

WHAT IS DIOXIN?

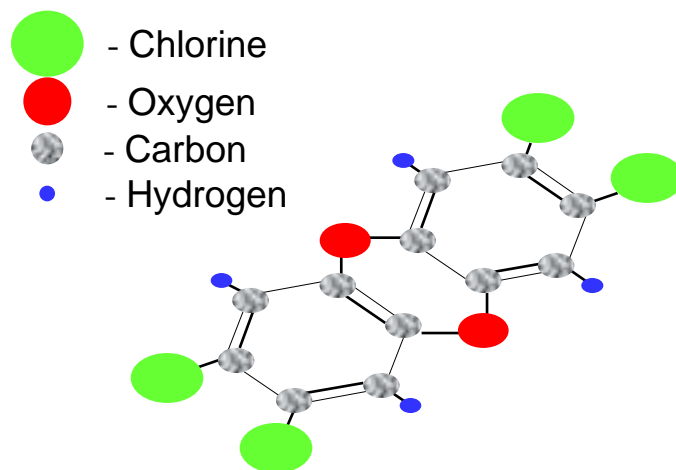
The term Dioxin is used to describe a family of compounds with a similar chemical structure. Dioxin compounds contain carbon, hydrogen, oxygen and chlorine. Dioxin is an unwanted by-product of activities such as burning refuse, metal smelting, and producing some chemicals.

Dioxin was present in small amounts in the herbicide Agent Orange.

Properties and Sources of Dioxin in the Environment

Properties

- Colorless solid
- Evaporates very slowly, unless heated to high temperatures
- Attaches strongly to soil and other particles
- Dissolves in fats
- Does not dissolve easily in water
- Does not burn easily
- Present throughout the environment in very low concentrations



Sources



- Incineration of municipal and medical waste
- Burning wood in homes and industry
- Forest fires
- Bleaching wood pulp and paper products
- Chemical manufacturing
- Metal smelting

DISTRIBUTION OF DIOXIN IN THE ENVIRONMENT

History of Dioxin Distribution

- *Very little dioxin was present in sediments before 1920*
- *Dioxin in sediments was at its peak around 1970*
- *Dioxin levels in most areas of the world have decreased since the 1970s*

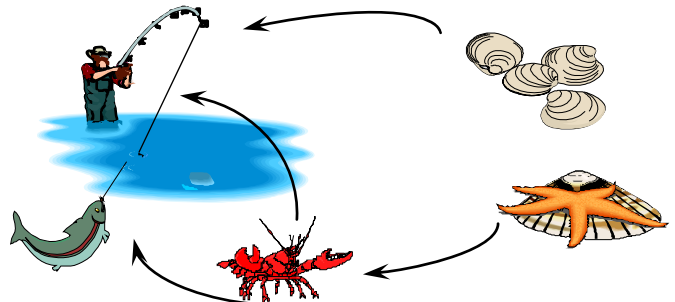
Dioxin is widely distributed in the environment. It has been found in very remote locations. Dioxin is found in soil, water, air, and sediments (soil trapped under water).

What Happens to Dioxin in the Environment?

- Dioxin does not break down easily in the environment.
- Once attached to soil, it does not move to underground water.
- Dioxin can be redistributed in the environment by a process called erosion. Erosion results from the action of wind and water on soil.
- Dioxin in air settles toward the ground where it is deposited on soil, plants, or in lakes and streams.
- Dioxin in soil is not absorbed by the roots of plants.
- Dioxin that enters lakes or streams settles to the bottom and is combined with sediments.

Dioxin in the Food Supply

- Dioxin in soil and on the surface plants is eaten by animals.
- Dioxin levels increase when animals are eaten by other animals higher in the food chain (bioaccumulate).



EXPOSED POPULATIONS

How are People Exposed to Dioxin?

- The main source of exposure (more than 90%) comes from the food supply.
- Some dioxin exposure comes from accidentally swallowing soil as a part of daily life.
- A very small amount of dioxin exposure comes from the air we breathe.



Dioxin in the Body

- Dioxin is deposited mainly in fat.
- Dioxin is removed by the body very slowly.
- This slow removal by the body causes dioxin to build up in fat.



HEALTH EFFECTS



Known Human Effects

- Exposure to high doses over a long period, such as those that occurred in industry resulted in chloracne, a skin condition like acne.
- Dioxin has been shown to effect the liver of people exposed at levels above those normally found in the environment .



Effects on Laboratory Animals



- A wide variety of effects have been observed in animals.
- There is clear evidence that in animals, dioxin is a cancer causing agent.
- Reproductive and developmental effects have been noted in some animals.
- Effects on the immune system have been seen in some animals.