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 also 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.

Every Canadian is exposed to some level of arsenic because it occurs naturally in our food and drinks and in the air. Additional exposure can occur through accidental ingestion of contaminated water or soil, but absorption through the skin is minimal. Arsenic is also present in tobacco and is inhaled with cigarette smoke.

HOW DOES ARSENIC AFFECT HUMAN HEALTH?

As far as we know, the human body does not require 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 chemical form, the amount we are exposed to and the duration of exposure. 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 varying amounts in shellfish 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.

If you would like this information in another official language, contact us at 1-855-846-9601.
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ARE TRADITIONAL FOODS SAFE TO EAT AND IS WATER SAFE TO DRINK?

Traditional foods are safe to eat; however it is recommended to avoid harvesting wild edible plants near sites where past industrial activity has occurred. There are also certain areas around the Giant Mine Site (near Yellowknife) where the NWT's Chief Public Health Officer has recommended to avoid harvesting berries, mushrooms or other plants, and to avoid fishing and recreational lake use as part of a precautionary public health advisory (http://www.hss.gov.nt.ca/en/newsroom/arsenic-lake-water-around-yellowknife). These areas are shown on the GNWT Health and Social Services website. As new information becomes available, these recommendations may change.

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 and bioavailability 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. 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.

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