

Preserving the health of the Arctic

May 3 2013, by Anthony King

Lars-Otto Reiersen is a marine biologist by training, now working as an environmental scientist in Norway. He has led the [Arctic Monitoring and Assessment Programme](#) (AMAP) for over two decades. AMAP advises the governments of eight Arctic countries on issues relating to threats to the region from pollution. As a native of Tromsø in Norway, his "heart is in the north." Here, Reiersen speaks to youris.com about his role in monitoring polluting chemicals as a means to understand their effect on the Arctic environment and its inhabitants.

What is the main issue with contaminants in the Arctic?

Climate change is affecting transport of pollutants and changing precipitation too. As a result, there is remobilisation of contaminants. So when snow and ice melt you release contaminants trapped in the top layers over the last 50 to 60 years. When snow and ice melts faster than it accumulates, you have runoff of stored contaminants that had been trapped in snow and ice. This is something that is ongoing today and will continue.

The trouble is that classical contaminants like persistent [organic compounds](#) degrade slowly; the [cold temperature](#) means this happens even slower in the Arctic. We are talking about PCBs [Polychlorinated biphenyls], the hexachlorocyclohexanes, lindane, all stored in snow. There are also the brominated flame retardants, mercury, lead, and the [radionuclides](#) which fell back to earth after [nuclear testing](#) back in the 1960s. Once remobilised, they become available for [biological systems](#)

and can enter the food chain.

Is the Arctic in any way special in exposure to airborne pollutants?

When we first started, we were surprised to see that people living in a clean environment in the North had high levels of these contaminants. Some of these [persistent organic pollutants](#) and metals like mercury are transported in the atmosphere and in the oceans. The main source of mercury is burning of coal for power, and you have enormous air transport from Europe, North America, and South-East Asia, with the wind blowing to the North. You then have bioaccumulation in the food chain, with contaminants moving from the plankton to fish to whales to the seals that people are eating.

How are people exposed to these harmful chemicals?

The diet people in the North have survived on for thousands of years has been rich in nutrients, energy, vitamins, but you have this Arctic paradox. Many of these contaminants are in the same place as the nutrients, so in the blubber, the muscle and the fat. By eating the healthy stuff you also get the contaminants. That's why we work to get international regulations to reduce the use and emissions of these toxic substances.

Who is responsible for putting the health of Arctic people at risk?

Industrialised countries in Europe, North America and Asia are responsible. That is why we have in place the Stockholm Convention, which tries to regulate the old and new persistent pollutants and reduce emissions. International treaties are important. For example there was

recently an agreement on reducing the use of mercury called the Minamata Convention [named after a Japanese city which suffered severe mercury pollution in the 20th century and supported by the United Nations].

Why do we need new models of air pollution which include climate change?

We have been using climate models and knowledge of chemical behaviour to predict what will happen in the Arctic. The recent ArcRisk research project is important. It will report on the combined effects of climate change and contaminants on human inhabitants of the Arctic, in January 2014, in Tromsø in Norway.

What can readers do about these issues?

People can say we must reduce the production of such chemicals. They can see where any sources are and take action. It is important the public say no to such chemicals.

Provided by Youris.com

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