

This fact sheet answers the most frequently asked health questions (FAQs) about chlorpyrifos. For more information, all the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS:** Chlorpyrifos is an insecticide which has been widely used in homes and on farms. Breathing or ingesting chlorpyrifos may result in a variety of nervous system effects, ranging from headaches, blurred vision, and salivation to seizures, coma, and death, depending on the amount and length of exposure. Chlorpyrifos has been found in at least 7 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

## What is chlorpyrifos ?

(Pronounced klôr pîr/a-fô's)

Chlorpyrifos is an insecticide that is a white crystal-like solid with a strong odor. It does not mix well with water, so it is usually mixed with oily liquids before it is applied to crops or animals. It may also be applied to crops in a capsule form.

Chlorpyrifos has been widely used in homes and on farms. In the home, it is used to control cockroaches, fleas, and termites; it is also used in some pet flea and tick collars. On the farm, it is used to control ticks on cattle and as a spray to control crop pests.

## What happens to chlorpyrifos when it enters the environment?

- Chlorpyrifos enters the environment through direct application to crops, lawns, houses and other buildings.
- It may also enter the environment through volatilization, spills, and the disposal of chlorpyrifos waste.
- Chlorpyrifos sticks tightly to soil particles.
- It does not mix well with water, so it rarely enters local water systems.

- Once in the environment, it is broken down by sunlight, bacteria, or other chemical processes.

## How might I be exposed to chlorpyrifos?

- Using it to control household pests such as termites, fleas or cockroaches.
- Breathing air outside of homes or other buildings where chlorpyrifos was applied to the ground around the foundation to control termites.
- Breathing air in a field where chlorpyrifos was sprayed on to crops.
- Touching soil or crops in a field where it was sprayed or touching freshly sprayed areas in a house.
- Putting food or other chlorpyrifos contaminated items in your mouth.

## How can chlorpyrifos affect my health?

Breathing the air in an area in which chlorpyrifos has recently been sprayed may produce a variety of effects on the nervous system including headaches, blurred vision, watering of the eyes (called lacrimation), excessive salivation, runny nose, dizziness, confusion, muscle weakness or tremors, nau-

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sea, diarrhea, and sudden changes in heart rate. The effect depends on the amount in the air and length of time exposed.

Ingesting chlorpyrifos orally through contaminated food containers or, in the case of children, putting objects of hands in their mouth after touching chlorpyrifos, may cause similar symptoms.

Exposure to high levels may cause severe sweating, loss of bowel control, severe muscle tremors, seizures, loss of consciousness (coma), or death.

There is no information at present to show that chlorpyrifos either effects the ability of humans to reproduce or causes human birth defects.

### **How likely is chlorpyrifos to cause cancer?**

It is not known whether chlorpyrifos can cause cancer in people. Animal studies have not shown that chlorpyrifos causes cancer.

The EPA has not classified chlorpyrifos for carcinogenicity.

### **Is there a medical test to show whether I've been exposed to chlorpyrifos?**

There is a general test that can be used to determine if you have been exposed to a certain group of insecticides, including chlorpyrifos. This test measures the activity of an enzyme called acetylcholinesterase in the blood. There is also a test which measures a metabolite, or breakdown product (known as TCP), of chlorpyrifos in the urine. The metabolite TCP can usually be found in the urine for several days after the exposure to chlorpyrifos occurred.

### **Has the federal government made recommendations to protect human health?**

The EPA requires that spills or accidental releases into the

environment of 1 pound or more of chlorpyrifos be reported to the EPA.

The EPA also recommends that children not drink water with chlorpyrifos levels greater than 0.03 milligrams per liter of water (0.03 mg/L) for periods of 1–10 days.

The Food and Drug Administration (FDA) has set tolerances for chlorpyrifos for agricultural products ranging from 0.05 to 15 parts chlorpyrifos per million parts of food (0.05–15 ppm).

### **Glossary**

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Ingest: To eat or drink something.

Insecticide: A substance that kills insects; a pesticide.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million (1 ppm is equal to 1 mg/L in water).

TCP: Metabolite of chlorpyrifos.

Volatilization: The changing of a liquid into a vapor or a gas.

### **References**

This ToxFAQs information is taken from the 1997 Toxicological Profile for Chlorpyrifos produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

