

Cyanide - ToxFAQs™

What is cyanide?

Cyanides include a group of compounds containing a highly reactive cyanide anion (CN⁻). Cyanide is produced naturally in many plants, fungi, bacteria, and millipedes. Some cyanide compounds are human-made. The most common forms in the environment are hydrogen cyanide, a colorless gas, and sodium and potassium cyanide, which are white or colorless solids. Most cyanide compounds have a faint almond odor.



What happens to cyanide in the environment?

Cyanide has been detected in low levels in the air, soil, and water. It is released into the environment both from natural sources and from industries that make or use cyanide compounds. Industrial releases are mainly into the air in the form of hydrogen cyanide. Hydrogen cyanide can travel long distances in the air before it is slowly broken down by sunlight. Only small amounts of hydrogen cyanide are removed from the air through rainfall or snow.

Most cyanide in surface water or soil will quickly evaporate into the air as hydrogen cyanide. If cyanide is in groundwater or deeper soils, or bound to certain compounds such as metals, it will stick to other particles or break down. If water is treated with chlorine (e.g., drinking water), cyanide can combine with other substances present in water to form cyanogen chloride. There is little known about levels of cyanide in plants and animals that do not contain cyanide-producing compounds (cyanogenic compounds), but levels for the most common forms of cyanide are not expected to build up over time.

How can I be exposed to cyanide?

You may be exposed to small amounts of cyanide by eating food and drinking water containing cyanide or by breathing contaminated air. You may be exposed to higher levels of cyanide than the general public if you eat certain foods that potentially contain cyanogenic compounds, such as pits or seeds of common fruits (e.g., apple, apricot, peach) or unprocessed cassava (tapioca) root. Most products of concern in the United States are processed to remove cyanogenic compounds. If you smoke cigarettes or live with a smoker, you may be exposed to cyanide. If your water has hydrogen cyanide in it, household activities such as showering, bathing, or washing clothes or dishes may expose you to this chemical. Hydrogen cyanide found in soils can become a vapor and enter your home, usually through a basement; this is known as vapor intrusion.

General population exposure to cyanide is expected to be low. Individuals who smoke cigarettes, live near hazardous waste sites, eat unprocessed plants containing cyanide, or work with cyanide may be exposed to higher levels.

How can cyanide affect my health?

Cyanide is a well-known poison that can cause death if exposed to very high levels in the air, food, or drink, or directly on the skin. Breathing hydrogen cyanide may also cause breathing difficulty, nervous system changes (e.g., dizziness, headache, weakness, tingling), and impaired thyroid gland function. Oral exposure can damage the nervous system, sometimes resulting in serious (and permanent) impairments resembling Parkinson's disease. Oral exposure may also impair thyroid gland function or damage the male reproductive system. It is not known if children are more sensitive to cyanide exposure than adults.

Cyanide

Can cyanide cause cancer?

The ability of cyanide to cause cancer in people has not been studied.

The [U.S. Department of Health and Human Services \(DHHS\)](#) has not evaluated the potential for cyanide or cyanide compounds to cause carcinogenicity in humans.

The [U.S. Environmental Protection Agency \(EPA\)](#) determined that there is inadequate information to assess the carcinogenic potential of hydrogen cyanide and cyanide salts.

The [International Agency for Research on Cancer \(IARC\)](#) has not evaluated the potential for cyanide or cyanide compounds to cause carcinogenicity in humans.

Can I get a medical test to check for cyanide?

Levels of cyanide or its breakdown product (thiocyanate) can be measured in the blood or urine. With inhalation exposure, exhaled levels of hydrogen cyanide may be measured. Your doctor can take samples but must send them to a laboratory to be tested. In some cases, physicians may order additional blood or imaging tests if cyanide poisoning is suspected in order to allow for faster diagnosis and treatment. Classical signs of cyanide poisoning have included detection of an almond-like smell in the breath of a poisoned patient and “cherry-red skin.” However, these signs are considered less reliable methods. None of the medical tests checking for cyanide exposure can predict whether you will have health problems from the exposure. If you think you have been exposed to this or any other chemical, talk to your doctor or nurse or call poison control.

How can I protect myself and my family from cyanide?

Most people don't need to take any special steps to avoid cyanide in their daily lives. People may want to avoid smoking cigarettes or breathing in cigarette smoke. People may also want to avoid ingesting seeds or pits from common fruits or eating unprocessed/improperly processed cassava (tapioca root) products. Do not let your children play near hazardous waste sites.

For more information:

Call **CDC-INFO** at 1-800-232-4636, or submit your question online at <https://wwwn.cdc.gov/dcs/ContactUs/Form>

Go to ATSDR's Toxicological Profile for Cyanide: <https://wwwn.cdc.gov/TSP/ToxProfiles/ToxProfiles.aspx?id=72&tid=19>

Go to ATSDR's Toxic Substances Portal: <https://wwwn.cdc.gov/TSP/index.aspx>

Find & contact your ATSDR Regional Representative at http://www.atsdr.cdc.gov/DRO/dro_org.html

