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DDT: An Organochlorine Pesticide

One of the best-known chlorine-related environmental issues resulted from the extensive use of **DDT** (dichlorodiphenyltrichloroethane) following World War II. DDT is one of a number of compounds, called **chlorinated hydrocarbons**, that are used as pesticides (see figure that follows for the molecular structure of DDT). DDT was used in the United States to control malaria- and typhus-carrying insects (such as mosquitoes) and also as an agricultural pesticide.

Although DDT has not proven to be very toxic in adult humans, its persistence in the environment and its ability to **bioaccumulate** and **biomagnify** in living tissue led to the decline of many insect, bird, and fish populations. Particularly hard hit were predatory birds such as bald eagles, peregrine falcons, and ospreys. As the concentration of DDT increased within these species (bioaccumulated), reproduction faltered because either their eggs were infertile or the shells were too thin to support the weight of the incubating parent.

The DDT ban has played a part in the continuing recovery of the peregrine falcon, bald eagle, and osprey populations in the United States and Canada.

By 1972, the environmental impacts of the widespread use of DDT became known, and its use was subsequently banned in the United States. Its production and export, however, were not banned in the United States. A report issued by the Foundation for Advancements in Science and Education indicated that in 1992 approximately 96 tons of DDT were exported from the United States.

Malaria is still a serious problem, with approximately 120 million clinical cases worldwide and causing over 1 million deaths per year—80 percent of which occur in Africa. DDT is still used in developing countries because it is one of the most effective ways to combat the malaria-carrying mosquito. It is also used for agricultural purposes.

Following the ban on DDT use, some farmers increased their use of organophosphate pesticides. While these types of pesticides are less persistent than DDT, they are more acutely toxic.

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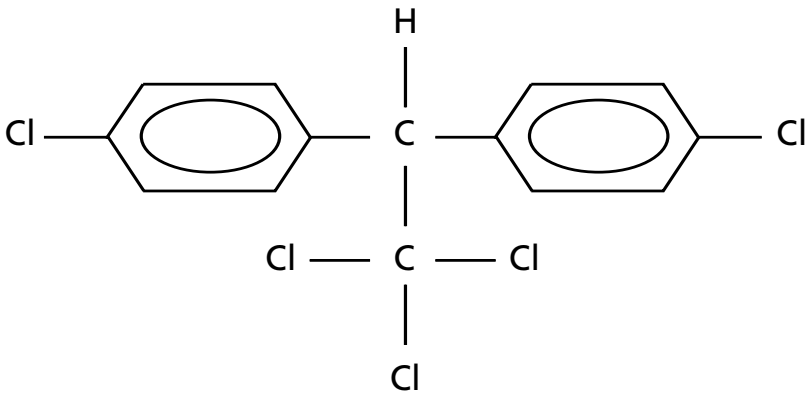
Structural Representation of dichlorodiphenyltrichloroethane (DDT)



⬡ = aromatic hydrocarbon
Cl = chlorine
C = carbon
H = hydrogen
— = single bond between atoms

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