packaging introduced into the market. (*See License Fee Table*) This allows them to use the 'Green Dot' symbol on the packaging to identify the product for the PRO, which collects all Green Dot packaging. Over 75% of all packaging in German stores carries the green dot. Consumers pay an increased price for the packaging to cover the cost of recycling; based on what material it is made from and its weight. This provides an incentive to manufacturers/fillers to reduce the DSD fee by using more favourable materials and or reducing the amount of packaging.

Retailer pressure has forced producers, namely fillers, to eliminate unnecessary packaging such as blister packs to keep their costs low. Germany's long experience with its EPR program for packaging waste reveals that the use of composite has fallen 50% and plastics use in packaging fell from a previous rate of 40% (by volume) to 27%. Total packaging has been reduced by 1 million tonnes, a per capita reduction of 15 kg.⁵¹ For comparison, between 1991 and 1995, Green Dot packaging decreased 14% while during the same period in USA, packaging increased 13%. It also shows a move from PVC to non-chlorinated plastics such as Polyethylene and Polypropylene.⁵² The legislation also mandates high refillable rates for beverage containers of 72% which has, according to the German government, prevented the generation of 1.2 million tons of waste a year.⁵³



¹ Hawken, P, *The Ecology of Commerce: A Declaration of Sustainability*. Harper Business, New York. 1993. p. 73.

² *ibid*

³ Platt, Brenda and Seldman, Neil. *Waste and Recycling in the United States 2000*. Institute for Local Self Reliance. Pg. 2. 2000

⁴ S.W. Lagakos and others, "An analysis of contaminated well water and health effects in Woburn, Massachusetts," *Journal of the American Statistical Association* Vol. 81, No. 395 (1986), pgs. 583-596.

⁵ State of New York Department of Health, *Investigation of Cancer Incidence and Residence Near 38 Landfills with Soil, Gas Migration Conditions*, New York State, 1980-1989. (Atlanta, Georgia: Agency for Toxic Substances and Disease Registry, June 1998).

⁶ J. Griffith and others, "Cancer mortality in U.S. counties with hazardous waste sites and ground water pollution," *Archives of Environmental Health* Vol. 44, No. 2 (March 1989), pgs. 69-74.

⁷ U.S. Environmental Protection Agency, *The Inventory of Sources of Dioxin in the United States [EPA/600/P-98/002Aa External Review Draft]* (Washington, D.C.: U.S. Environmental Protection Agency, April, 1998). Other analysis has identified 192 volatile organic compounds being emitted by a solid waste incinerator. See K. Jay and L. Steiglitz, "Identification and Quantification of Volatile Organic Components in Emissions of Waste Incineration Plants," *CHEMOSPHERE* Vol. 30, No. 7 (1995), pgs. 1249-1260

⁸ Commission for Racial Justice, United Church of Christ. 1987. *Toxic Wastes and Race in the U.S.: A National Report on the Racial and Socio-economic Characteristics of Communities with Hazardous Waste Sites: UCC*.

⁹ Philadelphia Dumps on the Poor. *Rachel's Environment and Health News*. #595.

¹⁰ *Exporting Harm: The High-Tech Trashing of Asia*. Basel Action Network/Silicon Valley Toxics Coalition. February 25, 2002

¹¹ US EPA. *Cutting the Waste Stream in Half: Community Record-Setters Show How*. EPA.530-R-99-193. June 1999.

¹² US EPA, *Characterization of Municipal Solid Waste in the United States: 1998 Update*, pg. 5.

¹³ *Packaging Today – History of Plastics*. See www.packagingtoday.com

¹⁴ Quoted in Statelone.org. Article entitled: *E-waste disposal – states' computer-age headache*. Oct 22, 2003.

¹⁵ Betty Fishbein, B. *Waste in the Wireless World: The Challenge of Cell Phones*. INFORM. May 2002

¹⁶ quoted in Betty Fishbein. *What is EPR and where is it headed?* INFORM 1998

¹⁷ She, J.; Petreas, M.; Winkler, J.; Visita, P.; McKinney, M.; Kopec, D. PBDEs in the San Francisco Bay Area: measurements in harbour seal blubber and human breast adipose tissue. *Chemosphere* 46(5): 697-707; 2002; Linda S Birnbaum and Daniele F Staska. *Brominated Flame Retardants: Cause for Concern?* *Environmental Health Perspectives* 112(1) 9-17; 2004

¹⁸ W. van der Naald and B Thorpe. *PVC: A Looming Waste Crisis*. Greenpeace International. 1997. Amsterdam

¹⁹ Commission of the European Communities. *Environmental issues of PVC*. Green Paper COM(2000) 469 Final. Brussels.

²⁰ *Recycling for the Future. Consider the Benefits*, prepared by the White House Task Force on Recycling (Washington, DC: Office of Environmental Executive, 1998).

²¹ *State Budget Deficits For fiscal Year 2004 are Huge and Growing*, Center on Budget and Policy Priorities. January 23, 2003

- ²² City of Cleveland to discontinue curbside recycling, leaf pickup. Waste News, November 26, 2003.
- ²³ Source OECD 2001. Guidance Manual for Governments Extended Producer Responsibility. <http://www1.oecd.org/publications/e-book/9701041E.PDF>
- ²⁴ Presentation: *Implementing WEEE & RoHS* by Andrew Baynes Apple at Workshop on Supply Chain Management (SCM) & Meeting Electronics' Customer Environmental Requirements, organised by seeba, 30th April 2003, Farnham, Surrey, UK
- ²⁵ Germany Defends Drinks Packs Deposit System. Environment Daily. January 5, 2003.
- ²⁶ Daten und Fakten zum Grünen Punkt, Wertstoffrecycling in Zahlen – Techniken und Trends
- ²⁷ Tojo, N; T Lindqvist, and G Davis. EPR Programme Implementation: Institutional and Structural Factors. OECD. 2001
- ²⁸ Electrolux Statement at: http://ir.electrolux.com/html/environmentalreport2002/index_8.phtml
- ²⁹ Extracts from: Joint Press Statement of Industry, Consumers and Environmental Organisations on Producer Responsibility in the Directive on Waste Electrical and Electronic Equipment (WEEE), 7 February 2002. Some of the signatories to this Statement include: AeA (American Electronic Association) Europe, Association of Netherlands ICT Sector (ICT Milieu), Japan Business Council in Europe, Hewlett-Packard, SRI – The Swedish Recycling Industries' Association, AB Electrolux, Apple Europe, Fijitsu Siemens Computers GmbH, ICL plc, IKEA Service Center S.A., Intel Corporation, Nokia, Sanyo, Siemens AG, Sony Europe, Sun Microsystems, The Gillette Group Europe/Braun
- ³⁰ Tojo, Naoko. Effectiveness of EPR Programme in Design Change", IIIIEE Reports 2001:19. Lund Sweden.
- ³¹ Testimonies by Massachusetts cities in support of Computer Take Back Bill, H-1533.
- ³² See the European Recycling Platform mission statement at www.erp-recycling.org
- ³³ Basel Action Network. www.ban.org
- ³⁴ Sjodin, Andreas; Carlsson, H.; Thuresson, K.; Sjolín, S.; Bergman, A.; and Ostman, C. Flame Retardants in Indoor Air at and Electronics Recycling Plant and at Other Work Environments. Environmental Science & Technology. 35(3) 448-454. 2001
- ³⁵ In Lehigh County PA, the Hebelka Auto Savage yard was placed on the National Priorities List due to elevated levels of mercury and lead in sediments in an offsite stream. Steven's Scrap Yard and metal reclamation located in Littleton, ME has contaminated surrounding drinking wells with inorganic substances like mercury, lead and cadmium.
- ³⁶ Platt, Brenda and Seldman, Neil.
- ³⁷ US EPA, Characterization of Municipal Solid Waste in the United States: 1998Update, pg. 5.
- ³⁸ Raymond, M. California sends second e-waste bill to Governor; Raymond Survey shows recycling managers divided on electronics. National Recycling Congress, Baltimore. Raymond Communications. September 15, 2003.
- ³⁹ Tojo, Naoko. EPR Programmes: Individual versus Collective Responsibility. In print IIIIEE, Lund University, Sweden. 2004.
- ⁴⁰ For more information on environmental and economic benefits of Xerox's leasing programs, please visit their website: <http://www.xerox.com>.
- ⁴¹ <http://wlapwww.gov.bc.ca/epd/epdpa/ips>
- ⁴² British Columbia Industry Product Stewardship Business Plan. 2003/4-2004/5. BC Ministry of Water, Land and Air Protection. For more information please visit: <http://wlapwww.gov.bc.ca/epd/epdpa/ips/index.html>
- ⁴³ For more information, please visit: <http://www.cleancarcampaign.org/mercury.shtml>.
- ⁴⁴ For more information on the CAW's EPR campaign, please visit <http://www.caw.ca/whatwedo/health&safety/index.asp>
- ⁴⁵ However, note that in British Columbia, Canada, the term "Product Stewardship" is used to describe true EPR programs that meet most of the criteria described in this document. U.S. EPA previously coined the phrase "Extended Product Responsibility" to describe voluntary, shared responsibility programs.
- ⁴⁶ Definition used by NEPSI – National Electronic Product Stewardship Initiative. For more information see <http://eerc.ra.utk.edu/clean/nepsi/index.htm>
- ⁴⁷ Recycling Used Electronics: Report on Minnesota's Demonstration Project. Minnesota Office of Environmental Assistance. July 2001.
- ⁴⁸ Nationally, Congressman Thompson (D-CA) has introduced H.R. 5158, The Computer Hazardous-Waste Infrastructure Program (CHIP) Act. At the state level, fourteen states have introduced legislation that would essentially set up government run recycling programs.
- ⁴⁹ Contact the Furniture Recycling Network in the UK. Tel: +44 117 954 3571; fax: +44 117 954 3570; Email: frn.research@btinternet.com
- ⁵⁰ Daten und Fakten zum Grünen Punkt, Wertstoffrecycling in Zahlen – Techniken und Trends
- ⁵¹ <http://www.dergruenepunkt.de/index.php?id=97>
- ⁵² Germany Defends Drinks Packs Deposit System. Environment Daily. January 5, 2003

