



## Soil, Wild Plants, Mushrooms and Gardening

### 1. What are the health risks associated with exposure to arsenic-containing soil in the Yellowknife region?

A human health and ecological risk assessment<sup>1</sup> looked at arsenic in soil from the City of Yellowknife, Ndilq, Dettah, the Ingraham Trail, and Latham Island. The study looked at several different exposure pathways, and concluded the risk of developing cancer from arsenic exposure was very low for Yellowknife and Dettah residents and low for Ndilq residents.

Areas with high levels of arsenic in surface soil and in lake water are outlined in the “Area of Interest” on the public health advisory map. As a precaution, the Chief Public Health Officer provides advice for land-use activities in this area – see below. Studies are ongoing to determine the potential risks from exposure to soils in this area.

The Chief Public Health Officer will continue to assess new data from research and monitoring work, and will update public health advice as required. As a precautionary measure, people should wash their hands after playing or working outside (e.g. playing in the dirt, gardening) and young children should be discouraged from eating dirt or putting it in their mouths.

### 2. Is it safe to eat wild berries and other plants near Yellowknife, Ndilq, and Dettah?

A human health and ecological risk assessment<sup>1</sup> concluded that eating berries and wild plants harvested from the Yellowknife area does not pose a health risk due to low levels of arsenic in the berries and the amount of berries consumed from those locations.

The public is nonetheless advised to avoid consumption of berries and wild plants harvested from the Area of Interest (shown on the advisory maps), as this area contains water bodies and soils with high levels of arsenic and is near the former Giant Mine and Con Mine sites.

As a general precaution, people should pick berries and wild plants in locations that are well away from historic and current industrial activities and roadways.

### 3. Is it safe to eat mushrooms near Yellowknife, Ndilq and Dettah?

Mushrooms should not be eaten if harvested within 10 km of Giant Mine.

Mushrooms harvested within 10-25 km pose a very low risk from arsenic exposure; however mushrooms from the *Tricholomataceae* family (which includes Tricholoma, Clitocybe and White Matsutake) should not be eaten within 25 km of Giant Mine. These mushrooms tend to build up higher levels of arsenic.

A human health and ecological risk assessment<sup>1</sup> concluded that eating mushrooms harvested further than 25 km from Giant Mine does not pose a significant health risk from exposure to arsenic.

Some mushrooms are unsafe to eat for reasons other than arsenic (e.g. poisonous mushrooms). Mushrooms should only be harvested by or with someone who is experienced in identifying them properly.

#### **4. Is it safe to eat garden vegetables grown near Yellowknife, Ndilᓄ and Dettah?**

There has been no evidence to date that demonstrates garden vegetables grown within the City of Yellowknife, Ndilᓄ and Dettah pose a risk for consumption. A risk assessment<sup>2</sup> was carried out to evaluate the risk from consuming produce from Yellowknife gardens. It was found that although garden vegetables may have arsenic concentrations higher than those bought in the supermarket, there is no significant increase to total daily intake of arsenic, and therefore no significant increased health risk.

As a precaution, imported soil that has been tested for trace metal levels could be used in gardens used to grow produce for consumption. If you are buying soil from a local source provider, inquire whether it is from an area that has been impacted by industrial activities and/or whether the soil has been tested and deemed acceptable for agricultural purposes. Be sure to wash all produce thoroughly prior to eating to remove any soil.

#### **5. Why are soil arsenic levels not displayed on the public health advisory map?**

In 2015-2016, GNWT provided funding to Queen's University<sup>3</sup> to conduct surface soil sampling in the Yellowknife region. Results showed that arsenic levels can be very different in soil samples that are taken from locations very close to each other (e.g. within a few meters). For this reason, it is difficult to draw conclusions about arsenic in soils for a given area, and a challenge to define boundaries. Because of this high variability in soil contaminants results, the Chief Public Health Officer provides general precautionary advice for land-based activities such as gardening, harvesting and recreational activities. For more specific information about arsenic concentrations in Yellowknife surface soil, download the Queen's report from the NWT Geological Survey website (<http://www.nwtgeoscience.ca>).

### **KEY MESSAGES**

- Health risks from exposure to arsenic in soil are very low for Yellowknife and Dettah residents, and low for Ndilᓄ residents.
- It is recommended not to consume berries and other wild plants within the Area of Interest (on the public health advisory map) due to high levels of arsenic in water and in soil. Berries and wild plants should be harvested well away from industrial activities and roadways, as a general principle.

- Mushrooms of any kind should not be consumed within 10 km of the Giant Mine site. Mushrooms from the *Tricholomataceae* family (White Matsutake, Tricholoma, and Clitocybe) should not be consumed within 25 km of the Giant Mine site.
- Soil from the Area of Interest should not be used for gardening. There has been no evidence that shows consumption of garden vegetables from Yellowknife, Ndilo or Dettah poses a health risk.
- As a precaution, imported soil or tested local soil can be used for gardening. Wash all produce to remove soil prior to consumption.

1 – Canada North Environmental Services. (2018). Giant Mine Human Health and Ecological Risk Assessment, Final Report. Prepared for: Public Services and Procurement Canada – Western Region, Project No. 2385.

2 – Environmental Sciences Group, Royal Military College. (2001). Characterization of the Potential Human Health Risk from Consumption of Garden Produce in Yellowknife, N.W.T.

3 – Jamieson, H.E., Maitland, K.M., Oliver, J.T. and M.J. Palmer. (2017). Regional distribution of arsenic in near-surface soils in the Yellowknife area; Northwest Territories Geological Survey, NWT Open File 2017-03 28 p.