

This fact sheet answers the most frequently asked health questions (FAQs) about titanium tetrachloride. 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'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: Titanium tetrachloride is very irritating to the eyes, skin, mucous membranes, and the lungs. Breathing in large amounts can cause serious injury to the lungs. Contact with the liquid can burn the eyes and skin. The Environmental Protection Agency (EPA) has identified 1,416 hazardous waste sites on its National Priorities List (NPL) sites. Titanium tetrachloride has not been found in any of the sites on the NPL. However, the number of NPL sites evaluated for titanium tetrachloride is not known.

What is titanium tetrachloride?

(Pronounced tī-tā' nē-əm tēt'rə klōr'īd')

Titanium tetrachloride is a colorless to pale yellow liquid that has fumes with a strong odor. If it comes in contact with water, it rapidly forms hydrochloric acid, as well as titanium compounds.

Titanium tetrachloride is not found naturally in the environment and is made from minerals that contain titanium. It is used to make titanium metal and other titanium-containing compounds, such as titanium dioxide, which is used as a white pigment in paints and other products and to produce other chemicals.

What happens to titanium tetrachloride when it enters the environment?

- Titanium tetrachloride enters the environment primarily in the air from factories that make or use it in various chemical processes, or as a result of spills.
- If moisture is in the air, titanium tetrachloride reacts rapidly with it to form hydrochloric acid and other titanium compounds, such as titanium hydroxide and titanium oxychlorides.

- Some of the titanium compounds may settle out to soil or water. In water, they sink into the bottom sediments.
- The titanium compounds may remain for a long time in the soil or sediments.
- Some other titanium compounds, such as titanium dioxide, are also found in air and water.

How might I be exposed to titanium tetrachloride?

- You are not likely to be exposed to titanium tetrachloride in water, soil, food, or air.
- Because titanium tetrachloride breaks down rapidly in air, you probably would not be exposed to it unless you worked in an industry that made or used it.
- If you work in an industry that uses titanium tetrachloride, you could be exposed by breathing it or touching it.
- If titanium tetrachloride spills, you could get it on your skin.

How can titanium tetrachloride affect my health?

Titanium tetrachloride can be very irritating to the skin, eyes, mucous membranes, and the lungs. Breathing in large

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amounts of titanium tetrachloride can injure the lungs seriously enough to cause death.

If you breathe in lower levels of titanium tetrachloride, less serious respiratory system effects can include coughing and tightness in the chest. More severe effects including chemical bronchitis or pneumonia, and congestion of the mucous membranes of the upper respiratory tract can also occur. These effects can cause long-term effects such as the narrowing of the vocal cords, windpipe, and upper airways.

Accidental exposure to liquid titanium tetrachloride can result in skin burns and can cause permanent damage to the eyes, if they are not protected.

There is not enough information to determine if titanium tetrachloride causes birth defects or affects reproduction.

How likely is titanium tetrachloride to cause cancer?

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified titanium tetrachloride for carcinogenicity. Some laboratory animals that breathed titanium tetrachloride fumes for 2 years developed lung tumors of a special type. However, there is no evidence that long-term exposure to titanium tetrachloride causes cancer in people.

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

There is no medical test to indicate whether you have been exposed to titanium tetrachloride. However, you can be tested for the presence of titanium dioxide or titanium metal, which are breakdown products of titanium tetrachloride.

This test uses electron microscopes to examine lung tissue

for particles that contain titanium. This test is not specific for titanium tetrachloride exposure, but it does indicate exposure to some titanium-containing substances. Also, the test does not indicate whether you may have potential health effects resulting from such exposure or the amount of titanium compound to which you were exposed.

Has the federal government made recommendations to protect human health?

Releases of more than 100 pounds of titanium tetrachloride have been proposed as the release levels that must be reported to the EPA. Maximum levels have not been established for titanium tetrachloride exposure in the workplace.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Irritant: Abnormal reaction to a substance.

Long-term: 365 days or longer.

Sediment: Mud and debris that have settled to the bottom of a body of water.

Tumor: An abnormal mass of tissue.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Titanium Tetrachloride 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.

