



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

This Public Health Statement is the summary chapter from the Toxicological Profile for toxaphene. It is one in a series of Public Health Statements about hazardous substances and their health effects. A shorter version, the ToxFAQs™, is also available. This information is important 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. For more information, call the ATSDR Information Center at 1-800-232-4636.

Overview

We define a public health statement and show how it can help you learn about toxaphene.

Introduction

A public health statement summarizes information about a hazardous substance. The information is taken from a toxicological profile developed by the Agency for Toxic Substances and Disease Registry's (ATSDR's) Division of Toxicology and Human Health Sciences (DTHHS). A toxicological profile is a thorough review of a hazardous substance.

This toxicological profile examines toxaphene. This public health statement summarizes the DTHHS's findings on toxaphene, describes the effects of exposure to it, and describes what you can do to limit that exposure.

Toxaphene at hazardous waste sites

The U.S. Environmental Protection Agency (U.S. EPA) identifies the most serious hazardous waste sites in the nation. The U.S. EPA then includes these sites on the National Priorities List (NPL) and targets them for federal clean-up activities. U.S. EPA has found toxaphene in at least 68 of the 1,699 current or former NPL sites.

The total number of NPL sites evaluated for toxaphene is not known. But the possibility remains that as more sites are evaluated, the number of sites at which toxaphene is found may increase. This information is important; these future sites may be sources of exposure, and exposure to toxaphene may be harmful.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

Why a toxaphene release can be harmful

When a contaminant is released from a large area such as an industrial plant or from a container such as a drum or bottle, it enters the environment. But such a release doesn't always lead to exposure. You can only be exposed to a contaminant when you come in contact with it. That contact—and therefore that exposure—can occur when you breathe, eat, or drink the contaminant, or when it touches your skin.

Even if you're exposed to toxaphene, you might not be harmed. Whether you are harmed will depend on such factors as the dose (how much), the duration (how long), and how you happen to contact it. Harm might also depend on whether you've been exposed to any other chemicals, as well as your age, sex, diet, family traits, lifestyle, and state of health.

A Closer Look at Toxaphene

Overview

This section describes toxaphene in detail and how you can be exposed to it.

What is toxaphene?

Toxaphene is made by reacting chlorine gas with a substance called camphene. The resulting product (toxaphene) is a mixture of hundreds of different chlorinated camphenes and other, closely related chlorinated terpenes.

Toxaphene is usually found as a solid or gas. In its original form, toxaphene is a yellow to amber waxy solid that has a piney odor.

How is toxaphene used?

Toxaphene was one of the most heavily used pesticides in the United States in the 1970s and early 1980s. It was used primarily to control insect pests on cotton and other crops in the southern United States. Other uses included controlling insect pests on livestock and killing unwanted fish in lakes.

Toxaphene was banned for all registered uses in the United States by 1990.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

Where is toxaphene found? Toxaphene can be released into the air, water, and soil at places where it is produced or used.

Possible Sources	Outcome
Air, water, and soil	<p>When toxaphene is released to the environment, it can enter the air (by evaporation), soil (by sticking to soil particles), and water (from runoff after rains). Toxaphene does not dissolve well in water, so it is more likely to be found in air, soil, or the sediment at the bottom of lakes and streams.</p> <p>Toxaphene has been found in water, soil, sediment, air, and animals in places far from where it has been used. This shows that toxaphene can be carried long distances by the air.</p>
Other Media	<p>Toxaphene levels may be high in some predatory fish and mammals because toxaphene accumulates in fatty tissues of predators and their prey. Even when levels are low or confined to a certain area, they could be high in individual animals.</p>

How Toxaphene Can Affect Your Health

Overview

This section looks at how toxaphene enters your body and potential toxaphene health effects found in human and animal studies.

How toxaphene enters your body Toxaphene can enter your body from the air, water, or soil.

Possible Sources	Possible Exposure Pathway
Air	Toxaphene could enter your body from contaminated air. However, toxaphene was banned as a pesticide in the United States by 1990.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

Water	Toxaphene can enter your body via contaminated drinking water, although when toxaphene has been detected in drinking water, levels have been much lower than levels measured in toxaphene-contaminated food.
Soil	Toxaphene could enter your body if you were to get toxaphene-contaminated soil on your skin, although such contact is not likely.

What happens to toxaphene in your body

Toxaphene is quickly broken down into other substances in your body.

How toxaphene leaves your body

Toxaphene and its breakdown products leave your body mostly in urine and feces. Small amounts may leave through breast milk and exhaled air.

Introduction to toxaphene health effects

The health effects of toxaphene depend on how much toxaphene you are exposed to and the length of that exposure. Environmental monitoring data suggest that any toxaphene levels that the public might encounter by direct contact or through air, water, food, or soil are generally much lower than levels that caused adverse effects in animals.

Short-term exposure effects

Convulsions were experienced by some people who accidentally or intentionally swallowed large amounts of toxaphene, including three women who ate collard greens contaminated with toxaphene. However, since toxaphene is no longer used as a pesticide, you would not likely eat enough toxaphene-contaminated food to affect your nervous system in this way. Toxaphene temporarily damaged the liver and kidneys of a man who attempted suicide by drinking a large amount of an insecticide that contained toxaphene. Swollen kidneys were seen in a small boy who died after drinking a large amount of toxaphene. Kidney and liver damage were seen in animals that were given toxaphene by mouth in amounts that you would not likely get by eating food or drinking water containing toxaphene.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

Long-term exposure effects Effects on the immune system have been observed in laboratory studies of animals that were given toxaphene by mouth in amounts that you would not likely get by eating food or drinking water containing toxaphene.

Toxaphene and cancer Toxaphene caused liver cancer in mice and possibly thyroid cancer in rats that were given toxaphene by mouth in large amounts that you would not likely get by eating food or drinking water containing toxaphene.

Some cancer findings by government and other agencies

- The Department of Health and Human Services has determined that toxaphene may reasonably be anticipated to be a carcinogen. The International Agency for Research on Cancer has determined that toxaphene is possibly carcinogenic to humans.
- The EPA has determined that toxaphene is a probable human carcinogen.

Children and Toxaphene

Overview

This section discusses potential health effects of toxaphene exposure in humans from when they're first conceived to 18 years of age, and how you might protect against such effects.

Exposure effects for children generally Toxaphene would be expected to affect children in the same manner as adults. It is not known whether children are more susceptible than adults to the effects of toxaphene.

What about birth defects? A few studies in animals have shown minor changes in fetal development. We do not know if toxaphene would cause developmental effects in humans.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

How Can Families Reduce the Risk of Exposure to Toxaphene

Overview

If your doctor finds that you have been exposed to significant amounts of toxaphene, ask whether your children might also be exposed. Your doctor might need to ask your state health department to investigate.

Food/ contaminated groundwater or soil

Do not eat food that has been contaminated with toxaphene, although it is unlikely that any food you eat would contain detectable amounts of toxaphene, with the exception of food, such as fish, taken from surface waters that have been contaminated with toxaphene.

Drinking water

Do not drink water that has been contaminated with toxaphene.

Medical Tests to Determine Toxaphene Exposure

Overview

We identify medical tests that can detect whether toxaphene is in your body, and we recommend safe toxic-substance practices.

Toxaphene can be measured in blood and urine

Toxaphene and its breakdown products (metabolites) can be measured in blood and urine. However, the detection of toxaphene or its metabolites cannot predict the kind of health effects that might develop from that exposure. Because toxaphene and its metabolites leave the body fairly rapidly, the tests need to be conducted within days after exposure.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

Federal Government Recommendations to Protect Human Health

Overview

One way the federal government promotes public health is by regulating toxic substances or recommending ways to handle or to avoid toxic substances.

The federal government regulates toxic substances

Regulations are enforceable by law. The U.S. EPA, the Occupational Safety and Health Administration (OSHA), and the Food and Drug Administration (FDA) are some federal agencies that have adopted toxic substances regulations.

The federal government recommends safe toxic substance practices

The Agency for Toxic Substances and Disease Registry (ATSDR) and the National Institute for Occupational Safety and Health (NIOSH) have made recommendations about toxic substances. Unlike enforceable regulations, these recommendations are advisory only.

Toxic substance regulations

Regulations and recommendations can be expressed as “not-to-exceed” levels; that is, levels of a toxic substance in air, water, soil, or food that do not exceed a critical value usually based on levels that affect animals; levels are then adjusted to help protect humans. Sometimes these not-to-exceed levels differ among federal organizations. Different organizations use different exposure times (an 8-hour workday or a 24-hour day), different animal studies, or emphasize some factors over others, depending on their mission.

Check for regulation updates

Recommendations and regulations are also updated periodically as more information becomes available. For the most current information, check with the federal agency or organization that issued the regulation or recommendation.

Some regulations and recommendations for toxaphene include:

Federal Organization	Regulation or Recommendation
U.S. Environmental Protection Agency (U.S. EPA)	The U.S. EPA has determined that exposure to toxaphene in drinking water at concentrations of 0.004 mg/L for up to 10 days is not expected to

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

	cause any adverse effects in a child and that lifetime exposure to 0.01 mg/L toxaphene in the drinking water is not expected to cause any adverse noncancer effects if the only source of exposure to toxaphene is the drinking water.
Occupational Safety and Health Administration (OSHA)	OSHA set a legal limit of 0.5 mg/m ³ for toxaphene in air averaged over an 8-hour work day.
The Food and Drug Administration (FDA)	The FDA has determined that the toxaphene concentration in bottled drinking water should not exceed 0.003 mg/L.

Additional Information

Overview

Where to find more information about toxaphene.

Who to contact If you have any more questions or concerns, please contact your community or state health or environmental quality department, or contact ATSDR at the address and phone number below.

Additional information from ATSDR ATSDR can provide publically available information regarding medical specialists with expertise and experience recognizing, evaluating, treating, and managing patients exposed to hazardous substances.

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry



PUBLIC HEALTH STATEMENT

Toxaphene

Division of Toxicology and Human Health Sciences

October 2014

**Where to
obtain
toxicological
profile copies**

Toxicological profiles are also available online at www.atsdr.cdc.gov. For more information:

- Call the toll-free information and technical assistance number at 1-800-CDCINFO (1-800-232-4636) or
- Write to:

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences
1600 Clifton Road NE
Mailstop F-57
Atlanta, GA 30333

For-profit organizations should request final toxicological profile copies from:

National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Phone: 1-800-553-6847 or 1-703-605-6000
Web site: <http://www.ntis.gov/>

DEPARTMENT of HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry