



Bulletin No. 6

February 28, 1990

Summary of Findings of Toxicological Expert Committee
for Evaluating Data Related to the Consumption of
Marine Subsistence Foods (EXXON VALDEZ Oil Spill)
Seattle, Washington - February 21-22, 1990
Prompt Action Saves Lives

• **Based on all available knowledge of crude oil, sampling results, toxicology, biochemistry, and epidemiology, are Alaskan subsistence foods safe for human consumption?**

Three hundred sixty-five analyses from 548 samples of Alaskan fish and shellfish have been completed by the National Marine Fisheries Service, Environmental Conservation Division. Based upon available data and cumulative scientific knowledge, and consistent with the conclusions reached earlier, finfish are safe for human consumption. Levels of aromatic hydrocarbons found in finfish are very low and are similar to levels in fish from areas unaffected by the oil spill.

Specimens of mollusks taken from heavily oil-contaminated beaches (for example, Windy Bay) showed high levels of aromatic hydrocarbons. Shellfish tested from less impacted beaches, such as Chenega Bay and Old Harbor, showed the presence of aromatic hydrocarbons in higher concentrations than found in uncontaminated areas but at levels that are not considered to represent a serious health hazard. If mollusks are consumed, they should not be collected from areas that are obviously contaminated with oil.

Note: The Alaska Division of Public Health and Alaska Department of Environmental Conservation (ADEC) for many years have advised that bivalve mollusks should not be collected from Alaskan beaches because of the dangers from paralytic shellfish poisoning (PSP). PSP represents the greatest danger from eating bivalve mollusks. Commercially collected clams and mussels are routinely tested for PSP and are safe for consumption.

• **Will components of weathered crude oil persist or bioaccumulate?**

Because finfish metabolize crude oil contaminants more rapidly than bivalves, they do not accumulate significant aromatic hydrocarbons in their muscle tissue.

Bivalve mollusks (clams and mussels, for example) metabolize the crude oil contaminants at a much slower rate than fish and are therefore much more likely to bioaccumulate. Further sampling will be done in the spring of 1990 to document levels of aromatic hydrocarbons in mollusks and fish.

• **Can we expect to see any acute or chronic illness in those eating subsistence foods?**

No acute effects have been seen in the eleven months since the spill. Risk of chronic illness from exposure to aromatic hydrocarbons due to the oil spill in food cannot be said to be zero, but the contribution to levels of aromatic hydrocarbons in food not obviously contaminated with oil as a result of the oil spill are so low as to constitute no basis for public health concern.

• **Laboratory - Are aromatic hydrocarbons an adequate marker to reflect exposure and contamination of marine foods?**

Yes, aromatic hydrocarbons are a good indicator of the presence of crude oil. Dibenzothiophenes are characteristic of crude oils.

• **How do levels of PAHs compare to other finfish tested?**

Two samples of subsistence smoked salmon prepared in a traditional manner contained 8,170 and 22,400 ppb of total aromatic hydrocarbons, respectively. By comparison, levels of total aromatic hydrocarbons found in finfish thus far are generally very low (less than 15 ppb) and are not significantly greater than in the non-polluted areas tested. Less than 1% of fish tested had levels of total aromatic hydrocarbons slightly in excess of 100 ppb.

• **Any restrictions on amounts that can be eaten?**

None for fish and none for mollusks taken from beaches that have not been obviously contaminated with oil.

• **What do we believe will be the long-term fate of crude oil?**

The oil will be biodegraded eventually; however, pockets of oil in various forms exist throughout the area. As finfish move into shallow areas, water turbulence and their exposure may increase, resulting in higher levels in bile and tissue. Therefore, continued monitoring of these fish is necessary to document levels.

• **Can recommendations be made only for areas sampled or can they apply to all areas?**

It is impossible to provide individual recommendations for specific beaches or harvest areas. Results available from samples collected combined with available scientific knowledge provide the best information upon which to base general recommendations that apply to all areas impacted by the oil spill.

• **Are there levels of aromatic hydrocarbons that are considered to be safe for human consumption?**

There are no established guidelines for acceptable levels of aromatic hydrocarbons in foods. Aromatic hydrocarbons are ubiquitous. They are present in many foods routinely consumed, including cooked and smoked meats and fish, grains and cereal products, and fruits and vegetables.

- **Is there any way to test for human exposure?**

There are no feasible tests that are available to test for or monitor human exposure to aromatic hydrocarbons or other components of crude oil.

- **Are there specific ways that concerned Alaskan villagers can reduce their potential risk?**

Any risk of adverse health effects as a result of the oil spill from consumption of Alaskan fish and shellfish is very small. Villagers should rely on common sense and their own judgment to avoid collecting foods from areas obviously impacted by oil. In addition, individuals should decide based on the appearance, smell, texture, and taste of subsistence foods. If food is of doubtful quality, it should not be consumed.

- **What additional studies need to be done?**

1. Monitoring mollusks especially from heavily impacted areas such as Windy Bay, and less heavily impacted areas such as Chenega Bay, Kodiak Harbor, and Old Harbor; and monitoring fish, especially bottomfish, to document that levels have not increased over time. Appropriate control specimens should be included.
2. Two smoked salmon samples have thus far been tested, and more samples are needed
3. Testing of mollusks from impacted areas for heavy metals and polar organic compounds
4. Test hepatopancreas and corresponding edible tissue of crab for aromatic hydrocarbons
5. Sampling and testing of marine mammals that are part of the subsistence diet.

- **The Need for a Clearinghouse**

Because of the lack of historical information on oil spills and human health, a clearinghouse should be established to serve as a repository for data sets, clinical and epidemiological studies, and information on food safety related to petroleum and its impact on human health. The committee recommends that NOAA resources be used to implement this recommendation.

- **A Need for a Workshop**

Based upon experiences garnered from the Alaska oil spill, a workshop should be held to identify: 1) continuing gaps in scientific data, 2) the issues related to human health concerns and, 3) strategies to respond to future oil spills. The committee recommends that NOAA resources be used to implement this recommendation.