



OPPTS Tribal News

Environmental *VOICES*

Office of Pesticides, Prevention,
and Toxic Substances and
Tribal Environmental
News Exchange

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Featuring Pesticides Programs

Environmental Impacts on Subsistence Foods

Subsistence foods include fish, sea mammals, beavers, bears, deer and moose, plants, and wild rice, and are assumed to make up about 1/3 to 1/2 of a traditional diet. Over the past few years, EPA Region 10 has received reports of tainted subsistence foods, including salmon deformed with tumors, Alaskan fishermen catching infected fish, and seals losing their fur outside of molting season. White sharks, known to be warm water species, have even been seen in Arctic waters.

These reports have caused most to fear that food sources are contaminated with radio nuclides and other toxic chemicals and are, thus, affecting human health, as well as the Native tradition. As a result, EPA has partnered with tribal organizations and members to complete the Traditional Knowledge and Radionuclides Project, featured on page 16 of this issue. This project combines traditional knowledge with western science to measure environmental problems and conduct Arctic research.

The following pages also highlight many other environmental projects that use traditional knowledge and science to focus on environmental topics regarding subsistence foods, including:

- PBTs and other toxic contaminants
- Fish
- Moose and deer
- Wild rice.

Subsistence Foods and Tribal Initiatives

From the Office of Pollution Prevention and Toxics

Indian Township Studies Cadmium Levels in Moose and Deer

By Trevor White, Indian Township Environmental Department

With funds from U.S. EPA Region 1, the Passamaquoddy Indian Township Environmental Department started a successful project this summer with the local Passamaquoddy and Penobscot Indian Tribes to study cadmium levels in moose and deer livers, popular food sources for local members. The study will address reports that moose and deer livers suffered from unsightly lesions and were very friable to the touch and that a current state advisory warned hunters to limit their intake of deer livers and not to consume moose livers at all because of increased cadmium concentrations.

The advisory was based on a 1980 study that recorded high cadmium levels of 25µg/gram of dry weight in moose kidneys and 5µg/gram of dry weight in moose livers. According to the National Academy of Sciences, the acceptable daily intake of cadmium is 300 µg/day, and in comparison, current analytical data suggests that human consumption of moose kidney and possibly moose liver during an average meal may be enough to cause adverse gastro-responses.

Although some believe that moose and deer livers are not popular food sources, a telephone study in an Indian Township revealed that 15 out of 17 tribal families consumed deer liver and that 14 out of 17 fami-



Cadmium is a heavy metal that is profoundly toxic. Signs of cadmium poisoning include diarrhea, nausea, vomiting, abdominal pains, cramps, salivation, and organ destruction. Chronic cadmium exposure results in kidney failure, anemia, and bone disorders.

lies consumed moose liver. All 17 families valued the tradition of eating the subsistence foods, and 12 out of 17 families continue to eat moose or deer liver. In fact, one tribal member declared "we always eat the liver first... I even take a bite of the raw liver when I first take it from the moose. It's always been done that way; its tradition."

With this obvious need to study the cadmium content of moose livers, the Environmental Department designed the study to determine if cadmium levels in moose and deer livers are significantly different than those obtained in 1980 and to study any geographic significance in the cadmium levels of individual animals, specifically in Western Maine compared to Eastern

Maine. Researchers will also use the incisor tooth to determine if cadmium levels directly correspond to the age of the animal.

Moose livers and teeth were collected by tribal hunters, and with a 90% success rate, the department has received 37 moose livers and 8 deer livers from Passamaquoddy Lands and 25 livers from the Penobscot Lands since September. With analysis of cadmium levels in the collected samples, the Passamaquoddy Environmental Department will educate tribal council and members of the risks

Richard Stevens, Governor of the Passamaquoddy Tribe at Indian Township, believes that "...this study is very important to the Tribe, both scientifically and culturally...it will help us understand the way modern society impacts traditional ways of deriving sustenance and helps us protect our greatest resource, our people".

associated with eating moose and deer livers and acceptable consumption levels according to age, sex, size and location.