Report to the Hunters of the Porcupine Caribou – August, 2016

With the help of local hunters we have been taking samples of the Porcupine caribou since 1991. We collect these samples to study changes in the amount of contaminants such as mercury and lead in kidneys of caribou. Starting in 2015, these samples will be tested every year for 'new' contaminants (like stain repellents and flame retardants). One of the things we look for are contaminants carried to the Arctic by wind.

Photo credit: Peter Mather

WHERE IS THIS STUDY BEING DONE?

Samples for this study are collected from Old Crow.

ACTIVITIES IN 2015-16

- Samples from 17 caribou were collected from Old Crow in the fall of 2015.
- Kidneys were analyzed for a range of contaminants, as they are every year.
- Livers are being analyzed for new contaminants.

WHAT WE HAVE LEARNED NEW THIS YEAR

- Arsenic and lead have decreased slightly over time in Porcupine caribou. The decline in lead is likely because North America stopped using leaded gasoline in the early 1990s.
- Mercury is not increasing or decreasing over time; it appears to be cyclic.

Maximum Recommended Consumption of Porcupine Caribou for one adult for one year

	Kidneys	Livers	Muscle
Porcupine Caribou	24	12	All You Want

Tobacco contains much higher levels of cadmium than animal sources. Reducing or eliminating smoking is the most effective way of limiting cadmium intake.

WHAT WE HAVE LEARNED FROM THIS WHOLE PROJECT

- Porcupine caribou are largely free from contamination and are healthy to eat.
- Some caribou have high levels of mercury and cadmium in their organs. Some of the cadmium and mercury occurs naturally in the land, but some is brought here by wind from industry down south.
- Cadmium and mercury in caribou organs fluctuate over time but over the long term are remaining stable.
- The Porcupine caribou do not show high levels of radioactivity due to the nuclear accident at Fukushima, Japan in 2011.
- In the fall, mercury concentrations are higher in cows than in bulls, because cows are smaller and eat proportionally more food, therefore more mercury.
- In the spring, mercury may be lower in cows than in bulls, because some of the mercury is lost to the fetus and through milk production.
- Mercury is generally higher in the spring than the fall, because the caribou eat lichens through the winter which are higher in mercury than their summer foods of grasses and flowering plants.
- Mushrooms may provide a pulse of mercury in the fall, because mushrooms accumulate large amounts of mercury and are a preferred food when they are available.
- Mercury in the Porcupine caribou may be affected by rain, snow, wind, temperature, migration patterns, time of green-up and forage quality as well as mercury emissions coming from industry, forest fires and volcanoes.

We are continuing to monitor contaminants in the Porcupine Caribou to keep track of the amount of mercury in their organs, and to try to better understand how and why mercury accumulates in caribou the way it does.

WHAT CAN WE DO?

Our monitoring program provides evidence for national and international agreements to limit the amount of mercury being deposited into the environment. Continued monitoring will ensure that these environmental controls are adequate to protect Arctic wildlife and that they are implemented effectively.

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