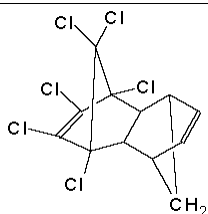




# FTA LOGISTICS

'About the 12 POPs'

## ALDRIN

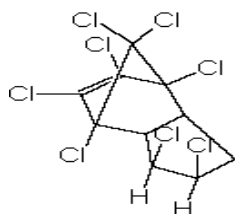


Aldrin is a pesticide applied to soils to kill termites, grasshoppers, corn rootworm and other insects. Negative effects is that aldrin can also kill birds, fish and humans.

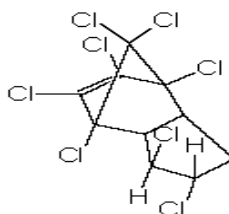
In one incident, aldrin-treated rice is believed to have killed hundreds of shorebirds, waterfowl and passerines along the Texas gulf coast when these birds either ate animals that had eaten the rice or ate the rice themselves. In humans, the fatal dose for an adult male is estimated to be about five grams. Humans are mostly exposed to aldrin through meat.

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## CHLORDANE / LINDANE



Cis



Trans

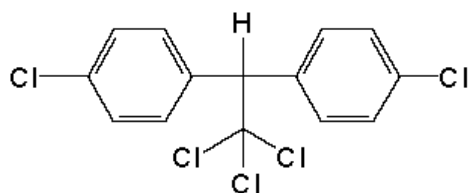
Chlordane has been used extensively to control termites and as a broad spectrum insecticide on a range of agricultural crops.

Chlordane remains in the soil for a long time and has reported a half-life of one year.

Chlordane may affect the human immune system and is classified as a possible human carcinogen. It is believed that the human exposure occurs mainly through the air and has even been detected in the indoor air of residences in the U.S.A. and Japan.

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## DDT

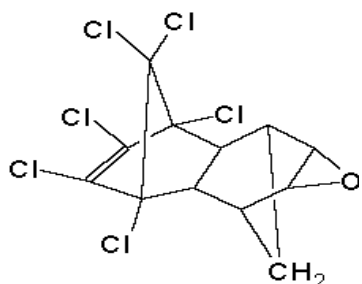


DDT is a well known and very infamous pesticide and was widely used during World War II to protect soldiers and civilians from malaria and other diseases spread by insects.

Nowadays DDT is still used (Africa) as a pesticide to control malaria.

DDT is very persistent with a half-life of 10-15 years after application and due to its widespread use, DDT can be found everywhere (even in the Arctic!)

## DIELDRIN



Dieldrin has been used mainly to control termites and textile pests as well as to control insects living in the soil. Its half-life is approx. 5 years.

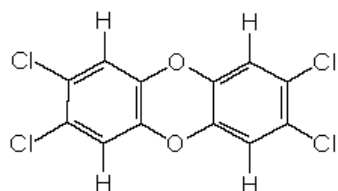
The pesticide aldrin rapidly converts to dieldrin, so concentrations of dieldrin in the environment are higher than dieldrin use alone would indicate.

Dieldrin is highly toxic to fish and other aquatic animals, particularly frogs (exposure to low levels to dieldrin can develop spinal deformities to the embryos).

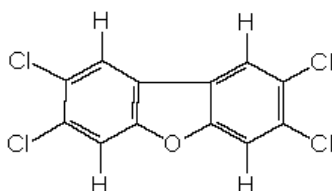
Residues of dieldrin have been found in air, water, soil, fish, birds, mammals, including humans.

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## DIOXINS



2,3,7,8-TCDD



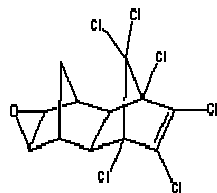
2,3,7,8-TCDF

As already mentioned Dioxins are one of the two POPs which are unintentionally produced as by products due to incomplete combustion. Dioxins are emitted mostly from the (low temperature: <900°C) burning of hospital waste, municipal waste and hazardous waste.

There are 75 different dioxins of which seven are considered to be of concern. One type of dioxin was found to be present in the soil 10-12 years after the first exposure. Dioxins have been associated with a number of adverse effects in humans such as immune disorders, chloracne and skin cancer. Meat is the major source of exposure for humans.

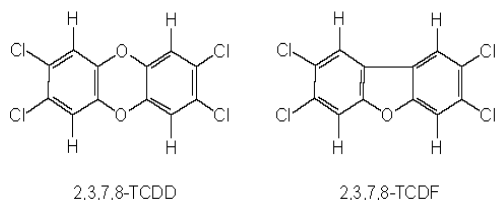
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## ENDRIN



This insecticide is sprayed on the leaves of crops such as cotton and grains. Its also used to control rodents such as mice. Animals can metabolize endrin, so it does not accumulate in fatty tissue. It has a half-life, persisting in the soil for up to 12 years. Endrin is highly toxic to fish. The primary route of exposure for the general human population is through food.

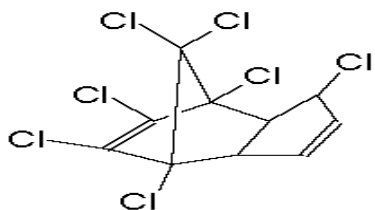
## FURANS



The second category of POPs as by product (besides dioxins) are furans. These compounds are also produced unintentionally from many of the same processes that produces dioxins, and also during the productions of PCBs. Furans have been detected in emissions from waste incinerations and automobiles. Furans are structurally similar to dioxins and share many of their toxic effects. There are 135 different types of furans and their toxicity varies. Furans persist in the environment for long periods, and are classified as possible humans carcinogens. Meat is the major source of exposure for humans. Furans have also been detected in breast fed infants!

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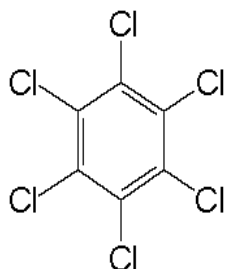
## HEPTACHLOR



Again a pesticide used to kill termites and soil insects. Heptachlor has also been used more widely to kill cotton insects, grasshoppers, other crop pests and malaria mosquitoes. It is believed that Heptachlor is responsible for the decline of several wild bird populations. Heptachlor is classified as a possible human carcinogen.

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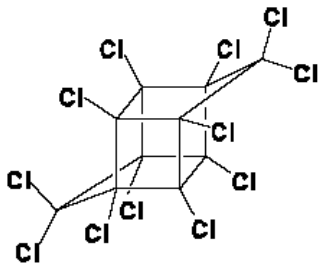
## HEXACHLOROBENZENE (HCB)



HCB was introduced in 1945 to treat seeds. HCB kills fungi that affect crops. It was widely used to control wheat bunt. It is also a by-product of the manufacture of certain industrial chemicals and exists as an impurity in several pesticide formulations.

When people in eastern Turkey ate HCB-treated seed grain between 1954 and 1959, they developed a variety of symptoms. Several thousand developed a metabolic disorder called porphyria turcica and 14 percent died. Mother also passed HCB to their infants through the placenta and through breast milk. In high doses, HCB is lethal to some animals and at lower levels it affects the reproductive success. HCB has been found in food of all types. A study of Spanish meat found HCB present in all samples.

## MIREX



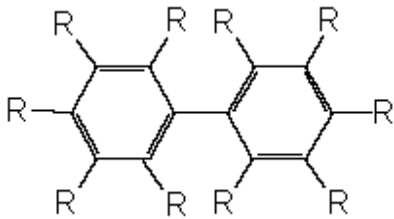
This insecticide is used to combat fire ants and it has also been used against other types of ants and termites.

Mirex has been used as a fire retardant in plastics, rubber and electrical goods. Direct exposure to mirex does not appear to cause injury to humans, but studies on laboratory animals have caused it to be classified as a possible humans carcinogen.

In studies mirex proved toxic to several plant species and to fish. It is considered to be a very stable and persistent pesticides, with a half life of up to 10 years. The main route of human exposure to mirex is through food, particularly meat and fish.

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## POLYCHLORINATED BIPHENYLS (PCBs)

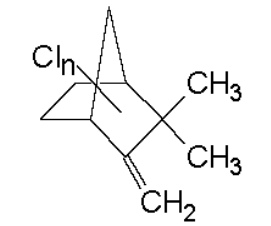


These compounds are used in industry as heat exchange fluids, in electrical transformers and capacitors and as an additive in paint, carbonless copy paper and plastics.

Of the 209 different types of PCBs, 13 type exhibit a dioxin-like toxicity. Their persistence in the environment corresponds to the degree of chlorination.

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## TOXAPHENE



This insecticide has been used on cotton, grains, fruits, nuts and vegetables. It has also been used to control ticks and mites in livestock. Toxaphene was the most widely used pesticide in the U.S. in 1975. Up to 50 percent of a toxaphene release can persist in the soil for up to 12 years. For humans, the most likely source of toxaphene exposure is through food. While the toxicity of toxaphene to humans of direct exposure is not high, toxaphene has been listed as a possible human carcinogen due to its effects on laboratory animals. It is highly toxic to fish. Thirty-seven countries have banned toxaphene and 11 other have severely restricted its use.