

Persistent Organic Pollutants (POPs)

What is a 'POP'?

POPs are a group of man-made substances, most of which share characteristics like low water solubility (they do not easily dissolve in water), the ability to accumulate in fat (high lipophilicity), and resistance to biodegradation (they take a very long time to break down and stop being harmful). The name POPs refers to many pollutants such as pesticides like DDT and pollutants like PCBs. These chemicals come from pesticides, industrial chemicals, and are the unwanted by-products of industrial processes or combustion.

'DDT' stands for Dichlorodiphenyltrichloroethane. It is a banned pesticide that, regardless, continues to be used primarily in tropical countries to kill disease spreading mosquitoes. 'PCBs' stands for Polychlorinated Biphenyls. It can be one, or a combination of, the 209 chemicals that are similar in structure and make up the category of pollutants called PCBs. They are hard to destroy, they do not easily break down on their own and they are still used in production today although with very tight controls and regulations for their use and disposal. These are only two examples of the many dangerous chemical pollutants that we call POPs.

Why are POPs harmful?

POPs are able to travel great distances because of the characteristics they share (low solubility, high lipophilicity and resistance to biodegradation). For more information on the transport of POPs, see the Transboundary Pollution fact sheet. POPs also bioaccumulate in the food chain and, thus, pose a risk to human health. That they can be transported far from their source means that neither any geographical area nor any food web can escape some level of impact from the presence of POPs.

What is being done about POPs?

The concern over POPs' wide geographical and biological reach inspired The Stockholm Convention, ratified on May 17th 2004 by 150 countries. It focused on the elimination or reduction of twelve POPs nicknamed the Dirty Dozen. The Stockholm Convention proposed five essential aims:

1. Eliminate dangerous POPs, starting with the 12 worst
2. Support the transition to safer alternatives
3. Target additional POPs for action
4. Cleanup old stockpiles and equipment containing POPs
5. Work together for a POPs-free future

The 12 Dirty Dozen POPs, as identified by The Stockholm Convention, are:

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

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

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.

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.

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.

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.

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

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.

Hexachlorobenzene (HCB) – HCB kills fungi that affect food crops. It is also released as a byproduct during the manufacture of certain chemicals and as a result of the processes that give rise to dioxins and furans.

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.

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.

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.

<http://www.pops.int/documents/pops/default.htm>

For more information about man-made pollutants see the [Water Pollution](#) fact sheet.

Stockholm Convention on POPs
<http://chm.pops.int/default.aspx>

DDT: This article first appeared in Pesticides News No.40, June 1998, p18-20
<http://www.pan-uk.org/pestnews/Actives/ddt.htm>

UNEP: Persistent Organic Pollution
<http://www.chem.unep.ch/pops/>

Stockholm Convention on Persistent Organic Pollutants (POPs): The 12 POPs under the
Stockholm Convention
<http://www.pops.int/documents/pops/default.htm>

UNDP – GEF: Persistent Organic Pollutants
<http://sgp.undp.org/index.cfm?module=projects&page=FocalArea&FocalAreaID=POP>