THE HISTORY OF DDT

DDT is one of the most controversial chemical compounds in recent history. Originally developed as an effective insecticide, it's potent toxicity is unfortunately not limited to insects. Banned by many countries including the United States, DDT is nonetheless still used both legally and illegally in some places.

What Is DDT?

DDT, also known as *dichloro-diphenyl-trichloroethane*, belongs to a class of pesticides known as organochlorides. It's a solid, colorless, crystalline, synthetic chemical compound that can't be dissolved in water. It is however easily dissolved in organic solvents, fats or oils. Because it is fat soluble, DDT can build up in the fatty tissues of animals that are exposed to it. This accumulated build-up is known as *bioaccumulation*. The EPA describes DDT as a "*persistent, bio-accumulative toxin".*

Because of this bioaccumulation, DDT remains in the food chain, moving from small animals like crayfish, frogs, and fish into the bodies of animals that eat them. As larger animals eat smaller animals, the DDT builds up. Therefore, DDT levels are often highest in the bodies of animals near the top of the food chain, notably in predatory birds like eagles, hawks, pelicans, condors and other meat-eating birds. It also accumulates in larger mammals like beef and pork partly because they are fed or consume contaminated grains and other feed "meal", often made from the carcasses of other animals including seafood. Humans are at the top of the food chain in mammals and thus also accumulate the DDT they eat mostly from the animal products we consume. In fact, because DDT it is so fat-soluble, the only way humans can rid themselves of this toxin is through breast milk. This is why today, even almost 50 years after it was banned in the US, everyone, including newborn babies, have DDT in their bodies! It gets passed along when mothers breastfeed their children.

DDT has serious health effects on humans. According to the EPA, DDT can cause liver damage including liver cancer, nervous system damage, congenital disabilities and other reproductive harm.

A Brief History of DDT

DDT was first synthesized in 1874 by by Austrian chemist Othmar Zeidler, but it wasn't until 1939 that Swiss biochemist Paul Hermann Müller discovered its potency as an all-purpose insecticide. Müller was awarded the Nobel Prize in 1948 for his discovery.

Before the widespread use of DDT, insect-borne diseases like malaria, typhus, yellow fever and even bubonic plague killed millions of people worldwide. During World War II, DDT was commonly used by American troops to control these illnesses, especially in Italy and in tropical regions like the South Pacific.

After World War II, the use of DDT expanded to agricultural use. However, some insect species developed resistance to the insecticide.

As DDTs use spread, scientists noticed that its reckless overuse was causing considerable harm to wildlife populations. These scattered reports were documented in the now-famous book "Silent Spring", published in 1962, by scientist and author Rachel Carson. This best-seller describes the dangers of widespread pesticide use. (The book's title comes from the effect DDT and other chemicals were having on songbirds, which were dying off in some regions.)

Silent Spring became a best-selling book, and its publication heralded the rise of the modern environmental movement. In fact, the Environmental Protection Agency (EPA) was created during the Nixon administration after the biotoxic effects of DDT was linked to the near extinction of the US national bird, the Bald Eagle. At that time, only a few hundred mating pairs of bald eagles were left. In the years that followed, scientists worldwide were reporting that birds with high levels of DDT in their bodies were laying eggs that had shells so thin they broke before hatching, causing bird populations to plunge. And the more DDT the birds had in their bodies, the thinner their eggshells.

Because of the fact that it is fat soluble and almost impossible to get rid of and because we used so much of it before it was banned, DDT is still wreaking havoc on us and the environment. It is thought to be one of the major factors in the massive decline in the bee population because of mysterious *colony collapse disorder* as well as the significant decline in bat populations.

It's interesting that books and music guided social awareness back in the 60's and 70's. Most adults remember Joni Mitchell's 1970's song "Big Yellow Taxi" and the line:
"*Hey farmer farmer,*
Put away the DDT.
I don't care about spots on my apples.
Leave me the birds and the bees.
Please!"

As evidence of the harm DDT was causing grew, countries worldwide started to ban the chemical or restrict its use. By 1970, Hungary, Norway, and Sweden had banned DDT, and despite overwhelming pressure from the U.S. chemical industry, the production and use of DDT were banned in the United States in 1972.

In 2004, the treaty known as the Stockholm Convention on Persistent Organic Pollutants (POPs), which 170 countries, including the United States, signed, restricted the use of DDT to emergency insect control, e.g., in the event of a malaria outbreak. In some countries, however, DDT is still regularly used for controlling mosquitoes and other insects, and it is still used in agriculture in a few places such as India and sub-Saharan Africa.