

**Bureau of Community and Environmental Health**

Environmental Exposure, Illness, Risk, and Your Health**When can chemicals make me sick?**

There are many factors that determine whether or not a chemical can make you sick. They include the type of chemical, the ability of that chemical to reach you, how and where it enters your body, how long you were in contact with the chemical, and how much of the chemical entered your body. Whether or not a chemical can make you sick also depends on you: your age, your health condition, and your genetic make up.

How can I be exposed to chemicals?

An exposure is when a chemical gets into your body. The route a chemical takes from its source to you is called an exposure pathway. Exposure can only occur if there is a chemical source and a completed exposure pathway. There are many sources of environmental contaminants including: storage tanks, landfills, mining waste, factories, and chemical applicators. Once a contaminant is released into the environment, it can enter the air, water, soil, plants, and animals.

What other factors determine whether or not I become sick from chemicals?

Exposure occurs if contaminants enter your body by breathing, eating, drinking, or touching contaminants or contaminated materials. Even if you are exposed to a chemical, you may not become sick. The major factors that contribute to illness from exposure are **dose**, **duration**, **route**, and **individual characteristics**.

The amount of chemical you are exposed to is the **dose**. Some chemicals cause adverse health effects at very small doses. Others require large doses before they cause adverse health effects.

The **duration** is the amount of time you are exposed to a chemical. Some environmental contaminants can harm human health in a very short period of time. Others may take years of daily exposure before they cause health effects. Long term exposure, called chronic exposure, occurs for a year or more. Short term exposure, called acute exposure, occurs over a short time, usually less than two weeks. Certain environmental contaminants may cause different health effects depending on the duration of the exposure, chronic or acute.

Routes of exposure are breathing, eating, drinking, and skin contact. If you drink water with a harmful substance in it, you will be exposed to that contaminant. Also, if you eat food that contains an environmental contaminant, you will be exposed to that chemical.

Individual characteristics include many things such as age, sex, diet, level of activity, physical attributes, and family traits. Some people are more sensitive to certain chemicals than others. This is the result of individual characteristics.

For instance, if an adult and a child breathe an equal amount of contaminated air, their exposure will not be the same. The child will receive a higher dose than the adult because of the child's lower body weight and increased breathing rate. Additionally, children's play behavior and developing organ systems place them at greater risk from chemical exposures.

What are my chances of becoming sick from an exposure to chemical contaminants?

Each exposure to a chemical produces its own potential health risk. Your chances of becoming sick from exposure to a chemical can be evaluated. The evaluations take into account the type of substance you are exposed to and what is known about its ability to impact human health. The evaluations also estimate the dose, duration, route of exposure, and population characteristics. These estimates do not predict the risk of a specific

person developing adverse health effects from exposure to a chemical. They evaluate the potential of a population developing adverse health effects.

How can I avoid exposure to chemical contaminants?

The most effective way to reduce your risk of becoming sick from exposure to an environmental contaminant is to avoid exposure. Here are some ways you can avoid being exposed to harmful chemicals in the environment:

1. Do not trespass on properties that handle, store, dispose of, or use hazardous chemicals.
2. Do not allow children or pets to play in bare soils on or near hazardous waste sites.
3. Wash your and your children's hands and face carefully after coming into contact with potentially contaminated soil.
4. Wash clothes that have come into contact with contaminants separately from other clothes.
5. Remove or carefully wipe your shoes before entering your house to prevent tracking contaminated soil into your home.
6. Wipe hard surfaces with a damp cloth or mop daily to remove dust.
7. If your drinking water comes from a domestic well or spring, have it tested by an analytical laboratory.

For additional information about preventing exposure, or information about BCEH, hazardous wastes, and toxic substances, contact:

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