

# WHAT IS DIOXIN?

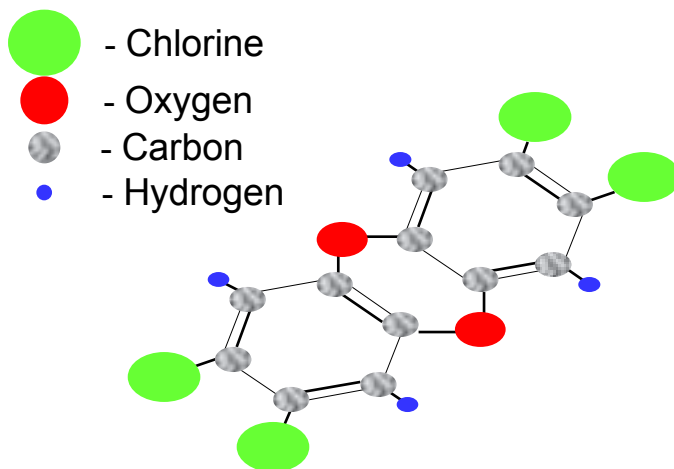
*The term Dioxin is used to describe a family of compounds with a similar chemical structure. Dioxin compounds contain carbon, hydrogen, oxygen and chlorine. Dioxin is an unwanted by-product of activities such as burning refuse, metal smelting, and producing some chemicals.*

*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*

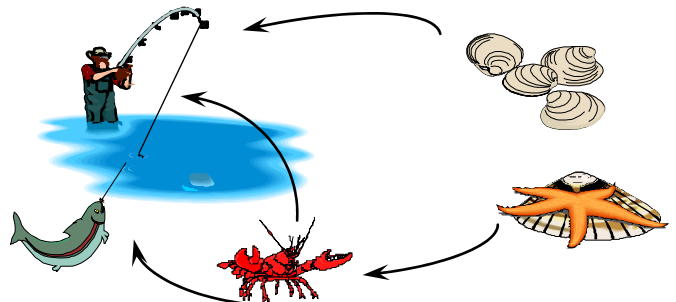
Dioxin is widely distributed in the environment. It has been found in very remote locations. Dioxin is found in soil, water, air, and sediments (soil trapped under water).

## 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.

