

Organic Contaminants in Ulukhaktok Male Ringed Seals

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While the concentrations of many organic contaminants have appeared to be decreasing in the Arctic environment over the last few decades, the impacts of climate change may be altering the exposure of contaminants to Arctic animals, particularly marine mammals. In this study we examined the contaminant levels in ringed seals sampled at Ulukhaktok, NT, from 1993-2008. The analysis also looked at factors like age, blubber thickness, and environmental factors such as the length of the open-water season. The levels of many contaminants are dependent upon sex. In this study we used samples taken from male seals only because there were few female samples.

We found that some contaminant levels decreased but others increased over time in male ringed seals. Contaminants that decreased over time tended to be more water-soluble (able to easily dissolve into water). On the other hand, contaminants that increased over time tended to be more water-insoluble (not easily dissolved into water). The length of the open-water season did not appear to affect the contaminant concentrations.

At the same time, we noticed that the blubber thickness of the animals decreased. When we took out the effect of blubber thickness in the analysis, the trends disappeared. Therefore, we believe the declining blubber thickness of the ringed seals may be influencing the trends of the water-insoluble contaminants. These contaminants bind to blubber for a very long time. When a seal becomes skinnier, it loses some of its blubber but not the contaminants that were in the blubber. This raises the concentration of the contaminants.