RIDDING THE WORLD OF POPs: A GUIDE TO THE STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS

UNITED NATIONS

UNEP

Stockholm Convention

Published by the United Nations Environment Programme in August 2010. Produced by the Secretariat of the Stockholm Convention. This book is intended for public information purposes only and is not an official document. Permission is granted to reproduce or translate the contents giving appropriate credit.

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Table of Contents

Introduction: Take a look inside yourself…

You are not the same as your great-grandparents were. You are partly synthetic.

People of four generations ago lived at the turn of the 20th century, before the invention and widespread use in agriculture and industry of thousands of synthetic chemicals. Those of us living in the early 21st century inhabit a world where some of these substances – which were introduced as far back as the 1920s and employed more and more in the 1940s and '50s – have been around for decades. Now they are everywhere… including in the tissues of every human being on Earth.

This is a frightening development. There are traces within you – or, depending on your circumstances and exposures, more than traces – of several hundred man-made chemicals. Many are harmless (or at least are so far thought to be). Others, however, may cause cancer and damage the nervous systems, reproductive systems, immune systems, or livers of animals. Mounting scientific evidence is confirming long-term suspicions that they do the same to human beings.

Over the past 50 years we have all been unwitting participants in a vast, uncontrolled, worldwide chemistry experiment involving the oceans, air, soils, plants, animals, and human beings. The Chemicals Revolution has indeed greatly contributed to human well-being. Chemicals have raised farming yields by killing crop pests and have made possible an endless array of useful products. But once released into the world, some chemicals cause toxic reactions, persist in the environment for years, travel thousands of kilometres from where they were used, and threaten long-term health and ecology in ways that were never anticipated or intended.

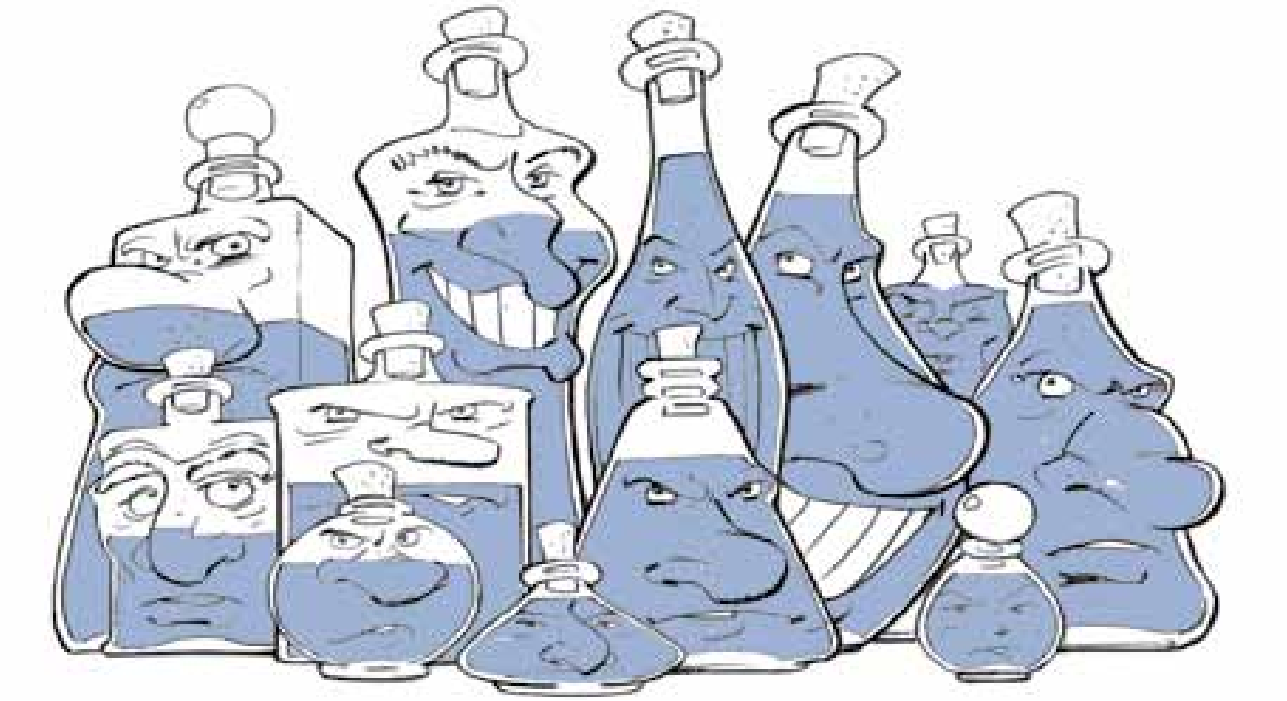
One class of substances in particular, called **persistent organic pollutants (POPs)**, has aroused concern. Many POPs pose such significant threats to health and the environment that on 22 May 2001, the world's governments met in Sweden and adopted an international treaty aimed at restricting and ultimately eliminating their production, use, release and storage.

The treaty, called the **Stockholm Convention on Persistent Organic Pollutants**, is a major achievement. It started by immediately targeting 12 particularly toxic POPs for reduction and eventual elimination. It also set up a system for tackling additional chemicals identified as unacceptably hazardous. Nine such new chemicals were added to the Convention in May 2009. The Convention recognizes that a special effort may sometimes be needed to phase out certain chemicals for specific uses and seeks to ensure that this effort is made. It also channels resources into cleaning up the existing stockpiles and dumps of POPs that litter the world's landscapes. Ultimately, the Convention points the way to a future free of dangerous POPs and promises to reshape our economy's reliance on toxic chemicals.

The Convention entered into force, thus becoming international law, on 17 May 2004. As of August 2010, the Convention has 170 Parties (169 countries and one regional economic integration organization).

The Stockholm Convention is perhaps best understood as having five essential aims:

Aim No. 1: Eliminate dangerous POPs, starting with the 21 listed in the Convention



The chemicals known as persistent organic pollutants act as powerful pesticides or serve a range of industrial purposes. Some POPs are also released as unintended by-products of combustion and industrial processes. While the risk level varies from POP to POP, by definition all of these chemicals share four properties:

1) They are highly toxic;
2) they are persistent, lasting for years or even decades before degrading into less dangerous forms;
3) they evaporate and travel long distances through the air and through water; and
4) they accumulate in fatty tissue.

This is a dangerous combination. The persistence and mobility of POPs means that they are literally everywhere in the world, even in the alpine and mountainous regions, the Arctic, Antarctica and remote Pacific islands. Their attraction to fatty tissue, known as "bioaccumulation", means that although a poison is first dispersed widely and thinly, it gradually starts to concentrate as organisms consume other organisms, thus moving up the food chain. The chemicals reach magnified levels – up to many thousands of times greater than background levels – in the fatty tissues of creatures at the top of the food chain, such as fish, predatory birds, and mammals, including human beings.

Worse still, during pregnancy and breastfeeding these POPs are often passed on to the next generation. Human beings and other mammals are thus exposed to the highest levels of these contaminants when they are most vulnerable – in the womb and during infancy, when their bodies, brains, nervous systems, and immune systems are in the delicate process of construction.

There are other bizarre and unkind ramifications. For example, the transport of POPs depends on temperature; in a process known as the "grasshopper effect", these chemicals jump around the globe, evaporating in warm places, riding the wind and particles of dust, settling to Earth in cool spots (such as water bodies), and then vaporizing and moving on again. As the POPs move away from the equator, they encounter cooler climates with less evaporation. The result is a general drift of these pollutants toward the Poles and mountain areas. Life also becomes "fattier" in colder climates: fish, birds, and mammals need thicker layers of fat for natural insulation against freezing temperatures. Consequently, the chemical contamination builds to higher levels in these organisms. Indigenous peoples in the Arctic, whose traditional diets are heavy in fatty foods and who often have no alternatives for nourishment, thus have some of the highest recorded levels of POPs. Yet they are hundreds or thousands of kilometres from where these pesticides and industrial chemicals were released, and they certainly received little benefit from the chemicals' original use.

The Stockholm Convention addresses the challenge posed by these toxic chemicals by targeting 21 of the worst POPs ever created, and the list has the potential to keep on growing.

Fourteen of the current POPs are **pesticides**: aldrin, alpha hexachlorocyclohexane and beta hexachlorocyclohexane (both are also by-products of lindane production and found in huge stockpiles in lindane-producing countries), chlordane, chloredecone, DDT (famous for decimating bald eagles, ospreys, and other predatory birds and for contaminating the milk of nursing mothers), dieldrin, endrin, heptachlor, hexachlorobenzene (HCB), lindane, mirex, pentachlorobenzene and toxaphene.

The Convention also targets **industrial chemicals**. Hexabromobiphenyl, tetra- and pentabromodiphenyl ethers (components of commercial pentabromodiphenyl ether), and hexa- and heptabromodiphenyl ethers (components of commercial octabromodiphenyl ether) are solely produced for industrial purposes. Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOS-F) have extensive industrial applications. A group of chemicals known as polychlorinated biphenyls (PCBs) has received a great deal of publicity for polluting rivers and lakes in industrial regions, killing or poisoning fish, and causing several human health scandals, including contamination of rice oil in Japan in 1968 and Taiwan in 1979. PCBs are also unintentional by-products of combustion and industrial processes, along with HCB and pentachlorobenzene, used in the past for industrial and agricultural purposes (as pesticides).

In addition, the Convention covers two families of chemicals which are solely **unintentional by-products**: polychlorinated dioxins and furans. These compounds have no commercial use. Dioxins and furans result from combustion and from industrial processes such as the production of pesticides, polyvinyl chloride, and other chlorinated substances. Dioxins and furans are among the most toxic chemicals known, and cause cancer in humans; they gained worldwide attention in the late 1990s when they were found to have contaminated chicken meat in several European countries.

What the Convention does:

• It commits the international community to protecting human health and the environment from persistent organic pollutants. For this to be achieved under variable environmental conditions and a multitude of physical, chemical, biological and man-made stressors including climate change, it explores the impacts of climate change and other stressors on the release, transport, distribution and toxicity of POPs.

• It sets a first goal of ending the release and use of 21 of the most dangerous POPs.

• It immediately bans all production and use of the pesticides endrin and toxaphene in countries that have ratified the Convention. The same goes for the recently added chemicals alpha hexachlorocyclohexane, beta hexachlorocyclohexane, chlordecone, hexabromobiphenyl and pentachlorobenzene.

• It also bans all production and use of aldrin, chlordane, dieldrin, heptachlor, hexachlorobenzene and mirex. The exemptions for these chemicals expired in 2009, so these can no longer be produced or used.

• It requires all Parties to stop producing lindane, tetra- and pentabromodiphenyl ethers and hexa- and heptabromodiphenyl ethers and requires those wishing to continue their use to register publicly for exemptions. Countries with exemptions will have to restrict their use of these chemicals to narrowly allowed purposes for limited time periods. The need for exemptions is to be periodically reviewed.

• It bans the production of PCBs but gives countries until 2025 to take action to phase out the use of equipment containing PCBs. The recovered PCBs must be treated and eliminated by 2028.

• The Convention limits the production and use of DDT to controlling disease vectors such as malarial mosquitoes in accordance with the World Health Organization's recommendations and guidance.

• It also limits the production and use of PFOS, its salts and PFOS-F to narrowly prescribed purposes and to countries that have registered for exemptions.

• It requires governments to take steps to reduce the releases of dioxins, furans, hexachlorobenzene, PCBs and pentachlorobenzene as by-products of combustion or industrial production, with the goal of their continuing minimization and, where feasible, ultimate elimination.

• It restricts imports and exports of the 19 intentionally produced POPs, permitting them to be transported only for environmentally sound disposal or for a permitted use for which the importing country has obtained an exemption.

• It requires Parties to develop, within two years, national plans for implementing the Convention and to designate national focal points for exchanging information on POPs and their alternatives.

The 21 POPs listed in the Stockholm Convention's Annexes, as of August 2010:

Annex A (Elimination)

● **Aldrin** – A pesticide applied to soils to kill termites, grasshoppers, corn rootworm, and other insect pests.

●/■ **Alpha hexachlorocyclohexane** – Use of this chemical as an insecticide was phased out years ago, but it is a by-product of lindane (for each ton of lindane produced, around 6-10 tons of alpha hexachlorocyclohexane are also produced). Therefore, large stockpiles lead to site contamination.

●/■ **Beta hexachlorocyclohexane** – This chemical has the same uses and properties as alpha hexachlorocyclohexane.

● **Chlordane** – Used extensively to control termites and as a broad-spectrum insecticide on a range of agricultural crops.

● **Chloredecone** – A synthetic chlorinated organic compound chemically related to mirex. It was mainly used as an agricultural pesticide starting the 1950s.

● **Dieldrin** – Used principally to control termites and textile pests, dieldrin has also been used to control insect-borne diseases and insects living in agricultural soils.

● **Endrin** – This insecticide is sprayed on the leaves of crops such as cotton and grains. It is also used to control mice, voles and other rodents.

● **Heptachlor** – Primarily employed to kill soil insects and termites, heptachlor has also been used more widely to kill cotton insects, grasshoppers, other crop pests, and malaria-carrying mosquitoes.

▲ **Hexabromobiphenyl** – This industrial chemical has been used as a flame retardant, mainly in the 1970s.

▲ **Hexabromodiphenyl ether and heptabromodiphenyl ether (commercial octabromodiphenyl ether)** – Polybromodiphenyl ethers including tetra-, penta-, hexa-, and heptaBDEs inhibit or suppress combustion in organic materials and therefore are used as additive flame retardants.

●/▲ **Hexachlorobenzene (HCB)** – HCB kills fungi that affect food crops.

● **Lindane** – Lindane has been used as a broad-spectrum insecticide for seed and soil treatment, foliar applications, tree and wood treatment and against ectoparasites in both veterinary and human applications.

● **Mirex** – This insecticide is applied mainly to combat fire ants and other types of ants and termites. It has also been used as a fire retardant in plastics, rubber, and electrical goods.

▲/● **Pentachlorobenzene** – Previously used in PCB products, in dyestuff carriers, as a fungicide and a flame retardant, it might still be used as a chemical intermediate (e.g. for the production of quintozene).

▲ **Polychlorinated biphenyls (PCBs)** – These compounds are employed in industry as heat exchange fluids, in electric transformers and capacitors, and as additives in paint, carbonless copy paper, sealants and plastics.

▲ **Tetrabromodiphenyl ether and pentabromodiphenyl ether (commercial pentabromodiphenyl ether)** – Like hexabromodiphenyl ether and heptabromodiphenyl ether (commercial octabromodiphenyl ether), these chemicals were used as additive flame retardants.

● **Toxaphene** – This insecticide, also called camphechlor, is applied to cotton, cereal grains, fruits, nuts, and vegetables. It has also been used to control ticks and mites in livestock.

Annex B (Restriction)

● **DDT** – Perhaps the best known of the POPs, DDT was widely used during World War II to protect soldiers and civilians from malaria, typhus, and other diseases spread by insects. It continues to be applied against mosquitoes in several countries to control malaria.

▲ **Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOS-F)** – PFOS is both intentionally produced and an unintended degradation product of related anthropogenic chemicals. The current intentional uses of PFOS are widespread and include: electric and electronic parts, fire fighting foam, photo imaging, hydraulic fluids and textiles.

Annex C (Unintentional production)

■ **Dioxins** – These chemicals are produced unintentionally due to incomplete combustion, as well as during the manufacture of certain pesticides and other chemicals. In addition, certain kinds of metal recycling and pulp and paper bleaching can release dioxins. Dioxins have also been found in automobile exhaust, tobacco smoke and wood and coal smoke.

■ **Furans** – These compounds are produced unintentionally from the same processes that release dioxins, and they are also found in commercial mixtures of PCBs.

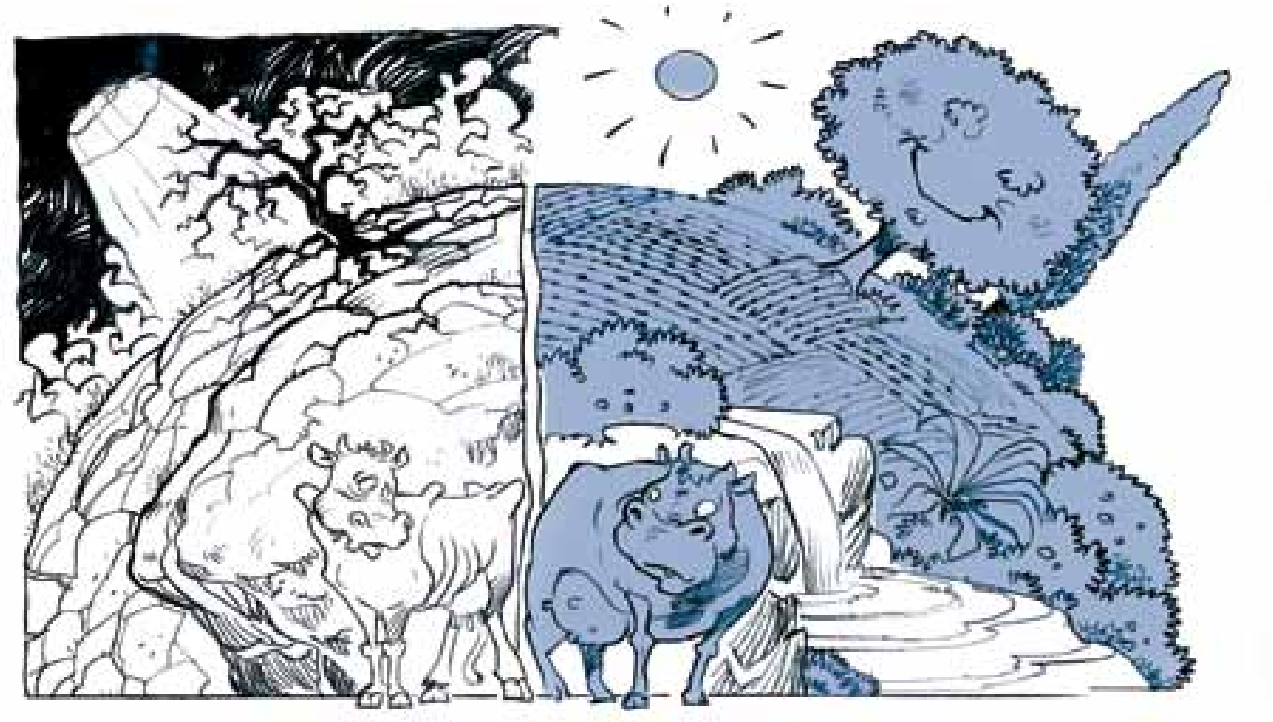
■ **Hexachlorobenzene (HCB)** – In addition to being a pesticide, it is also released as a by-product during the manufacture of certain chemicals and as a result of the processes that give rise to dioxins and furans.

■ **Polychlorinated biphenyls (PCBs)** – PCBs, in addition to being industrial chemicals, are also by-products.

■ **Pentachlorobenzene** – Pentachlorobenzene is produced unintentionally during combustion, thermal and industrial processes, and present under the form of impurities, in products such as solvents or pesticides.

Legend: ● Pesticides / ▲ Industrial chemicals / ■ By-products

Aim No. 2: Support the transition to safer alternatives



Some of the POPs targeted by the Stockholm Convention are already virtually obsolete. Their toxic effects became obvious early on and they have been banned or severely restricted in many countries for years or even decades. Replacement chemicals and techniques are in place. The remaining challenge is to find any leftover stocks and prevent them from being used. Some developing countries may need financial support to dispose of these stocks and replace them with chemicals whose benefits outweigh their risks.

But with other POPs the transition to safer alternatives will require more effort. Alternatives may be more expensive and their manufacture and use more complicated. That could put developing countries in an awkward spot – struggling from day to day, the world's poor tend to use what they can afford and what is available. Parties also need to make sure the alternatives do not have the same properties as the POPs they are replacing. Although it is difficult to fully evaluate potential risks of alternatives, the replacement of POPs should not result in creating another problem. So it is not enough for the Convention simply to say "No" to its target list of POPs: it must also help governments find a way to say "Yes" to replacement solutions.

Take the case of DDT. This pesticide harms health and the environment, but it is good at killing and repelling the mosquitoes that spread malaria. In regions where malaria still poses a major health hazard, that is a huge benefit. Malaria kills at least 1 million people a year, mostly children, and mainly in Africa. Meanwhile, concern is mounting because the malaria parasite is becoming more and more resistant to the drugs traditionally used for treatment.

For years DDT has been sprayed on the interior walls of homes as a relatively cheap and effective way of keeping malarial mosquitoes out and so preventing them from biting people.

Hardly any country still sprays DDT on crops, but over 20 countries use it for malaria control. During the Stockholm Convention negotiations, it became clear that these nations are justly concerned that an over-quick banning of DDT could have a high price in human lives lost to malaria.

Another case is PFOS. PFOS and its related substances are used for various industrial purposes. Long and complicated supply-chains make it difficult to track the fate of the chemical. Several types of uses including photo-imaging, aviation hydraulic fluids, and fire-fighting foam have no alternatives at the moment. Alternatives exist for other types of uses such as photo masks in the semiconductor and liquid crystal display industries; however, they are not readily available for many countries. Sharing and exchanging information on alternatives is essential for enhancing their safe and sustainable replacement.

PCBs present a different kind of challenge. PCBs can eventually be eliminated, but this will require additional money and know-how. Equipment containing PCBs is widely dispersed across the countryside, notably along electric power-line grids. Replacing all of this equipment immediately would be impractical and expensive, especially for financially strapped developing countries. Transporting PCBs to treatment sites is a delicate job that risks leakage and additional pollution, and the safe destruction or containment of PCBs requires special measures and high-tech equipment. With current technologies and facilities, only limited amounts can be dealt with at a time.

Other POPs can also be difficult to replace quickly. A number of countries have cited compelling reasons to use remaining stocks of lindane for control of head lice and scabies. Recycling products that may contain brominated flame retardants (tetra- and pentabromodiphenyl ethers, and hexa- and heptabromodiphenyl ethers) and handling of wastes that may contain POPs in an environmentally sound manner is also a challenge. A further problem is how to reduce emissions of furans and dioxins – which after all are unintentional and unwanted – as much as feasible using current technologies.

Fortunately, all of these challenges can be met through win-win solutions that reconcile eventual elimination with immediate human needs. By signalling to governments and industry that certain chemicals have no future and at the same time respecting their legitimate short term concerns, the Convention will stimulate the discovery of new, cheap and effective alternatives to the world's most dangerous POPs.

What the Convention does:

• It permits the production and use of DDT for controlling mosquitoes and other disease vectors in accordance with World Health Organization recommendations and guidelines and only when locally safe, effective, and affordable alternatives are not available. Use is carefully regulated and monitored and must be publicly registered. The governing body of the Stockholm Convention, the Conference of the Parties, evaluates every two years whether DDT is still needed for this purpose. A Global Alliance for developing alternatives to DDT has been established that includes all stakeholders involved in DDT use.

• If effective and affordable alternatives are not available in the country and the country publicly registered for the exemptions, the Convention permits the production and use of PFOS for specific purposes (for example photo imaging, fire-fighting foam, aviation hydraulic fluids, etc.).

• The Convention gives governments until 2025 to phase out "in-place equipment" such as electrical transformers and capacitators containing PCBs, as long as the equipment is maintained in a way that prevents leaks. It grants them another three years to ensure that such PCB oils and contaminated equipment are managed in an environmentally sound manner. The Convention recognizes that, for economic and practical reasons, this will take some time.

• It allows member governments to register publicly for country-specific exemptions permitting them to use existing stocks of lindane as a human health pharmaceutical for the control of head lice and scabies as second line treatment. It also allows the recycling of articles (products) that may contain tetra- and pentabromodiphenyl ethers or hexa- and heptabromodiphenyl ethers, and the use and final disposal of articles manufactured from recycled materials that may contain these chemicals. The use is narrowly restricted, and exemptions expire after five years. Renewals may be sought, but a justification report must be submitted to the COP; the Parties to the Convention will review such requests and may allow production and/or use for another five years or reject the proposal for an extension. Once there are no remaining countries registered for a particular type of exemption, this exemption will be closed to any future requests.

• It aims to improve, over time, abilities to reduce the release of dioxins, furans, PCBs, hexachlorobenzene and pentachlorobenzene as unwanted by-products. Governments are to develop action plans within two years of the Convention's entry into force and promote the use of best available techniques and best environmental practices. This is one of the most difficult technical challenges facing the treaty, and future research is expected to provide ever-better measures for preventing such pollution.

Aim No. 3: Target additional POPs for action

In court, a person is innocent until proven guilty. Chemicals suspected of bio-accumulating, persisting in the environment, and harming human beings and animals do not deserve that kind of protection. The Stockholm Convention had enough evidence to convict the 12 first POPs of posing a significant risk. But it also recognized that there are other suspects out there that could pose the same or similar threats. For POP no. 13 and beyond, the Convention clearly stated that the required standard of evidence would be based on the need for precaution.

Direct contact with POPs can cause acute effects – accidents with pesticides, for example, have killed and seriously sickened agricultural workers. But the kind of harm caused to human beings by low levels of POPs – cancer, immune-system disruption, nervous-system damage, liver damage, memory loss, endocrine disruption, birth defects and other reproductive problems – can be difficult to prove conclusively. It is hard to demonstrate that someone's immune system is weaker than it might have been, let alone that a particular chemical is the culprit. Nervous-system damage may result in something as basic and yet as nebulous as a lower level of intelligence. Once again, this can be hard to demonstrate beyond challenge. But unless precautionary action is taken to curtail exposure to these chemicals, millions of people – not to mention millions of other creatures ranging from lake trouts to penguins – are likely to suffer terrible harm.

A growing database of field and laboratory studies points to the connection between POPs and animal afflictions. Beluga whales in the St. Lawrence River in Canada have been observed to suffer several kinds of cancer, twisted spines and other skeletal disorders, ulcers, pneumonia, bacterial and viral infections, and thyroid abnormalities – afflictions seldom if ever seen in belugas living in less polluted waters. POPs have also been linked to stunted reproductive organs and reproductive failure in alligators in Florida, USA. Among the more recently added 9 POPs, chloredecone, alpha- and beta hexachlorocyclohexane, lindane, tetra- and pentabromodiphenyl ether, PFOS and its related substances and pentachlorobenzene are all recognized as being very toxic to aquatic organisms.

Evidence of damage to humans is alarming – and mounting. There is a growing suspicion that POPs contribute to cancer. One form of dioxin – 2,3,7,8 TCCD – is classified as a human carcinogen by the International Agency for Research on Cancer. In addition, the Agency considers PCBs a probable human carcinogen, and alpha- and beta hexachlorocyclohexane, chlordane, chlordecone, DDT, heptachlor, hexabromobiphenyl, HCB, mirex and toxaphene as possible human carcinogens.

Meanwhile, studies in Sweden, Canada and other countries have strongly suggested that eating food contaminated by very small quantities of PCBs and other persistent contaminants causes immune-system abnormalities. Studies in the USA and in Mexico have found significant problems with learning and physical coordination in children exposed to pesticides, including POPs, as compared to children living in cleaner environments. And so on.

The precise consequences of the worldwide spread of POPs cannot yet be calculated. New concerns often arise – recent evidence shows, for example, that several POPs interfere with normal hormonal activity, acting as "endocrine disruptors". How can people protect themselves against these risks in the face of continued scientific uncertainty? Twenty-one POPs are to be eliminated, but there are many dozens of other chemicals still available on the market that to some degree are persistent, bio-accumulating, mobile, and toxic. Are they safe, or will they harm human health and the environment, even after the 21 are long gone?

What the Convention does:

• It adopts the "precautionary approach", so that where there are threats of serious or irreversible damage, the lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

• It establishes a scientific experts' committee, called the POPs Review Committee, which regularly considers additional candidates for the POPs list. Any government can propose a new listing by stating the reasons for its concern. The Committee follows a structured evaluation process that incorporates precaution in a number of ways. It must ensure that all candidate POPs are evaluated using the best available scientific data to determine whether their chemical properties warrant their inclusion in the treaty. The Committee makes recommendations to the Parties to the Convention, who decide as a group whether and how to list the proposed chemical. New POPs can be added to Annex A, B or C of the Convention according to the decisions made by the Conference of the Parties. In this way, the Committee ensures that the Stockholm Convention remains updated, dynamic and responsive to new scientific findings.

Aim No. 4: Clean-up old stockpiles and equipment containing POPs

How do you clean up a decades-old mess involving vast amounts of dangerous chemicals spread around the entire globe, in some places thick on the ground, in other places in amounts so small – and yet still dangerous – that they are measured in parts-per-million?

The answer is you do what you can. Not much can be done with the traces of chemicals that are literally everywhere, from the industrial regions of the Northern Hemisphere to Antarctica, except to let time do its work. Eventually, over years, decades, and, in some cases, centuries, even the most persistent organic pollutants degrade into less dangerous substances. If no more are produced – and that is the goal of the Convention – the world will someday be rid of them. In the meantime, the research community must continue to study and attempt to limit the damage caused by these chemicals.

In some places there are stockpiles, storage facilities, and – to put it bluntly – dumps of these toxic substances. These stockpiles and waste sites have to be found, managed so that leaks and other releases into the environment are minimized, and ultimately cleaned up in a safe, responsible way. A number of countries have been engaged in such work for years, while others, especially in the developing world, lack the money and the expertise to do so. They will need help and the job will be difficult, technically complicated, and expensive.

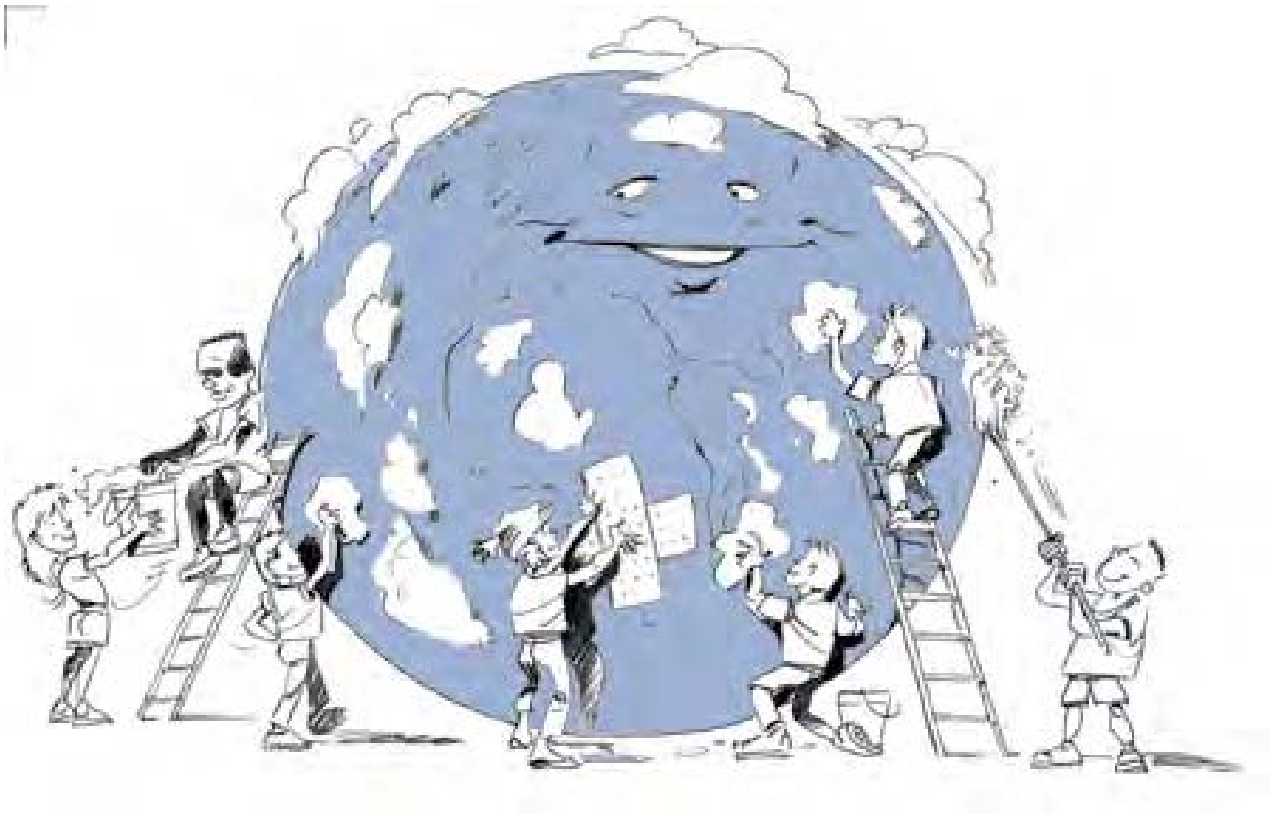
What the Convention does:

• It calls on governments to develop and implement strategies for identifying stockpiles, products and articles containing POPs. Once identified, these need to be managed in a safe, efficient and environmentally sound manner and disposed of in such a way that their POP content is destroyed or irreversibly transformed, so that the characteristics of POPs no longer exist.

• The Convention works closely with the Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal to establish guidance for environmentally sound disposal of POPs waste. The Convention does not allow recovery, recycling, reclamation, direct reuse or alternative uses of POPs, and it prohibits their improper transport across international boundaries.

• It calls for financial aid to help developing countries locate stockpiles and disposal sites and safely dispose of wastes containing POPs.

Aim No. 5: Work together for a POPs-free future



Worldwide agreements take time to finalize – the Stockholm Convention's origins go back to the 1992 Rio "Earth Summit" – and changing worldwide behaviour can take even more time. Yet there are advantages to this steady and methodical approach.

Consensus is vital for an environmentally focused treaty like the Stockholm Convention. It took time for governments to agree to act in concert, but without action in concert little could be done, since POPs do not stay put. If they are used in one place, they travel across international borders and pollute resources – air, water, and migrating food sources such as fish – that all humanity has in common. Consensus makes it easier for governments to make the sacrifices and efforts that complying with such an agreement requires. They are more willing to do so if other governments are doing so, and they are more convinced of the effectiveness of the result. The Convention is a case of everyone benefiting if everyone participates, and of everyone losing out if only a few do not participate. The years that have passed since the Earth Summit have allowed governments to become familiar with the threats posed by hazardous chemicals, to realize they have to work together, and to become committed to joint action.

Now that the Convention has taken effect, the countries that have ratified it and become Parties are holding regular conferences to see how well it is progressing, whether the milestones set to deal with different POPs are being met, whether new chemicals should be added to the list and how to improve future action against POPs. Experience – scientific and political – will be acquired in how to eliminate the use and spread of these chemicals and in how to clean up the messes they have made. Industry, public interest groups and concerned citizens will become an increasingly active and essential part of the global partnership. Over years and decades, everyone will do the job much better, resulting in an increased protection of humans and the environment against POPs. Also over time, technological progress, spurred by the requirements of the Convention, will find alternatives for POPs

that are economically viable and less harmful. Increased capacities for managing POPs will also bring increased capacities for managing other harmful chemicals.

What the Convention does:

• Under the Convention, the Parties are obliged to prepare National Implementation Plans (NIPs) as part of their sustainable development strategies. To date, over a hundred such NIPs have been developed.

• Over time, through national action plans, information exchange amongst national focal point and other efforts, the Convention seeks to increase public awareness of the dangers of POPs, provide up-to-date information on these pollutants, launch educational programmes, train specialists, and develop and disseminate alternative chemicals and solutions. The idea is to create a widespread understanding of the threat posed by persistent organic pollutants and to help governments and businesses make informed policy decisions, so that future problems with toxic chemicals are avoided.

• The Convention calls on governments to report regularly on their efforts to implement the treaty and on the effectiveness of such efforts. Every four years, an assessment is done to see if the levels of POPs are changing (in samples of human milk and blood and in the air) and thus whether the Convention is successful in protecting human health and the environment from these chemicals. To achieve this goal, the Convention sets up a worldwide mechanism for monitoring POPs levels in humans and the environment that can be used by countries to respond to the health risks posed by the chemicals and evaluate whether the levels of POPs are changing over time. Decreasing levels of POPs measured in human and environmental samples would indicate that the Convention is effective in reaching its objective.

• It calls on governments to encourage and to undertake further research on POPs, to monitor the health effects of the 21 chemicals, and to support developing countries and countries with economies in transition in their efforts to strengthen national scientific and technical research capabilities and promote access to information on POPs.

• It calls on the financially and technologically rich nations to help developing countries and the countries with economies in transition (from Central and Eastern Europe and the former Soviet Union) find acceptable alternatives to POPs. This can involve sharing knowledge and know-how, promoting technology transfer, and providing financial aid.

• More generally, the Convention calls for the provision of technical assistance to support developing country Parties and Parties with economies in transition in meeting their obligations. Regional and sub-regional centres for capacity-building and technology transfer have been established for this purpose.

Conclusion

Over the past two decades a series of international treaties has been negotiated to deal with global environmental problems – problems that have consequences not only for nature but also for human health and well-being. Like its sister agreements, the Stockholm Convention seeks to resolve a problem that is complicated and difficult. It involves politics and economics as much as science and technology. It seeks to balance the very different needs and concerns of rich and poor nations. And it recognizes that it can only achieve its aims by engaging all governments in a unified campaign to rid the world of dangerous POPs.

There is an unfairness to POPs pollution that also echoes other global problems. These chemicals were for the most part introduced and initially used by industrialized countries, yet the lasting consequences will be felt everywhere and can be especially damaging to poorer communities. Furthermore, wealthier countries were among the first to detect the dangers, to reduce use, and to start cleaning up the mess. Poorer nations, which adopted these toxic substances later, often lack the money and expertise to move on to alternatives and to clean up existing stockpiles and waste sites.

The Convention's call for international aid to help developing countries deal with the POPs problem is central to the treaty's success. Environmental treaties can only operate on the basis of international solidarity. Because problems of the sort caused by persistent organic pollutants do not respect international borders and affect every part of the world, dealing with them means that everyone has to watch out for everyone else. To deal with POPs, the nations of the world really will have to work together as a team. That will be good for eliminating the use of these dangerous chemicals… and if such cooperation becomes a habit, it could be good for facing up to many other global problems as well.

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