



ARSENIC COMPOUNDS

ENVIRONMENTAL HEALTH – CONTAMINANTS FACT SHEETS

WHAT DO WE KNOW ABOUT ARSENIC?

Arsenic is a metalloid found naturally in the environment and can be released as rocks wear down. Arsenic levels are naturally higher in some areas of the Northwest Territories compared to other regions of Canada. Arsenic can be found in water, snow, air, soil, plants, rocks and wildlife.

Arsenic is also released into the environment through human activities. Gold mining in the North has released a lot of arsenic from the ground, particularly in the area surrounding Giant Mine near Yellowknife. Currently 237,000 tonnes of arsenic trioxide, a by-product of extracting gold from the mineral arsenopyrite ore, is stored underground. The Giant Mine Remediation Project's primary goal is to protect human health and safety, and the environment

through the long-term containment and management of the arsenic trioxide waste, water treatment and the surface clean-up of the site. For more information on the Giant Mine Site Remediation Project, visit the Indigenous and Northern Affairs Canada website: <https://www.canada.ca/en/indigenous-northern-affairs.html>

Arsenic is also present in cigarette tobacco and is inhaled with the smoke.

Every Canadian is exposed to arsenic because it occurs naturally in our food and drinks and in the air. We can also be exposed by accidental ingestion of soil but absorption through the skin is minimal. The concern is when there is more than the normal (naturally occurring) amount of arsenic in the environment due to contamination.

HOW DOES ARSENIC AFFECT HUMAN HEALTH?

As far as we know, the human body does not use arsenic for any function.

At high levels of exposure, some forms of arsenic can be toxic. The health effects of exposure to arsenic in humans vary depending on the amount we are exposed to and the chemical form. Although it is generally accepted that the inorganic forms of arsenic are of greatest concern for potential health effects, there is now evidence indicating methylated organic arsenic compounds may also potentially cause health effects. One organic form of arsenic, which can be found in different amounts in some fish and certain mushrooms, is known to be non-toxic.

Effects from short-term **overexposure** (a brief exposure to an extremely high level) to inorganic arsenic may include vomiting, abdominal pain and diarrhea. Numbness and tingling of the extremities, muscle cramping and death may also occur in extreme cases.

Chronic exposure to elevated levels of toxic forms of arsenic over a long period of time can cause bladder, kidney, liver, lung and skin cancer and other problems with the skin. These may include skin lesions (wounds), changes in the color of the skin, and hard patches on the palms and soles of the feet. Arsenic exposure has also been associated with developmental effects, cardiovascular disease, neurotoxicity and diabetes.



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DOES ARSENIC AFFECT TRADITIONAL FOODS AND DRINKING WATER?

Traditional foods are safe to eat; however there are certain areas around the Giant Mine Site (near Yellowknife) where the NWT's Chief Public Health Officer has recommended in April 2016 to avoid harvesting berries, mushrooms or other plants, and to avoid fishing and recreational lake use. These areas are shown on the GNWT Health and Social Services website. As new information becomes available, these recommendations may change. A formal human health risk assessment is currently underway and is headed by the Giant Mine Remediation Team.

The City of Yellowknife draws water from Yellowknife River, where arsenic levels are below Health Canada's Guidelines for Drinking Water Quality (10 µg/L). The tap water in the City of Yellowknife, N'dilo and Dettah is safe to drink. Untreated water should not be used as a drinking source anywhere in the NWT because it may be contaminated with germs.

WHAT ARE THE RISKS FROM AIR, SOIL AND SEDIMENT EXPOSURE?

Absorption of arsenic through the skin is very minimal. However, future studies will investigate the type of arsenic in lake sediments and soils in order to help further understand the risks that exist for human health.

Air quality in Yellowknife and the surrounding area is safe and not affected by arsenic levels. Air quality is monitored and information is available to the public through the NWT Air Quality Monitoring Network (<http://aqm.enr.gov.nt.ca>).

The Giant Mine Remediation Project's Air Quality Monitoring Program ensures remediation activities at the mine site do not cause adverse effects to people or the environment. It is anticipated to be in operation for the duration of the remediation project.