

# Birth Defect Research for Children, inc.

## Fact Sheets

### DDT and Birth Defects

**What is it?** DDT is a cheap, persistent man-made organochlorine pesticide that is used in Third World countries for the control of malarial mosquitoes. DDT is soluble in organic solvents and fat, and relatively insoluble in water. It breaks down into several related compounds, such as DDD and DDE that are as toxic as DDT. Although DDT and DDD can not be legally used as a pesticide in the US, except for a public health emergency, DDT is still manufactured in this country and distributed widely throughout the world. Several hazardous waste sites, including Superfund sites, contain DDT and can act as sources of exposure. DDT's presence in the US is generally a result of contamination due to past and present production and past use. DDT, DDD, and DDE are found throughout the world; even areas far from their use; bound soil particles are transported by the wind and water; and, in the bodies of migrating species of animals. The half-life (the time it takes to break down half its concentration) is some 40 years.

**Human Health Effects:** DDT exposure occurs from inhalation, skin contact and ingestion of contaminated food. DDT has been banned from use in this country since 1972, however residues are found in the soil and can be transferred to crops grown in that soil. Crops from other parts of the world may have been directly treated with DDT. Levels of residual DDT have diminished greatly since the early 1980s. Levels are found in leafy and root vegetables, meat, fish, and poultry. Since DDT compounds accumulate in the fatty tissues of animals and leave the body very slowly, the levels will be magnified as they move up the food chain. Top predators, such as humans, can accumulate DDT in their body fat at many thousand times the background levels found in the soil. Residual DDT is determined by testing the blood, fatty tissue, or breast milk and semen.

**Acute Effects:** Short-term exposure to high doses of DDT affects primarily the nervous system, either as a depressant or a stimulant. People

who have voluntarily or accidentally swallowed very high amounts of DDT experienced excitability, tremors, seizures, coma, and respiratory depression leading to death. The effects on the nervous system appeared to be reversible when the exposure ceased. People who came in contact with DDT reported rashes or irritation of the eyes, nose, and throat. Tests in laboratory animals confirm the effects of DDT on the nervous system.

**Chronic Effects:** Chronic DDT absorption results in storage in fatty tissues. Long-term exposure may affect the liver, bone marrow, and brain.

**Reproductive Effects:** DDT is an endocrine disrupting chemical (EDC). DDT's estrogenic (hormone) effects have been well characterized in a number of assay systems, leading to the conclusion that DDT adversely affects reproductive outcome, either by causing birth defects, increasing pregnancy complications, or by affecting fertility. DDT and DDE are known to cross the human placenta, and these compounds can be found in the tissues of mother and newborn. One study noted higher concentrations of DDT in maternal blood, cord blood, and placenta from stillborn pregnancies than from non-exposed matched controls. Another study found higher proportions of a DDT component in women who had spontaneous abortions than in women with normal pregnancies. Chlorinated hydrocarbons were found in the seminal fluid and cervical mucus of infertile patients, suggesting a role for these chemicals in reproductive problems. The endocrine system is similar for all vertebrates, so what happens in laboratory rats or Arctic polar bears closely resembles what happens in the human body. The studies in animals have shown a close correlation between exposure to hormone disruptors with resulting birth defects that include incomplete and deformed reproductive systems, reduced fertility, impaired mental development, learning difficulties and hyperactivity, clear cell cancer, and compromised immune systems.

**Genetic Effects:** DDT has induced chromosome mutations in humans and animals in some studies, but not in others.

**Carcinogenic Effects:** Chronic lymphatic leukemia has been associated with occupational exposure to DDT. One study reported an association between DDT and malignant lymphoma. Liver cancer has been observed in

experimental animals exposed to DDT. The US Environmental Protection Agency (EPA) has placed DDT in Class B2: probable human carcinogen

## **Resources**

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