

Pesticides

Pesticides - Health Effects

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What kinds of health effects are associated with pesticides?

Pesticides are designed to kill “pests”, but some pesticides can also cause health effects in people. The likelihood of developing health effects depends on the type of pesticide and other chemicals that are in the product you are using, as well as the amount you are exposed to and how long or often you are exposed.

Most often, pesticides affect the nervous system (system in your body that controls your nerves and muscles). General health effects from acute (short-term) exposures or poisonings are listed in the table below.

NOTE: The term “pesticide” describes a very large and diverse group of chemicals or products. It is very important to always get specific information about the exact product you are using.

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Table General Symptoms that Might Indicate Pesticide Poisoning		
Mild Poisoning	Moderate Poisoning	Severe Poisoning
Any of the following: <ul style="list-style-type: none"> • irritation of the nose, throat, eyes or skin • headache • dizziness • loss of appetite • thirst • nausea • diarrhea • sweating • weakness or fatigue • restlessness • nervousness • changes in mood • insomnia 	Any of the mild symptoms, plus any of the following: <ul style="list-style-type: none"> • vomiting • excessive salivation • coughing • feeling of constriction in throat and chest • abdominal cramps • blurring of vision • rapid pulse • excessive perspiration • profound weakness • trembling • muscular incoordination • mental confusion 	Any of the mild or moderate symptoms, plus any of the following: <ul style="list-style-type: none"> • inability to breathe • extra phlegm or mucous in the airways • small or pinpoint pupils • chemical burns on the skin • increased rate of breathing • loss of reflexes • uncontrollable muscular twitching • unconsciousness • death

Some health effects from pesticide exposure may occur right away, as you are being exposed. Some symptoms may occur several hours after exposure. Other effects may not be noticed for years, for example cancer.

Some symptoms of pesticide exposure will go away as soon as the exposure stops. Others may take some time to go away. For people exposed to pesticides on a regular basis, long-term health effects are a concern.

Women who are pregnant or breast-feeding should check with their doctors before working with pesticides as some pesticides may be harmful to the fetus (unborn baby) or to breast-fed infants.

Certified pesticide applicators or people who work with pesticides are encouraged to have regular medical check-ups. Tell your doctor which pesticides you are working with and/or exposed to.

How do pesticides enter our bodies?

Pesticides can enter your body during mixing, applying, or clean-up operations. There are generally three ways a chemical or material can enter the body:

- through the skin (dermal),
- through the lungs (inhalation), or
- by mouth (ingestion).

Dermal (absorption through skin or eyes)

In most work situations, absorption through the skin is the most common route of pesticide exposure. Absorption continues as long as the pesticides remain in contact with the skin. People can be exposed to a splash or mist when mixing, loading or applying the pesticide. Skin contact can also occur when you touch a piece of equipment, protective clothing, or a surface that has pesticide residue on it.

Pesticides can also be absorbed through your eyes. In addition, pesticides, can cause injuries to the eye itself.

Inhalation (through the lungs)

Inhalation may occur when working near powders, airborne droplets (mists) or vapours. The hazard from low-pressure applications is fairly low because most of the droplets are too large to remain in the air. Applying a pesticide with high pressure, ultra-low volume, or fogging equipment can increase the hazard because the droplets are smaller and they can be carried in the air for considerable distances. Pesticides with a high inhalation hazard will be labelled with directions to use a respirator. Pesticides can be absorbed easily through lung tissues.

Ingestion (by mouth)

While ingestion (by mouth) is a less common way to be exposed, it can result in the most severe poisonings. There are numerous reports of people accidentally drinking a pesticide that has been put into an unlabelled bottle, beverage cup or container (including soft drink cans or bottles). Workers who handle pesticides may also unintentionally ingest the substance when eating or smoking if they have not washed their hands first.

(From: British Columbia Ministry of Agriculture, 2022. "Pesticide Toxicity and Hazard")

For more information about how chemicals can enter your body, please see the OSH Answers document [How Workplace Chemicals Enter the Body](#).

How do I know if a pesticide will be harmful to me?

Because there are so many types of pesticides, the toxicity can vary greatly. The likelihood of becoming ill from exposure to pesticides depends on a number of factors including:

- the type of pesticide (some pesticides are more harmful than others),
- the amount of pesticide you were exposed to (how much),
- the concentration/strength (how strong/dose),
- the length of exposure or duration (how long/time),
- “route of entry” into the body (skin, ingestion, or inhalation), and
- other carriers or chemicals in the pesticide product.

In general, the risk of illness increases as the concentration (strength) of the pesticide, and duration (length) of exposure increases. "How much" and "how long" is necessary to cause illness will depend on the exact type of pesticide.

For more information about routes of exposure, and types of toxicity, please see the OSH Answers document [What Makes Chemicals Poisonous?](#).

Can people become allergic to pesticides?

In some cases, yes. There are two types of allergic sensitization: skin and respiratory. Symptoms of skin sensitization may include swelling, redness, itching, pain, and blistering. Respiratory sensitization symptoms may include wheezing, difficulty in breathing, chest tightness, coughing and shortness of breath. In some cases, respiratory sensitization can produce a severe asthma attack.

As the allergy develops, the reaction can become worse with each exposure. Eventually, even a short exposure to a low concentration of the pesticide can cause a very severe reaction. Although it is rare, it is important to be aware that pesticides may have the ability to cause life threatening allergic reactions in some people.

Can pesticides cause cancer?

Health Canada recommends buying pesticides that use a Pesticide Control Products (PCP) number on the label. Products using a PCP number have been approved by Health Canada.

Before a pesticide is allowed to be used or sold in Canada, it must undergo a rigorous scientific assessment process to ensure that no harm will occur when pesticides are used according to label directions. It is also assessed to determine if it is effective for its stated purpose. All pesticides registered in Canada, including for agricultural, forestry and domestic uses, undergo this level of scrutiny.

There are many different ingredients used in pesticide formulations. As with all chemical exposures, it is “good practice” to use products as little as possible (or not at all) or to use a less toxic substance. If you must use a pesticide, always follow the safe use, handling and storage directions.

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