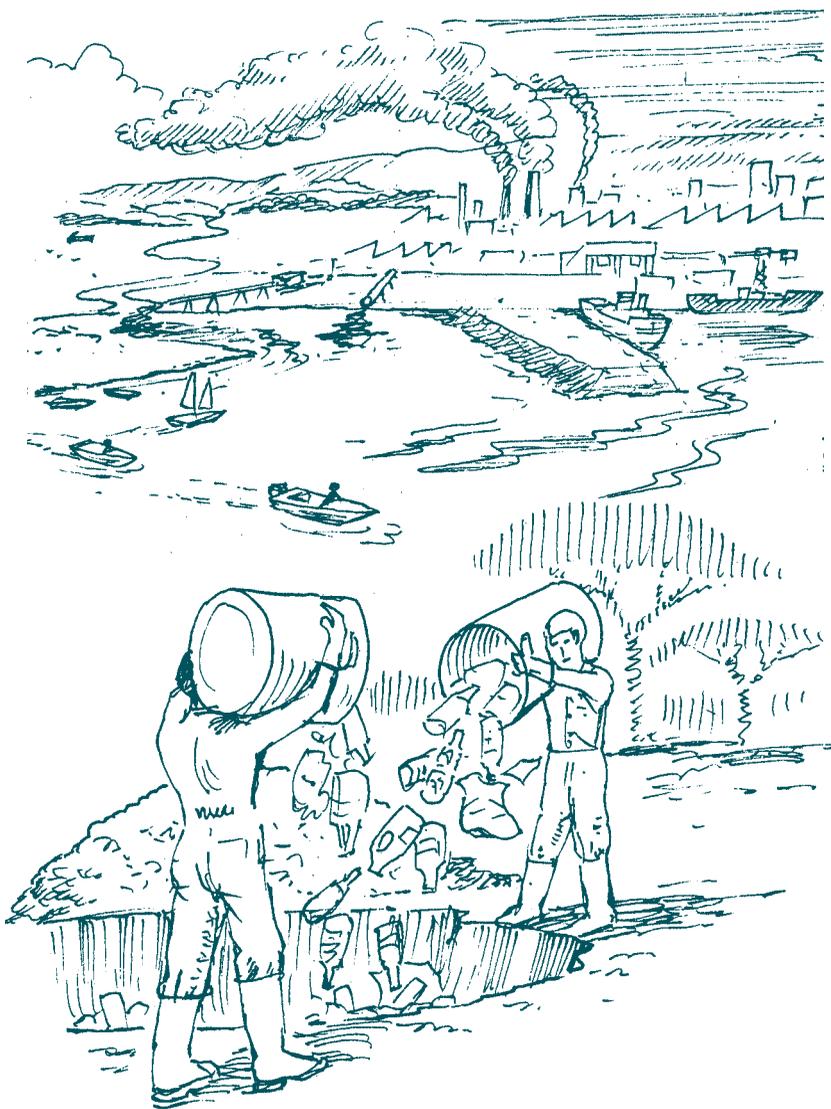




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**MINIMIZING HAZARDOUS WASTES :  
A SIMPLIFIED GUIDE  
TO THE BASEL CONVENTION**

## Some key hazardous wastes

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### Arsenic

Used as an alloy in lead shot and electrical circuits, as a pesticide, and as a preservative for wood. Highly toxic and carcinogenic.

### Asbestos

Once widely employed in construction primarily for insulation. Still used in gaskets, brakes, roofing and other materials. When inhaled can cause lung cancer and mesothelioma.

### Cadmium

Used in batteries, pigments, metal coatings, and plastics. Exposure risks include workplace activities, cigarette smoke and contaminated foods. Damages the lungs, causes kidney disease, and irritates the digestive tract.

### Chromium

Combines easily with other metals to form alloys such as stainless steel. Used as a rust-resistant coating on other metals, a pigment in paint, and in wood preservatives and liquids for tanning hides.

### Clinical wastes

Hospitals must dispose of large quantities of syringes, medication bottles and other materials that can be infectious and spread pathogens and harmful micro-organisms.

## Cyanide

A poison that in large doses can cause paralysis, convulsions and respiratory arrest. Chronic exposure to low doses can cause fatigue and weakness. Compressed hydrogen cyanide gas is used to exterminate rodents and insects on ships and to kill insects on trees.

## Lead

Used in the production of batteries, ammunition, paints, metal products such as solder and pipes, and devices to shield X-rays. If ingested or inhaled can harm the nervous system, kidneys, and reproductive system.

## Mercury

Used to produce chlorine gas, caustic soda, thermometers, dental fillings, and batteries. Exposure occurs through contaminated air, water and food and through dental and medical treatments. High levels may damage the brain, kidneys, and developing fetuses.

## PCBs

Compounds used in industry as heat exchange fluids, in electric transformers and capacitors, and as additives in paint, carbonless copy paper, sealants and plastics. Pose risks to nervous systems, reproductive systems, immune systems, and livers.

## POPS

Persistent organic pollutants are a class of chemicals and pesticides that persist for many years in the environment, are transported great distances from their point of release, bio-accumulate (thus threatening humans and animals at the top of the food chain), and cause a range of health effects.

## Strong acids & alkalis

Highly corrosive liquids used in industry that can corrode metals and destroy tissues of living organisms.

## Introduction

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**The modern lifestyle and its benefits exist because of industry. Health-giving pharmaceuticals, labor-saving household appliances, automobiles and ships, paints and detergents, synthetic fibers and polythene packaging, personal computers and TVs – the list of useful manufactured goods is almost endless.**

But with the goods come the “bads”. Industrial production results in hundreds of millions of tonnes of wastes every year. These wastes include chemical by-products that are hazardous to human health and the environment because they are poisonous, eco-toxic, explosive, corrosive, flammable, or infectious. Too often these wastes pour out of smokestacks and outtake pipes or lie abandoned in dumps or leaky storage drums. Sometimes wastes are shipped off illegally to faraway places, exposing unsuspecting communities to terrible dangers.

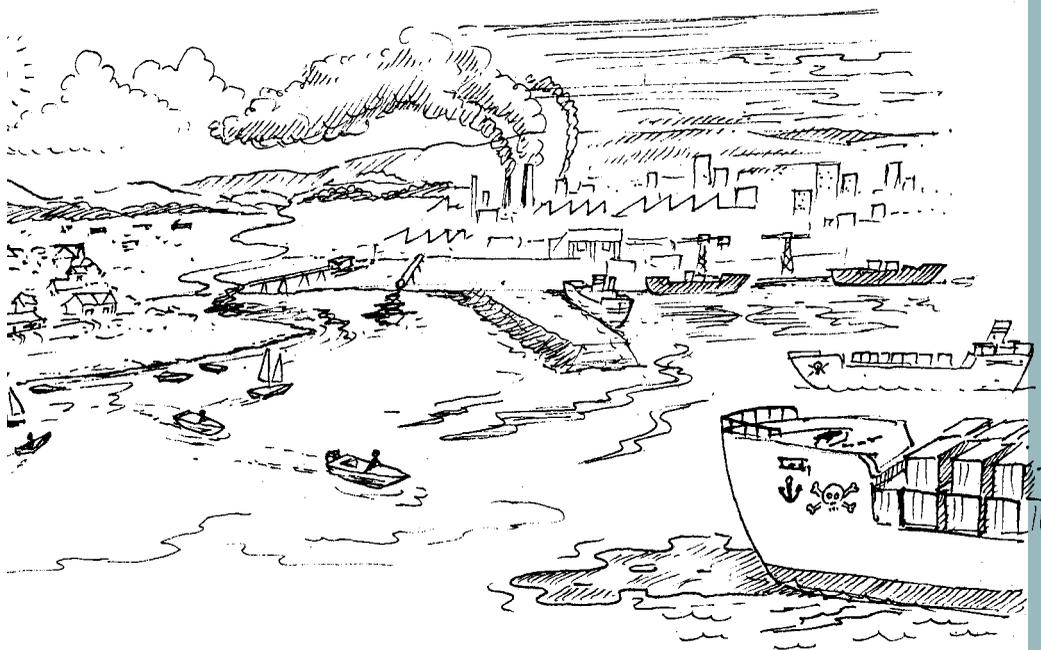
The cross-border transport of hazardous wastes seized the public’s attention in the late 1980s. The misadventures of “toxic ships” such as the *Karin B* and the *Pelicano*, sailing from port to port trying to offload their poisonous cargoes, made front-page headlines around the world. These tragic incidents were motivated in good part by tighter environmental regulations in industrialized countries. As the costs of waste disposal skyrocketed, “toxic traders” searching for cheaper solutions started shipping hazardous wastes to Eastern Europe and Africa and other regions.

Once on shore, unwanted shipments are typically dumped indiscriminately, spilled accidentally or managed improperly, causing severe health problems – even death – and poisoning the land, water and air for decades or centuries.

These criminal shipments are so morally repugnant that they clearly must be stopped and their perpetrators brought to justice. But toxic ships are just a symptom of a much more fundamental problem: If the production of goods did not generate so much hazardous waste, if this waste were not so dangerous, if wealthier communities did not resist new treatment plants and dumps, and if the costs of detoxifying wastes were not so astronomical, there would be less financial incentive to cheat and dump wastes illegally.

Recognizing that industrial society must fix this major flaw in the system, governments – and many forward-looking companies – started exploring solutions as early as the 1970s. By the 1980s, the international community launched treaty negotiations under the auspices of the United Nations Environment Programme. In March 1989, they adopted the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. The treaty entered into force in 1992 and now boasts some 150 members.

Drawing on the principles of “environmentally sound management”, the Convention seeks to protect human health and the environment from the risks posed by hazardous wastes. This will require changing the economic equation for wastes in order to motivate the producers of hazardous wastes and people who benefit from the associated goods to take action. To do this, the Convention sets out a three-step strategy for minimizing the generation of wastes, treating wastes as near as possible to where they were generated, and minimizing international movements of hazardous wastes.



## Step ONE : Minimize the generation of hazardous wastes.

The less mess there is to start with, the less money and work and risk is involved in cleaning it up. Fortunately, “cleaner production” processes can lower costs for manufacturers while reducing damages to the environment – a happy combination. The most successful industries of the future will include those that become better and better at minimizing unwanted by-products and designing products with fewer hazardous components; they will become increasingly adept at recycling or reintegrating leftover materials back into the manufacturing cycle. The Basel Convention seeks to hurry this trend along.

All of the Basel Convention’s efforts to push responsibility for treating wastes further up the supply chain are geared to promoting the environmentally sound management of hazardous wastes. ESM, as it is called in the jargon, involves taking all practical steps to protect human health and the environment from hazardous wastes. In an ideal world, this would mean reducing the generation of hazardous wastes to zero. In practice, ESM means



strictly controlling the storage, transport, treatment, reuse, recycling, recovery and final disposal of wastes that, despite best efforts to minimize their generation, occur nevertheless. Also dubbed the “integrated life-cycle approach”, this strategy forces companies to monitor and control every step in their production processes, thereby gaining a more realistic understanding of the true costs of generating hazardous wastes.

Many companies have already demonstrated that eliminating or reducing hazardous by-products can be both economically efficient and environmentally safe. Some are starting to internalize the costs of their waste generation. The United Nations Environment Programme is working closely with business to identify and disseminate “best practices” as part of its efforts to promote the goals of the Basel Convention.

The Convention seeks to encourage this kind of innovation by strengthening its partnerships with industry. Industry shares responsibility for the wastes that are generated, and only industry has the tools, technologies and financial resources for minimizing these wastes, managing them better, and helping to destroy old stocks. It is time to engage industry – especially those companies that are effectively tackling their own hazardous waste generation – more fully in solving the global problem of hazardous waste. Leading companies can – and are – contributing a great deal to developing a vision, a strategy and a programme of action to deal with these issues.

Consumers, of course, also have a vital role to play. One of the most critical aspects of ESM is lowering consumer demand for products and services that result in hazardous by-products. Consumers need to educate themselves about the methods used in production processes and to think about what they buy every day. Everyone that consumes manufactured goods must consider himself or herself as part of the problem – and as a vital part of the solution.

## Step TWO : Treat and dispose of hazardous wastes as close as possible to where they were generated.

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With current production technologies, generating at least some hazardous wastes remains unavoidable. The preferred option for disposing of these wastes is to do so locally. Local disposal has two important benefits. First, it reduces the risks of accident or spillage during transport. Second, it ensures that the costs of hazardous wastes disposal are borne by the generators of these wastes. Faced with this truer cost equation, factory managers and workers and the communities they live in are more motivated to find safe and innovative solutions.

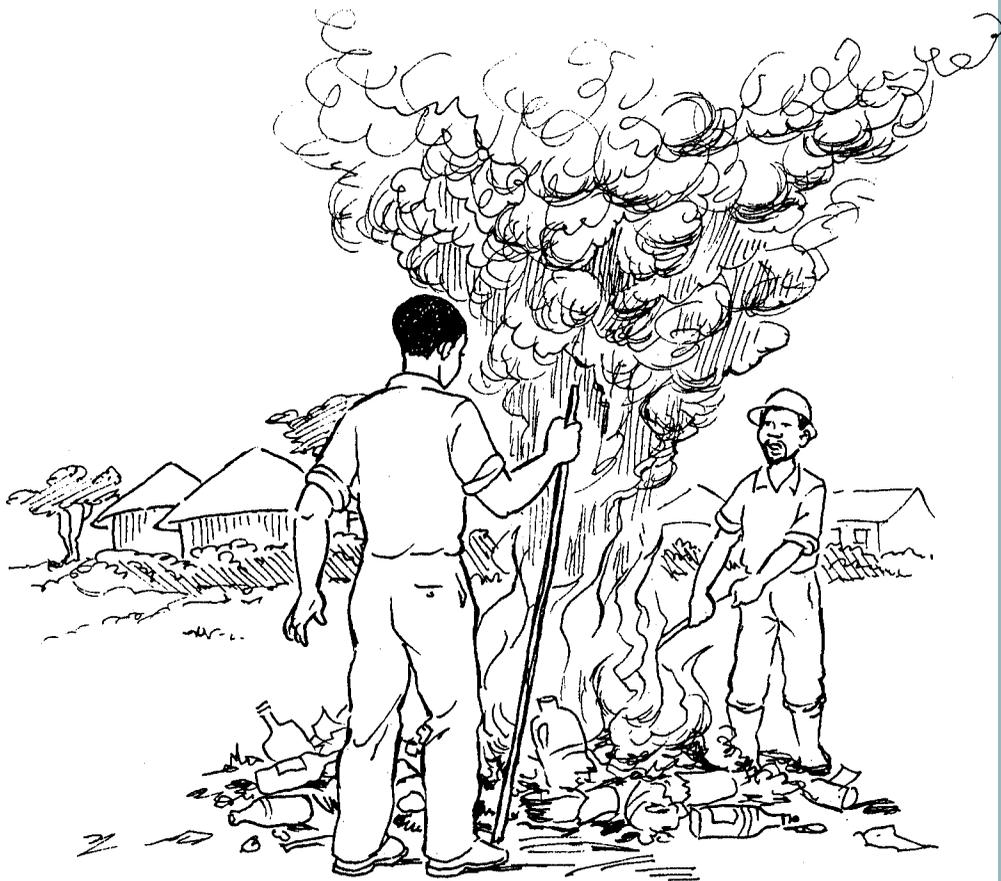
Of course, local solutions are only possible if the necessary legislation and infrastructure are in place. Waste-management facilities need to be of a high technological standard. Site operators must be highly qualified and trained. Monitoring must be sophisticated enough to detect any leaks or emissions above acceptable standards. Emergency procedures must be in place in the event of spills or other accidents. There must be safe storage facilities for any residues from waste recovery or incineration.

To ensure that these technical requirements are in place, the Parties to the Convention have produced a series of Technical Guidelines. These Guidelines detail best practices for managing organic solvents, waste oils, polychlorinated biphenyls (PCBs), household wastes, clinical wastes, pneumatic tires, and other types of hazardous wastes. They also address disposal methods relevant to a range of wastes, notably specially engineered landfills and physico-chemical and biological treatments. Together, the Guidelines give governments the tools and information they need to ensure the environmentally safe management of hazardous wastes.

A good example is plastics. Plastics are an integral part of the modern economy and are used in automobiles and other consumer goods, buildings, containers, and numerous other products. Many countries manufacture plastic materials, and all countries import plastic products.

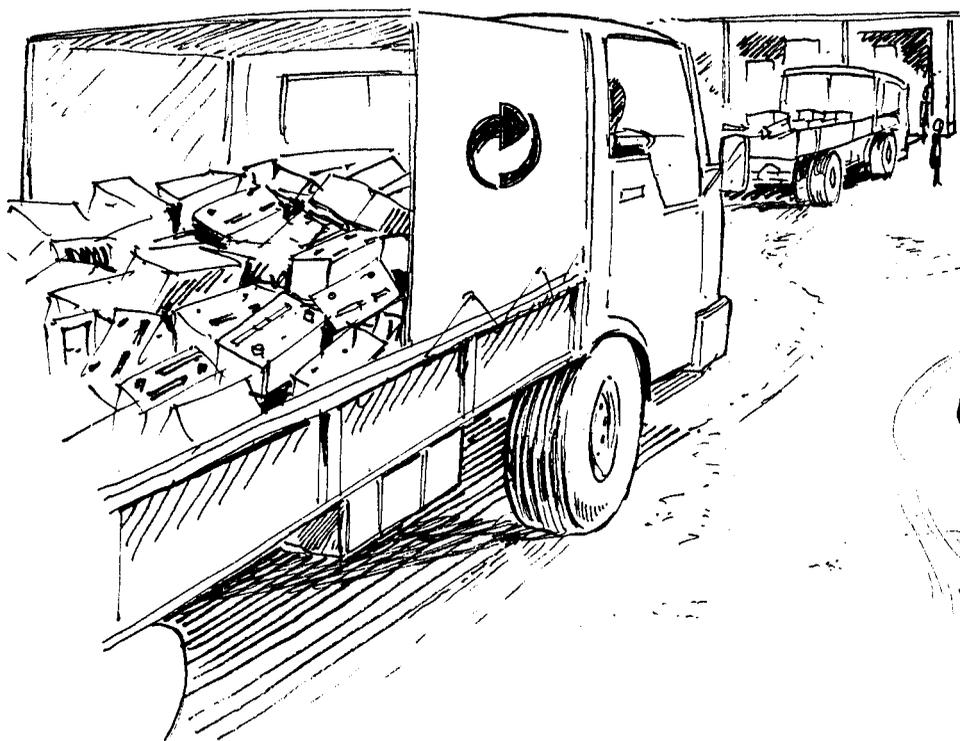
In some developing countries, plastics are disposed of through open, uncontrolled burning and land fills.

Open burning releases pollutants into the air – including in some cases cancer-causing furans and dioxins – that can cause a range of health problems for nearby communities.



The Convention offers these countries Guidelines for ensuring the environmentally sound management of plastic wastes. The Guidelines address a range of waste management issues such as sorting for mechanical recycling, health and safety, shipping and transport, feedstock recycling, compaction, energy recovery and final disposal.

Lead-acid batteries offer another sort of challenge. Secondary lead is valuable and is therefore recycled rather than sent for disposal. The safe recycling of lead-acid batteries – used in automobiles, industrial facilities and portable tools – requires strict environmental and occupational standards that can only be ensured by specialized firms, of which only a few are found in developing countries. As a result, retired batteries are often broken up manually. This is extremely dangerous to the workers. Inhaling dust, fumes or vapors dispersed in the workplace air can lead to acute lead poisoning. The more common problem, however, is chronic poisoning from absorbing low amounts of lead over long periods of time.

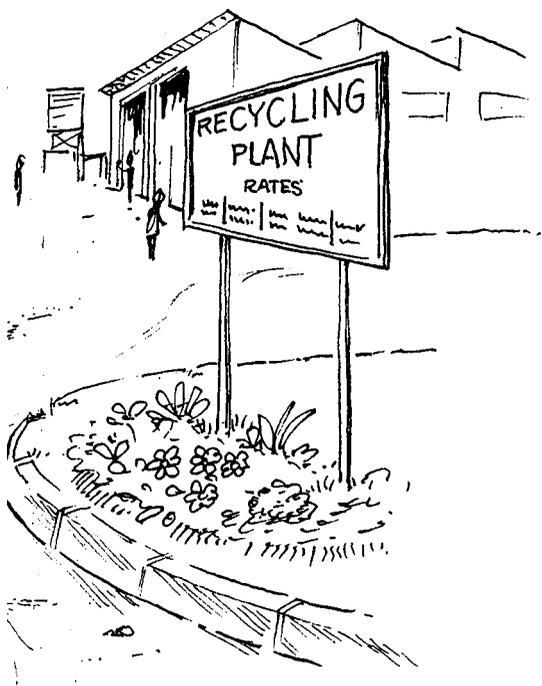


Recently drafted Guidelines offer managers a set of best practices and principles for setting up effective systems for recycling batteries. They describe how to collect, transport and store used batteries; give specifications for the storage chambers and transport facilities; describe how batteries delivered to the recycling plant should be drained of their electrolytes, identified, segregated, and stored; explain how the recovered lead must be refined in order to remove unwanted contaminants; and address medical issues and public awareness. The Guidelines conclude that the most effective approach to collection is to rely on manufacturers, retailers, wholesalers and service stations to retain old batteries at the time new ones are provided to the customer.

By improving the safety and effectiveness of the local treatment of hazardous wastes, the Basel Convention's Technical Guidelines will help reduce pressure for transporting these wastes elsewhere. Meanwhile, governments must also address the toxic heritage created by the unsafe procedures of the past.

Old landfills and barrels stored in developed and developing countries alike continue to threaten groundwater, soil and human health.

It will take decades or centuries – and a huge amount of money and work – to rehabilitate these old sites (some cannot be cleaned up and must be cordoned off). The Convention operates a major worldwide programme to dispose of large quantities of obsolete pesticide stocks and to prevent any further accumulation.

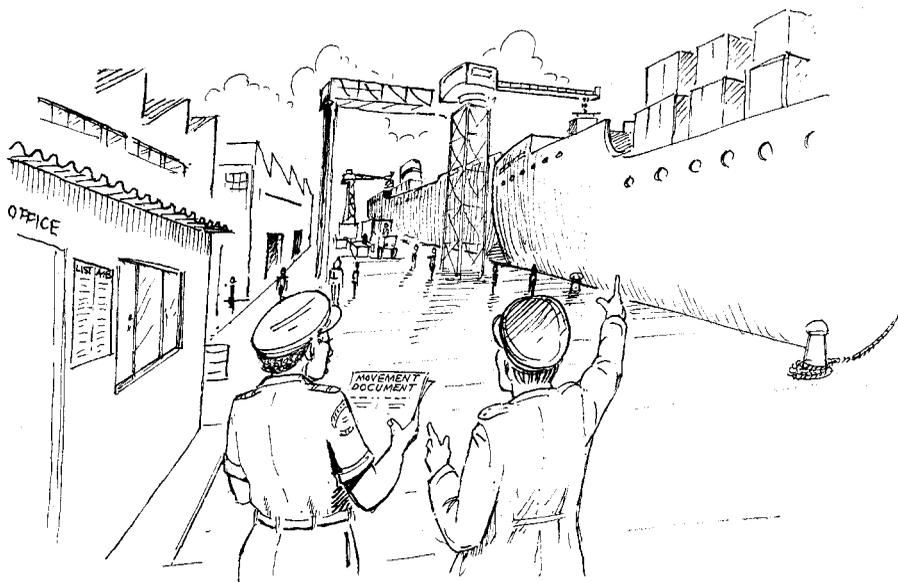


## Step THREE : Minimize international movements of hazardous wastes.

The Basel Convention seeks to minimize the movement of wastes across international borders through an agreed regime of rules and procedures. This regime starts by rigorously identifying the kinds of wastes that are considered hazardous and are thus subject to the rules on transboundary movement.

The Convention currently addresses 27 specific categories of waste and 18 waste streams (such as clinical wastes). These “List A” wastes all exhibit one or more carefully defined hazardous characteristics. Radioactive wastes and wastes from normal ship operations are excluded because they are covered by other international agreements. Some of the key wastes addressed by the treaty are described in the box on page two. A second list, List B, contains wastes that are normally considered to be non-hazardous.

Drawing up these lists is not as easy as it might seem. National definitions vary, some chemicals are hazardous in some circumstances and not others, and many wastes are a mix of different substances and may contain only very small amounts of toxic chemicals.



The Convention requires every company or broker wishing to export hazardous wastes to ask the Government of the exporting State to provide prior written notification to the competent authorities in the State of import and in any transit States. The importing and transit States must then give prior written consent before any export can take place.

Each approved shipment must be accompanied by a “movement document” with a detailed description of the contents and their disposal requirements, from the point at which the export begins to the point of disposal. Hazardous waste shipments made without such documents are illegal.

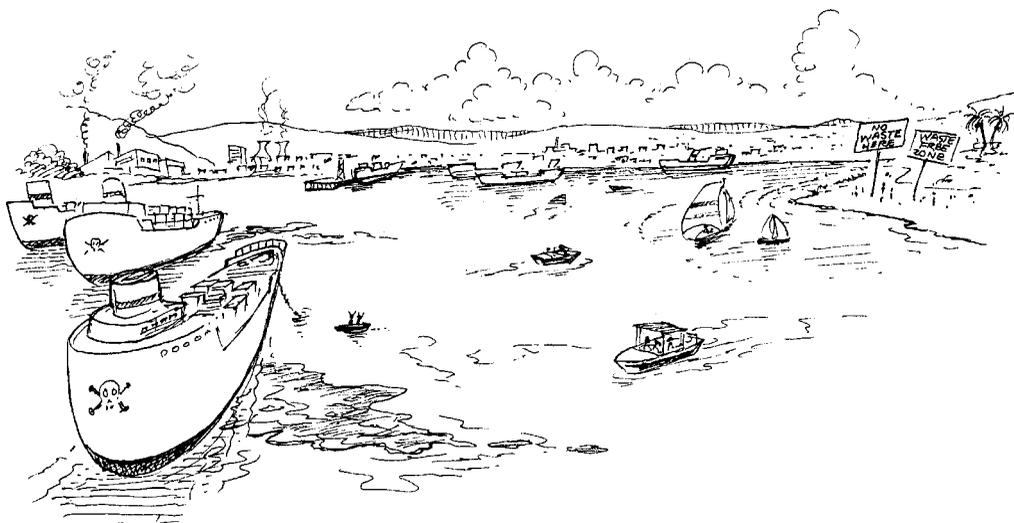
Thanks to the Basel Convention, legal cross-border movements of hazardous wastes are now fully transparent for all involved and are better justified from the point of view of environmental safety and economic efficiency. Some hazardous wastes must be treated using highly sophisticated technologies, and shipping them to high-tech plants that have invested in equipment designed to detoxify specific substances can make sense, as not every country can afford to build and maintain specialized plants for every substance. Other wastes are sent to recycling plants in countries where the market demand for that material is sufficiently large to ensure proper recycling.

Of course, unscrupulous traders still try to bypass the Convention system now and then. Some try to trick customs officers by diluting hazardous wastes or deliberately mixing them with non-hazardous wastes. Others are linked to money laundering and even to the illegal arms trade. And every once in a while a toxic ship can still be seen wandering the seas looking for a port it can enter through trickery or bribery, or for a discrete opportunity to dump its cargo in the open ocean...

The Convention therefore provides guidance on how to draft and implement national legislation to prevent and punish illegal traffic. When a shipment is judged to be illegal as a result of the exporter’s or generator’s conduct, the State of export must ensure that the wastes are taken back or, if this is no longer practical, disposed of in an environmentally sound manner. If the illegality results from actions taken by the State of import, this State becomes responsible for ensuring that the wastes are disposed of in an environmentally sound manner by the importer, disposer or by the Government itself. In cases where responsibility cannot be assigned, the States concerned, perhaps with the help of others, must cooperate on finding an environmentally sound solution.

In 1995, the Parties to the Convention gave developing countries yet another tool for protecting themselves against unwanted imports of hazardous wastes. Under the so-called Ban Amendment, the industrialized countries (EU and OECD members, plus Leichenstein) may not export hazardous wastes intended for recovery, recycling or final disposal to developing countries. The ban reflects concern that many developing countries lack the financial, technical, legal, and institutional capacity for monitoring transboundary movements and preventing illegal imports. The Ban Amendment, however, has not yet entered into force and will not be legally binding until it has been ratified by 62 governments (only 30 have ratified as of mid-2002).

Yet another tool was developed four years later, when the Parties adopted The Protocol on Liability and Compensation for Damage Resulting from the Transboundary Movement of Hazardous Wastes and their Disposal. In the event of an accidental spill from a legal shipment or dumping by an illegal trader, the Protocol describes how to determine liability and how to ensure adequate and prompt compensation for any damage. It considers each phase of a transboundary movement, from the generation of wastes to their export, international transit, import, and final disposal. It also establishes an emergency fund, financed with an initial \$500,000, that promises to finance immediate action in the event of an emergency, allowing more time to establish liability.



Taken together, these various tools and procedures all seek to ensure that trade is no longer a cheap and easy outlet that countries can use to avoid addressing their domestic hazardous waste problems. They have enabled the Basel Convention to achieve during its first 10 years of existence its aim of reducing transboundary movements of hazardous wastes, in particular for final disposal.

## The next 10 years

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Today's globally interconnected economy ensures that there is no country in the world that does not have a hazardous wastes problem. This makes hazardous wastes a global problem that requires local and regional, but also global, solutions.

The Basel Convention promotes these solutions through the exchange of ideas and technologies. It distributes publications that describe best practices and how to implement the Convention. In addition to the various Technical Guidelines, a manual entitled *Model National Legislation for the Transboundary Movement and Management of Hazardous Wastes* advises governments on how to establish an effective regulatory system containing the necessary legal and administrative measures. The *Manual for the Implementation of the Convention* describes the process for agreeing to and then overseeing imports and exports of hazardous wastes.

The implementation of the Convention is also promoted through a network of 12 (with more to come) Regional Centres for Training and Technology Transfer. The Centres provide practical and hands-on support on technical, technological and enforcement issues. They also offer training, disseminate information, and promote public awareness.

Another resource available to governments is the Convention's Secretariat. The Secretariat works with national authorities on developing national legislation, setting up inventories of hazardous wastes, strengthening national institutions, assessing the hazardous waste management situation, preparing hazardous waste management plans and policy tools, and strengthening enforcement efforts. In the case of a hazardous waste spill or other emergency, it contacts governments and international organizations that can assist rapidly with expertise and equipment.

With this infrastructure in place, plus the control system and agreements described earlier, the Parties to the Basel Convention are now focusing on the full implementation and enforcement of their treaty commitments. Over the coming decade, governments will further minimize unnecessary movements of hazardous and other wastes, prevent and monitor illegal traffic, promote the transfer of safe and well-tested waste-management technologies and improve the institutional and technical capabilities of developing countries and countries with economies in transition. They will collaborate with industry and civil society to seek new solutions for minimizing the generation of wastes at source.

They will also pursue greater collaboration and synergies with other organizations and sister conventions dealing with toxic chemicals. In addition to the Basel Convention, two major UNEP conventions tackle key aspects of the chemicals lifecycle. The Stockholm Convention on Persistent Organic Pollutants seeks to reduce and eventually eliminate the release of a particularly dangerous group of chemicals that persist in the environment and bio-accumulate in people and animals. The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade will help governments to decide whether or not to accept imports of certain hazardous chemicals and to refuse imports if they decide that they cannot safely manage them.

Much more needs to be done, of course. The development and transfer of cleaner technologies and processes must be accelerated. Without a dramatic increase in such technologies over the coming 10 or 20 years, the generation of hazardous wastes by an expanding global economy could reach unmanageable dimensions. Only by giving the issue a higher profile on the international agenda can governments ensure that action under the Basel Convention will lead to an environmentally sustainable future free from the dangers of hazardous wastes.