Selenium

HIGHLIGHTS

- Selenium is found naturally in the earth's crust.
- Selenium is used mostly in electronic and photocopier components.
- Although selenium is thought to mitigate the toxic action of mercury, high concentrations of selenium have negative health effects.
- As an antioxidant, selenium helps to prevent damage caused by oxygen to the body's tissues.
- Foods that contain selenium include broccoli, onions and whole wheat.
- Selenium is not found in any Yukon country foods at levels of concern.

WHAT IS SELENIUM?

Selenium is widely but unevenly distributed in the earth's crust. It is most often associated with copper ores but may also be found with silver, lead and zinc ores. Organic compounds of selenium may form in plants, fish and animals.

Selenium is used in electronics and photocopiers due to its semiconductive and photoelectric properties. Glass, pigments, rubber, metal alloys, textiles, plastics, photographic emulsions, nutritional supplements, antidandruff shampoo, sheep and cattle feed additives, medical therapeutic agents and petroleum are products that may contain selenium. Broccoli, onions, whole wheat, tomatoes, tuna, bran and wheat germ are natural whole foods containing selenium.

IS SELENIUM TOXIC?

At low levels, selenium is an essential element in the diet. It acts as an antioxidant in the body, helping to prevent damage to tissues by oxygen. Both inorganic (from minerals) and organic (from plants) selenium can be metabolized; however, organic selenium is metabolized more efficiently than inorganic selenium. Selenium can be flushed out of the body to a limited extent through urine, feces and breath.

Because selenium is a micronutrient, a deficiency in the diet may have harmful effects. The reverse is also true: if you ingest, inhale or absorb too much selenium, it can have negative health effects. Short-term low-dose exposure may result in hair loss, muscle discomfort, skin rashes, swelling, nausea and fatigue. Higher short-term doses can lead to fingernail loss, changes in the nervous and circulatory systems and/or possible damage to the liver and kidneys. Long-term chronic high doses of selenium can trigger the build-up of fluid in the lungs and lead to severe bronchitis.

High levels of selenium are known to be toxic to animals; this has been a problem in the Western United States and Canada. Moose in the Yukon have levels of selenium in their organs that would be considered toxic in cattle; this may indicate that moose have adapted to these higher levels. However, selenium levels of concern to humans have not been found in Yukon country foods, including moose.

Selenium is thought to have mitigating effects on the toxic action of mercury, so...
mercury monitoring of Yukon foods has been combined with studies about selenium levels.

WHERE TO FIND MORE INFORMATION ON THE WEB:

- **Health Canada**

- **Environment Canada**
  http://www.chemicalsubstanceschimiques.gc.ca/index-eng.php
  http://www.ec.gc.ca/default.asp?lang=En&n=FD9B0E51-1

- **Indian and Northern Affairs Canada, Northern Contaminants Program**
  www.inac-ainc.gc.ca/ncp/index_e.html

- **Arctic Borderlands Ecological Knowledge Society**
  www.taiga.net

- **Government of Yukon, Environment**
  http://www.environmentyukon.gov.yk.ca/monitoringenvironment/

REFERENCES: