Communicating Risks About Alaska Natives' Food

The Arctic dilemma is how to raise community interest in pollution research without alarming the community and further eroding the Native cultures.

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What should public health researchers say to the public when low levels of known contaminants are found in locally obtained foods and no viable alternative foods are available? How should communities be encouraged to participate in human sampling studies and health impact assessments, while being assured that their traditional diet is nutritious and safe to eat?

The stage is set

After a long winter of eating dried meat and foods stored from the previous year, the springtime return of waterfowl is the first fresh meat for many Alaska Natives. In addition to hunting adult birds, Alaska Natives collect and eat their eggs as well. Some of these birds, however, have wintered in Asia and Central America on winter fallow fields that were sprayed with herbicides and insecticides. They bring in their bodies a collection of pollutants that may be banned for use in the communities that consume the birds for dinner.

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In the Arctic, fat becomes the currency for survival. Each predator targets the consumption of fat to maximize energy transfer. In this process lipophilic contaminants are passed very efficiently up the food chain and at each trophic level, they are biomagnified due to their persistence as well as their volume of consumption.

The Arctic's cold, extreme light patterns, physical currents, and fat-focused biota all contribute to the continuing movement of persistent organic pollutants (POPs) into and up the food chain—all the way to those Alaskans at the top of the food chain who depend on local resources for their economic and nutritional needs. A growing body of research indicates that the long-term bioaccumulation of mixtures of these POPs, even at low levels, affects health.

Cultural factors

Cross-cultural risk perceptions are key to any communication about potential hazards in the environment. No matter how well science has been able to quantify the exposure to contaminants, it does not resolve the anxiety that arises when people observe an abnormal condition in an animal or plant that they depend on for food and well-being.

Alaska Natives eat 6.5 times as much fish as other Americans and more fat of different types. Under the Marine Mammal Protection Act, Alaska Natives are allowed to hunt marine mammals, which they then eat. Alaska Natives eat higher on the food chain, consuming predator species (seals, bears, and toothed whales), in contrast to the typical American who feeds lower on the food chain, consuming herbivores (pigs, cows, and chickens).

Food is central to culture. Alaska Natives, although sharing different cultural heritages, all believe they are one with their local environment as they consume the foods they gather locally. Their traditions promote social structures that define behavior in the sharing of subsistence harvests, such as through feasts. Children and youth are taught about their environment and about their relationship to the community through hunting, gathering, and sharing. The survival knowledge of the group is passed from generation to generation, ensuring the transmission of language and values. The work of obtaining food is rigorous and promotes self-reliance and self-esteem. For all of these factors, the continued confidence in the quality of locally obtained foods must be preserved.

In regions where employment opportunities are scarce or seasonal, locally obtained foods are not only a cultural but also an economic necessity. Purchased food is expensive and often beyond the budgets of many people. Even when store-bought food is available in remote Alaskan communities, it is frozen, canned, or has had preservatives added to keep it viable. What foods can be purchased are generally less nutritious and healthy than fresh foods that are obtained locally. Pork and beef fats provide fewer health benefits than marine mammal fats and fish oils. Store-bought foods are much higher in processed sugars and simple carbohydrates, both contributors to such conditions as cancer, diabetes, heart disease, and dental caries—conditions growing at alarming rates in Alaska. At the same time there

is little information about the levels of POPs in store-bought foods, so comparative risks cannot be evaluated.

Science-based health interventions assume that some parts of an animal or person can be affected while others are not. In the Native world view, however, any problem is systemic, so the solution must apply to the entire system. For many Alaska Natives, cautions that part of subsistence species, the kidneys or liver for example, should not be eaten, means that the entire animal is not eaten.

Alaska Natives are not close to their land; they perceive themselves as part of it. When people believe they are one with the environment, and the environment is contaminated, they see themselves as contaminated, too. When orcas (killer whales) are reported to be one of the most contaminated animals in the world, Alaska Natives who are members of the Orca Clan conclude that members of the Clan are similarly contaminated, as they live near and eat the same things as the whales.

Risk communication

Risk analysis deals with the statistical probability of an event occurring. The concept of *risk* has no reality for Alaska Native communities in the mathematical context in which environmental health professionals usually use it. This is also true for the word *significant*. To researchers, *significant* is a mathematical construct; to the community it is something noticeable and of concern.

The reports of research in the 1990s on POPs in local foods raised concerns in the northern communities since at the same time there was no similar media mention of the POPs in the foods purchased at the store.

Recent reports on fish advisories dealing with mercury also caused alarm among Alaska Natives. Although most of the consumption is of salmon, which are low in methylmercury, public announcements just said eat no more than two meals of fish a week. The combination of generalized *fish* and broad statements on mercury were alarming, particularly in areas where people get most of their year's food supply as it swims past their community.

The scientific community is faced with a dilemma: saying nothing, due to the lack of certainty and being accused of not caring about Alaska Natives; or stating warnings that could cause alarm and further erode cultural values through the reduced use of local foods that are both nutritious and important to the people for their full well-being.

Working toward solutions

At present, the risk to health of a subsistence diet in Alaska is only theoretical, and the benefits are well documented. Our research needs to address such objectives as establishing and monitoring human tissue trends in organic compound accumulation, subsistence food use, and health effects, both positive and negative. At the same time, researchers must recognize the problems their research can create in subsistence communities. An awareness of Alaska Native cultural values and beliefs is crucial in any work that includes the communication of risk.

The National Science Foundation, the Alaska Federation of Natives, and a number of other groups have adopted guidelines for research in the Arctic. These guidelines are now being incorporated into every institutional review board assessment of new research. The key factor is that research is not to be done by investigators alone; research must be developed in partnership with the community. Samples are to be taken only after there has been discussion and agreement on the process. Data are to come back to the community first, with community educational programs as part of the research process. Until the full scope of the investigation is understood, the community may wait to participate in subsequent research. Any recommendations that deal with local foods must be developed with maximum participation from and in close coordination with the Alaska Native community.

This process may frustrate academic researchers who have to meet publication requirements and the deadlines of federal funding agencies, but awareness is growing about a new way to conduct research in the Far North. Researchers can address the Arctic dilemma and engage Natives. The key to improving health and preserving culture is partnerships with communities that will:

- Respond to the community's concerns by collecting the samples the community targets (rather than samples selected by researchers alone)
- Engage students in the fields of study so that they will be able to conduct their own future research
- Support community-based research initiatives with academic researchers on contract to Tribal organizations
- Provide research results in clear messages with practical recommendations for community action

The solution to the Arctic dilemma is a dynamic shift in the paradigm of how research is done: new information must be gained in partnerships.

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Resources

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