

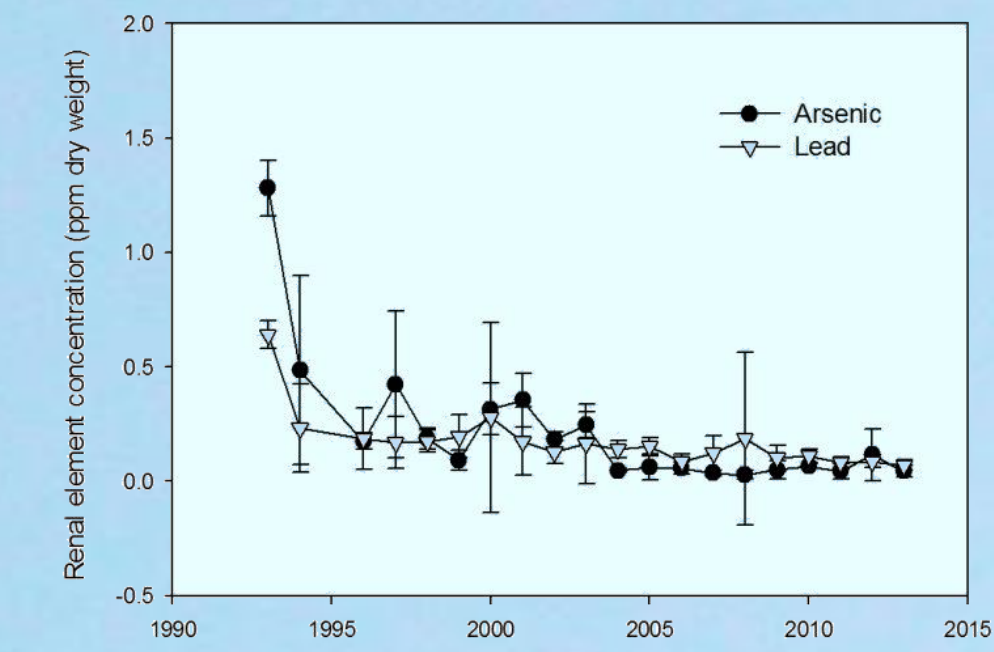
Contaminants in Arctic Caribou

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Porcupine Caribou

Samples were collected from 24 caribou by hunters in Old Crow in the fall of 2013. No samples were collected in 2014 since the herd changed its migration and did not pass through Old Crow. Seven additional archived samples from previous collections were analyzed to fill in data gaps. No cows were sampled, so gender differences were unable to be tested.

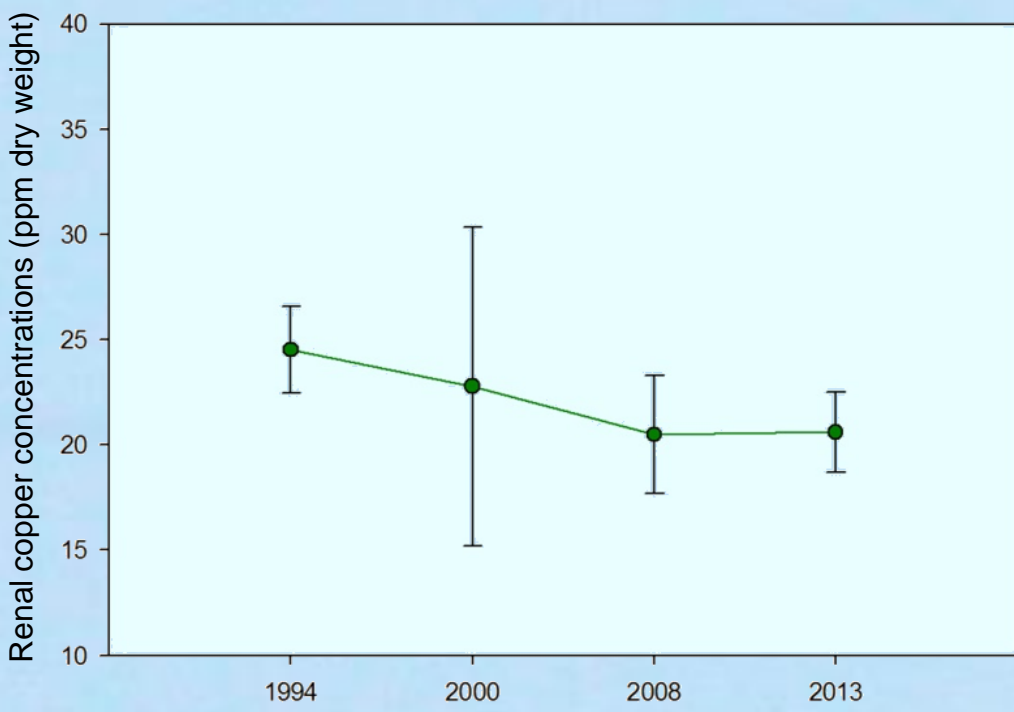


Renal arsenic and lead have declined over time in fall-collected bulls, while none of the other elements studied changed significantly. The declines may reflect reductions in emissions since the shift to unleaded gasoline and away from arsenical pesticides.

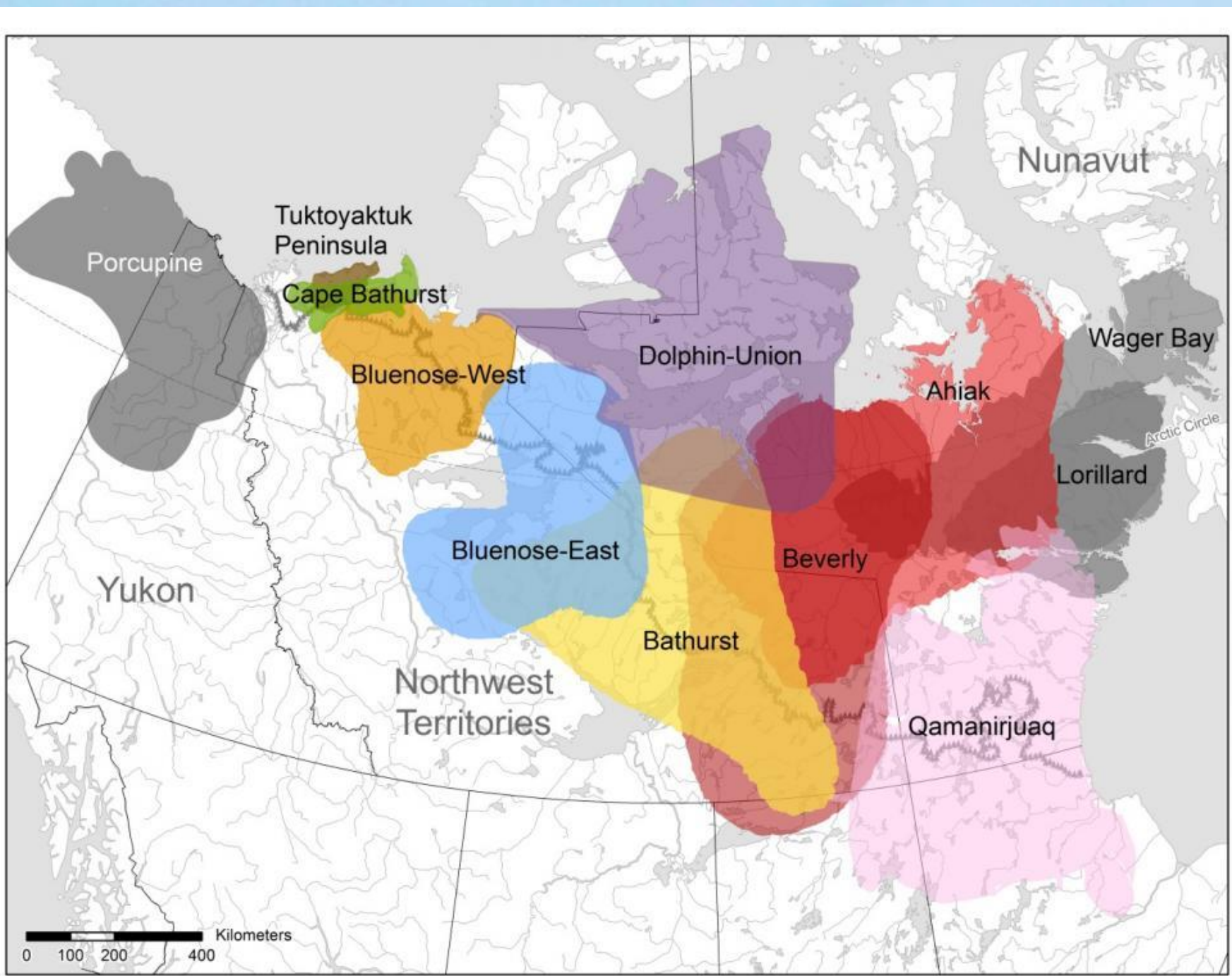
Beverly Caribou

Samples were collected from 16 caribou in the spring of 2013 by GNWT and donated to this program.

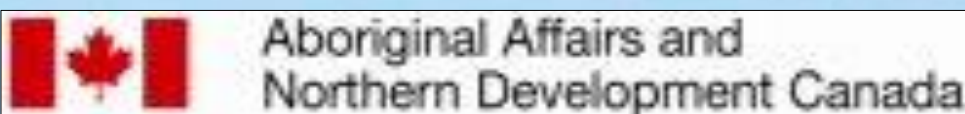
Although renal copper declined over time in spring-collected caribou, the trend was driven by high levels measured in 1994. Levels have not changed significantly since 2000. None of the other elements studied have changed significantly over time.



Cows had higher renal cadmium and lead than males.



Courtesy of GNWT ENR



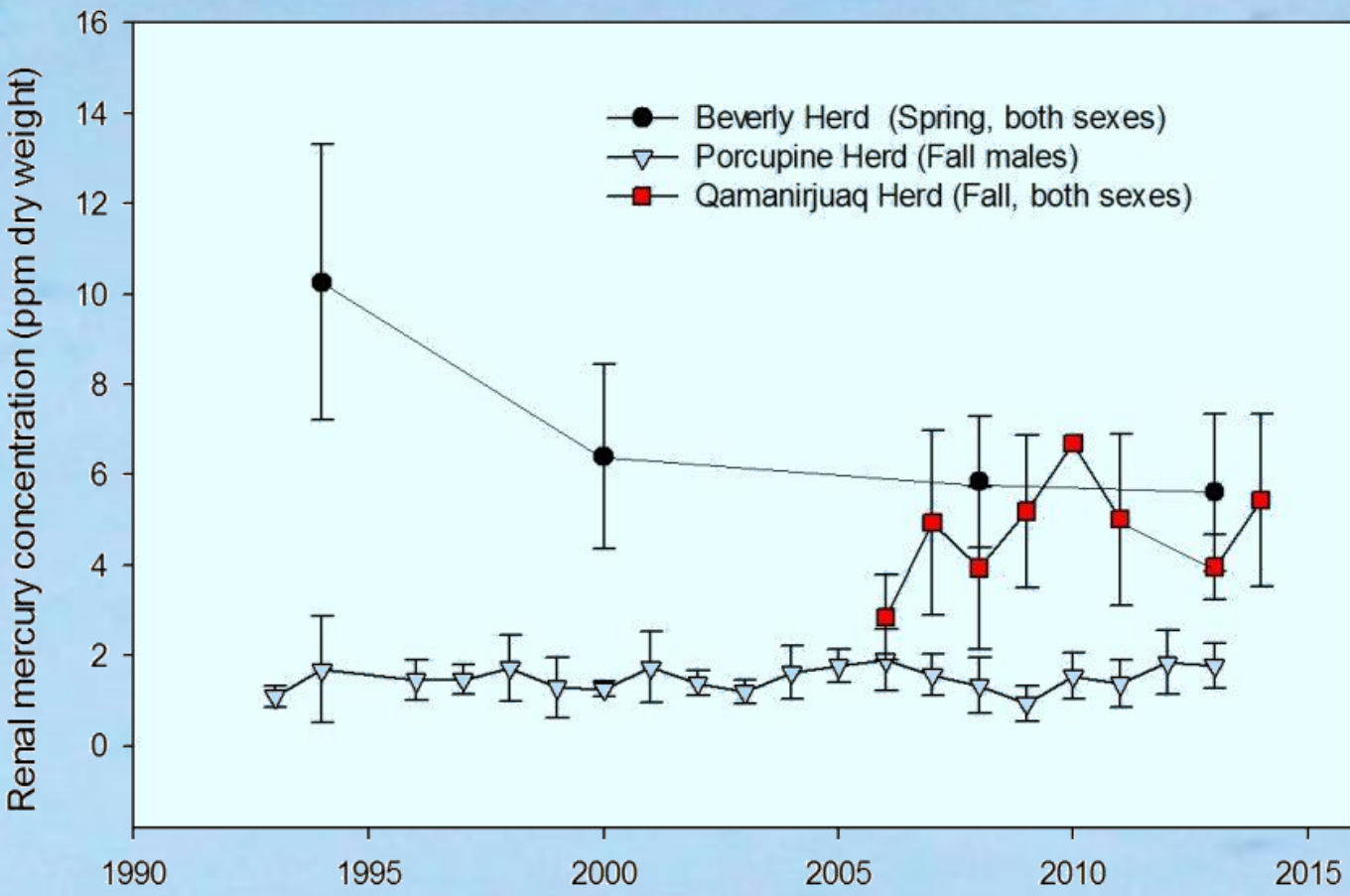
Key Messages

- Levels of most elements measured in caribou tissues are not of concern, although kidney mercury and cadmium concentrations may cause some concern for human health depending on the quantity of organs consumed. Caribou meat (muscle) does not accumulate high levels of contaminants and is a healthy food choice.
- Lead concentrations in the Porcupine and Qamanirjuaq herds are declining over time, likely reflecting reductions in lead in the environment due to the prohibition of the use of leaded gasoline in many parts of the world.
- Mercury in the Porcupine caribou is stable over the long term, but appears to undergo a cycle. More research is required to determine drivers of the cycle. Mercury is also stable in the Beverly and Qamanirjuaq caribou herds.
- Brain and marrow in the Qamanirjuaq caribou herd did not accumulate high levels of toxic elements and are healthy food choices.



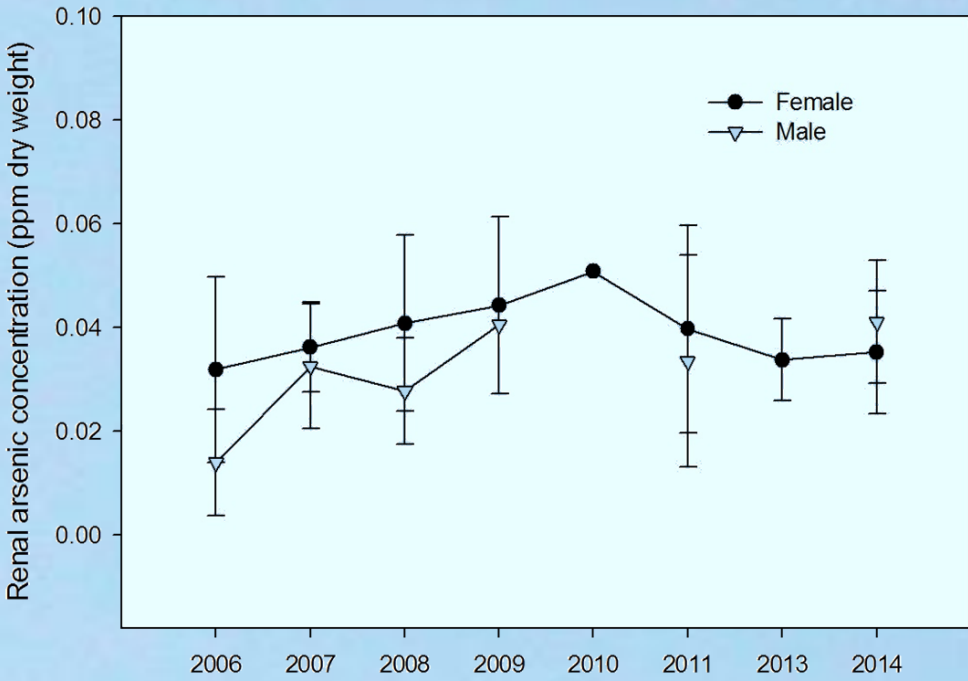
Mercury

Mercury concentrations are higher in the Beverly and Qamanirjuaq caribou than in the Porcupine herd. This could reflect higher mercury levels in lichens from the eastern herds or alternatively an additional source of mercury such as seaweed. Mercury levels in the Qamanirjuaq and Porcupine caribou are not changing over time. Concentrations in the Beverly herd have not changed since 2000.



Qamanirjuaq Caribou

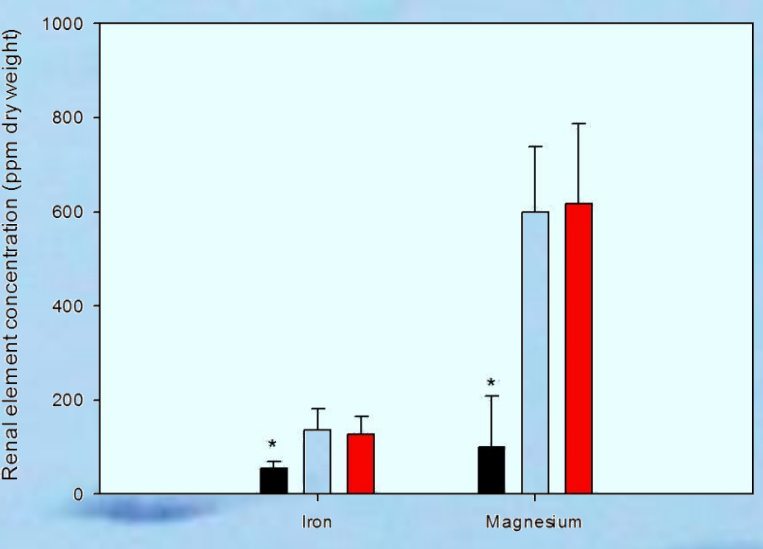
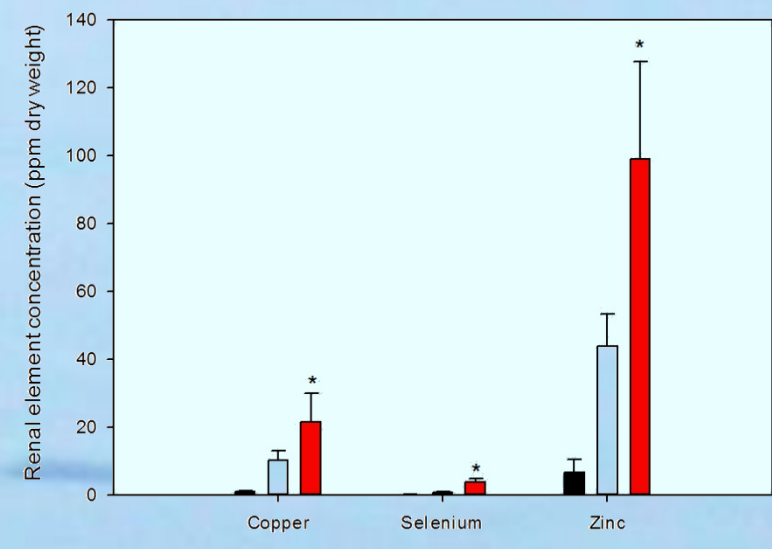
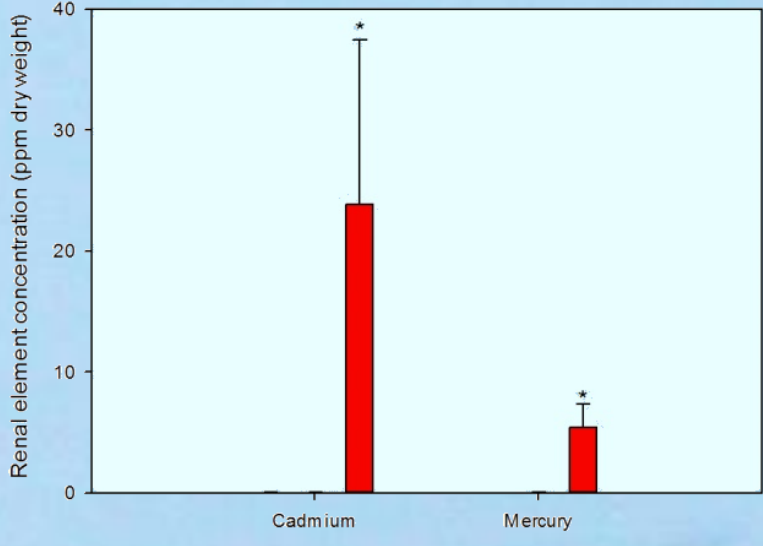
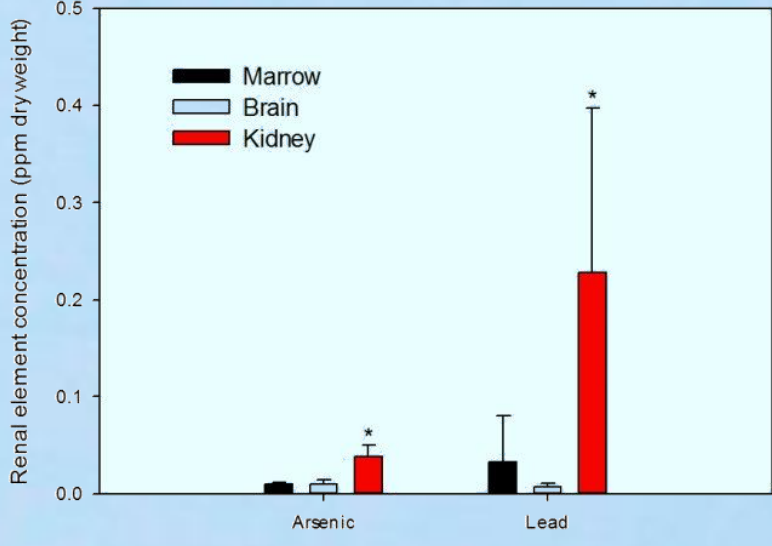
Samples were collected from 4 caribou in the fall of 2013 and from 20 caribou in the fall of 2014. The low number of collections from 2013 was a result of the herd not coming close to communities and coincidental bad weather. In addition to the usual tissues (kidney, liver, muscle and teeth), marrow and brain samples were collected from 10 caribou in 2014 for analysis in response to hunter concerns about these traditional foods.



Renal copper and lead decreased and selenium increased over time. All of these changes were small and likely of little biological significance. Renal cadmium and zinc did not change over time.

Although it appears that renal arsenic has increased over time in bulls, this is an artifact of the minimal number of bulls sampled since 2008. In fact arsenic concentrations in bulls closely follow those in cows which are not changing over time.

Renal arsenic, cadmium and mercury were higher in cows than bulls.



* Indicates a significant difference when compared with the other tissues

Marrow and brain had much lower concentrations of toxic elements (arsenic, lead, cadmium and mercury) than kidney in the Qamanirjuaq caribou. Marrow and brain also had lower levels of copper, selenium and zinc. Brain had similar amounts of iron and magnesium as kidney and both had more than marrow.

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