ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

1,1,2,2-TETRACHLOROETHANE

CAS # 79-34-5

Division of Toxicology and Environmental Medicine ToxFAQs™ **September 2006**

This fact sheet answers the most frequently asked health questions (FAQs) about 1,1,2,2-tetrachloroethane. For more information, call 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 is 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: 1,1,2,2-Tetrachloroethane is a manufactured chemical that is no longer used much in the United States. Breathing high levels in a closed room can cause fatigue, vomiting, dizziness, and possibly unconsciousness. Breathing, drinking, or touching large amounts of 1,1,2,2-tetrachloroethane for a long period of time can cause liver damage, stomachaches, or dizziness. 1,1,2,2-Tetrachloroethane has been found in at least 329 of the 1,678 National Priority List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is 1,1,2,2-tetrachloroethane?

1,1,2,2-Tetrachloroethane is a manufactured, colorless, dense liquid that does not burn easily. It is volatile and has a sweet odor.

In the past, it was used in large amounts to produce other chemicals, as an industrial solvent to clean and degrease metals, and as an ingredient in paints and pesticides. Commercial production of 1,1,2,2-tetrachloroethane for these uses has stopped in the United States. It presently is used only as a chemical intermediate in the production of other chemicals.

What happens to 1,1,2,2-tetrachloroethane when it enters the environment?

- ❏ Most 1,1,2,2-tetrachloroethane released to the environment eventually moves to the air or ground water.
- ❏ It does not attach to soil particles when released to land.
- ❏ When released to surface water, much of it will evaporate to the air while the rest may break down in the water.
- ❏ Breakdown of the chemical in the environment is slow; it takes about 1 year for half of the chemical to disappear from groundwater and 2 months in air.
- ❏ 1,1,2,2-Tetrachloroethane does not build up significantly in the bodies of fish or other organisms.

How might I be exposed to 1,1,2,2-tetrachloroethane?

- ❏ The general public is not expected to be exposed to significant amounts of 1,1,2,2-tetrachloroethane.
- ❏ 1,1,2,2-Tetrachloroethane is not commonly found in drinking water, soil, or food.
- ❏ Higher concentrations have been found occasionally in private well water that may have been used for drinking.
- ❏ You may be exposed to 1,1,2,2-tetrachloroethane if you live near a hazardous waste site that contains it or near an industrial building where the chemical is used.
- ❏ Since production of the chemical has stopped, most workers would not be exposed to it.
- ❏ If spills or accidents occur at work, exposure will likely be by breathing in vapors or through skin contact.

How can 1,1,2,2-tetrachloroethane affect my health?

1,1,2,2-Tetrachloroethane is not life-threatening unless you intentionally or accidentally drink more than a few spoonfuls at one time or spill a large amount so that you breathe it and get it on your skin. Breathing high levels in a closed room can cause fatigue, vomiting, dizziness, and possibly unconsciousness. However, most people recover from these effects once they are in fresh air. Breathing, drinking, or touching large amounts of 1,1,2,2-tetrachloroethane for a long period of time can cause liver damage, stomachaches, or dizziness.

The health effects of long-term (365 days or longer) exposure to low levels of 1,1,2,2-tetrachloroethane are not known. It is also not known whether 1,1,2,2-tetrachloroethane will cause reproductive effects in people.

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How likely is 1,1,2,2-tetrachloroethane to cause cancer?

It is not known whether 1,1,2,2-tetrachloroethane causes cancer in humans. In a long-term study, 1,1,2,2-tetrachloroethane caused an increase in liver tumors in mice, but not in rats.

The International Agency for Research on Cancer (IARC) has determined that 1,1,2,2-tetrachloroethane cannot be classified as to its ability to cause cancer in humans, while the EPA has determined that it is a possible human carcinogen.

How can 1,1,2,2-tetrachloroethane affect children?

Exposure of children to large amounts of 1,1,2,2-tetrachloroethane will probably cause the same effects observed in adults (i.e., fatigue, vomiting, dizziness, liver damage, stomachache). It is not known whether children are more or less susceptible to the effects of 1,1,2,2-tetrachloroethane than adults.

No information is available regarding the detection of 1,1,2,2-tetrachloroethane in breast milk or in the fetuses of exposed women. However, based on similarities to other chlorinated chemicals, it is expected that 1,1,2,2-tetrachloroethane can cross the placenta from an exposed woman and reach the fetus.

A very small number of studies in animals do not suggest that 1,1,2,2-tetrachloroethane is a developmental toxin.

How can families reduce the risks of exposure to 1,1,2,2-tetrachloroethane?

❑ Exposure to high amounts of 1,1,2,2-tetrachloroethane is unlikely because the chemical is no longer used in household products.
❑ If you have old household products (i.e., cleaners, degreasers, and paints) at home that contain 1,1,2,2-tetrachloroethane, make sure they are stored out of the reach of children.

Is there a medical test to determine whether I've been exposed to 1,1,2,2-tetrachloroethane?

There are no medical tests to determine whether you have been exposed to 1,1,2,2-tetrachloroethane. Urine and blood tests are available, but are common to several other types of chemicals and would not specifically indicate exposure to 1,1,2,2-tetrachloroethane. The symptoms of 1,1,2,2-tetrachloroethane poisoning, such as stomachaches, fatigue, and dizziness, as well as the liver effects are common to many conditions and not useful to determine exposure to this chemical.

Has the federal government made recommendations to protect human health?

The EPA has decided that not more than 0.17 micrograms of 1,1,2,2-tetrachloroethane per liter of water (0.16 parts per billion [ppb] or about 1 drop in an above-ground pool) should be in lakes and streams, although no national drinking water standards have been set. EPA recommends that children do not drink water with more than 0.04 milligrams per liter (mg/L) of 1,1,2,2-tetrachloroethane for a period exceeding 10 days. EPA also requires that spills of 100 pounds or more of 1,1,2,2-tetrachloroethane to the environment be reported to the Agency.

The Occupational Safety and Health Administration (OSHA) has set a limit of 5 parts per million (ppm) in air to protect workers during an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends a limit of 1 ppm for 1,1,2,2-tetrachloroethane in workroom air over an 8- to 10-hour workday.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2006. Toxicological Profile for 1,1,2,2-Tetrachloroethane (Draft for Public Comment). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, 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.