Dioxin Encyclopedia Article

Dioxin

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Dioxin

Dioxin is the short name for the chemical 2, 3, 7, 8-tetrachlorodibenzo-*p*-dioxin (TCDD). The chemical is a by-product of several paper- and chemical-manufacturing processes. It can be detected in emissions from incinerators and hazardous waste sites. It has also been found as a contaminant in certain **pesticides**.

In laboratory studies with animals, dioxin has been shown to have biological effects at very low levels. It has been identified as a carcinogen (cancer-causing chemical) in animals, and it is strongly suspected to cause cancer in humans. Another potential health problem that may be linked to dioxin is suppression of the immune system and decreased resistance to infectious diseases and cancer. Dioxin has been shown to cause birth defects and impaired development in animals, but there is no evidence for such effects in humans. Dioxin may also affect the reproductive system. In males, there may be decreased synthesis of testosterone (the male hormone); effects in females are unclear.

The amounts of dioxin in the environment are very low. It is estimated that 80 lb (36 kg) of dioxin are released into the environment each year. The health effects of dioxin in the environment are not as clear-cut as they appear in the laboratory. Dioxin breaks down very slowly in the body. Owing to very sensitive measuring techniques, it can be detected at extremely low levels in blood and breast milk (e.g., parts per trillion). It is unknown whether such levels have definite health effects in the general population.

Among industrial workers and others who experience higher exposure to dioxin than the general population, medical research has shown a small, but measurable increase in certain cancers and other diseases. However, these people also have greater exposure to other chemicals which may be **carcinogens** as well.