

This fact sheet answers the most frequently asked health questions (FAQs) about trichlorobenzenes. For more information, call the CDC Information Center at 1-800-232-4636. 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: Trichlorobenzenes have been used as solvents. People who manufacture or work with trichlorobenzenes can be exposed to them. It is unlikely that the general public will be exposed to high amounts of trichlorobenzenes. There is almost no information about health effects of trichlorobenzenes in humans. 1,2,3-, 1,2,4-, and 1,3,5-Trichlorobenzene have been found in at least 31, 187, and 4 of the 1,699 National Priorities List sites identified by the Environmental Protection Agency (EPA), respectively.

What are trichlorobenzenes?

Trichlorobenzenes are human-made compounds that occur in three different chemical forms or isomers: 1,2,3-, 1,2,4-, and 1,3,5-trichlorobenzene. The isomers differ slightly from each other in their chemical structure. 1,2,3-Trichlorobenzene and 1,3,5-trichlorobenzene are colorless solids, while 1,2,4-trichlorobenzene is a colorless liquid. Trichlorobenzenes have primarily been used as solvents and chemical intermediates to produce other compounds. 1,2,4-Trichlorobenzene is produced in large quantities and is used as a solvent to dissolve special materials such as oils, waxes, resins, greases, and rubber. It is also frequently used to produce dyes and textiles. 1,2,3-Trichlorobenzene and 1,3,5-trichlorobenzene are produced in lower quantities and have fewer uses.

What happens to trichlorobenzenes when it enters the environment?

- Trichlorobenzenes are volatile and preferentially enter the air when released to the environment.
- The half-life (the time it takes for 50% of the compound to degrade) of trichlorobenzenes in air is about 1 month.
- Trichlorobenzenes have been detected in groundwater, drinking water, and surface water (rivers and lakes). Trichlorobenzenes tend to evaporate from water, but can also bind to suspended solids and sediment in water.
- Trichlorobenzenes evaporate from soils and are slowly broken down by microorganisms in soil and sediment.

- High levels of trichlorobenzenes are often detected in fish or other species living in contaminated waters because trichlorobenzenes can accumulate in fatty tissues.

How might I be exposed to trichlorobenzenes?

- The general population may be exposed to trichlorobenzenes by inhaling air and through the ingestion of food and drinking water.
- Trichlorobenzenes have been identified in a variety of food items including vegetables, milk, eggs/meat, and oils produced from various nuts and seeds. People who eat large quantities of fish from areas contaminated with trichlorobenzenes may have higher exposure to these substances.
- Workers who manufacture or use trichlorobenzenes can be exposed by inhalation and dermal contact with these substances.

How can trichlorobenzenes affect my health?

There is virtually no information regarding health effects of trichlorobenzenes in humans. However, based on results from studies in animals, it is reasonable to predict that humans exposed to high amounts of trichlorobenzenes may develop liver problems.

Studies in animals indicate that oral administration of trichlorobenzenes for short or long periods produces mainly alterations in the liver and kidneys. Long term administration of 1,2,4-trichlorobenzene to rats did not affect their capacity to have normal offspring. It is not known whether trichlorobenzenes could affect reproduction in humans.

Trichlorobenzenes

CAS # 12002-48-1

How likely are trichlorobenzenes to cause cancer?

There are no studies of cancer in people exposed to trichlorobenzenes. Mice given 1,2,4-trichlorobenzene in the food for 2 years developed cancer of the liver. The EPA has stated that 1,2,4-trichlorobenzene is not classifiable as to human carcinogenicity. However, this was based on studies conducted prior to 1990; newer information has not been evaluated.

How can trichlorobenzenes affect children?

There are no studies of children exposed to trichlorobenzenes. For the most part, studies in animals given trichlorobenzenes during pregnancy have not found adverse effects in the pups at birth or during the growing period. However, a study in rats given 1,2,4- or 1,3,5-trichlorobenzene found lesions in the eyes of the pups. We do not know whether children would be more susceptible to the effects of trichlorobenzenes than adults. Trichlorobenzenes have been found in human breast milk, which means that mothers can transfer these chemicals to their babies by nursing.

How can families reduce the risk of exposure to trichlorobenzenes?

- Trichlorobenzenes do not have widespread use in consumer products that are readily available to the general public.
- Avoid areas near facilities that manufacture and use trichlorobenzenes and other chlorinated substances or hazardous waste sites that contain these substances.
- Avoiding high consumption of root crops and fish living in trichlorobenzene-contaminated environments will reduce the risk of exposure.

Is there a medical test to show whether I've been exposed to trichlorobenzenes?

Trichlorobenzenes can be measured in blood and body fat, but the tests used are not routinely available in the doctor's office.

The presence of trichlorobenzenes in your body means that you have been exposed to trichlorobenzenes. Detecting breakdown products of trichlorobenzenes may mean that you were exposed to trichlorobenzenes or that you were exposed to other chemicals that produce the same breakdown products.

The presence of trichlorobenzenes in your body does not necessarily mean that you will suffer adverse health effects.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to 1,2,4-trichlorobenzene or 1,3,5-trichlorobenzene in drinking water at concentrations up to 0.1 and 0.6 milligrams per liter (mg/L), respectively, for 1 or 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 1,2,4- or 1,3,5-trichlorobenzene in drinking water at concentrations up to 0.07 and 0.04 mg/L, respectively, is not expected to cause any adverse effects.

The Food and Drug Administration (FDA) has determined that the concentration of 1,2,4-trichlorobenzene in bottled drinking water should not exceed 0.07 mg/L.

References

This ToxFAQs™ information is taken from the 2014 Toxicological Profile for Trichlorobenzenes produced by the Agency for Toxic Substances and Disease Registry, 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 and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30333.

Phone: 1-800-232-4636.

ToxFAQs™ on the web: www.atsdr.cdc.gov/toxFAQs.

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.