



# RADIONUCLIDES

## ENVIRONMENTAL HEALTH – CONTAMINANTS FACT SHEETS

### WHAT DO WE KNOW ABOUT RADIONUCLIDES?

Radionuclides are substances that release energy called radiation. Some radionuclides are made by humans, such as cesium-137, and others occur naturally, such as potassium-40 and lead-210. Radionuclides can be found everywhere in small amounts and the greatest exposure to radiation comes from naturally occurring radionuclides. These come from the Earth's crust and from cosmic radiation (from outside of Earth's atmosphere).

Man-made radionuclides come from above-ground nuclear weapons testing (which was banned in the 1960's), and from nuclear accidents like Chernobyl (1986) and Fukushima (2011). Radionuclides can travel long distances from where they were released because they are carried in the air.

Natural radionuclide levels can also be increased by human activities, such as uranium mining.

In 1978, the Cosmos 954 satellite crashed into Great Slave Lake and released some radioactivity into the environment. This level of radionuclides was found to not be of concern.

Radionuclides in the air deposit in the ground, where other natural radionuclides are also found. These radionuclides are absorbed and stored in lichen. Caribou then feed on the lichen and store the radionuclides in the body. Caribou have been monitored for radionuclides since the 1960s, when concerns over the high levels of man-made emissions were present. Fortunately, since the 1960s there has been a sharp decline in cesium-137 levels in caribou. Muskoxen were sampled in 1987 and had very low levels of cesium-137 and so it is not a contaminant of concern in this animal. Mountain goats were sampled for radionuclides (2011-2013) and the levels were also very low and not of concern to human health. Another recent study looked at Cesium-137 in beluga and in caribou after the Fukushima nuclear accident occurred in 2011 (in Japan). Levels were low and were not impacted by the incident.

Humans in the Northwest Territories have also been tested for Cesium-137. Levels were high in the 1960's but have dropped drastically, which encourages people that traditional foods are safe to eat.

### HOW DO RADIONUCLIDES AFFECT HUMAN HEALTH?

High levels of radionuclide exposure can damage the cells of the body and cause cancer.

If exposure is severely high, early symptoms can include skin damage, cataracts, and in extreme cases, death. These exposure levels are not what one would find in the NWT.

### ARE TRADITIONAL FOODS SAFE TO EAT?

Traditional foods provide many essential nutrients that can lower the risk of chronic diseases. Marine mammals tend to have the highest levels of POPs, particularly in the fatty

tissues. However, most people do not need to be concerned about contaminated-related effects from traditional food consumption. Generally, the benefits of eating traditional foods outweigh the risks from contaminant exposure.