

## ACKNOWLEDGMENTS

This study was conducted by the U.S. Environmental Protection Agency (USEPA), Office of Water's Office of Science and Technology (OW-OST), through an InterAgency Agreement with the Department of Interior, Minerals Management Service (IAG No. DW14937850-01-0, May 1, 1997). The USEPA Work Assignment Manager for this study was Mr. Jeffrey Bigler. Sample collection for the study was conducted by Arthur D. Little, Inc. Representatives from the villages of Nanwalek, Port Graham, Seldovia, and Tyonek assisted in the study design and field collection activities. Laboratory oversight was provided by Ecology & Environment, Inc. Data QA review was provided by DynCorp. A draft risk assessment was prepared by EVS Environment Consultants (EVS) under contract to Tetra Tech, Inc. The EVS Project Manager for that project was Dr. Steve Ellis.

This study was designed and conducted because local Tribal residents in Kachemak Bay and Cook Inlet contested renewal of the oil and gas industry's NPDES discharge permit. The NPDES discharge permit allows the oil and gas industry in Cook Inlet a waiver to the national zero discharge law on the assumption that discharges have no adverse effect on traditionally harvested foods. The Kachemak Bay and Cook Inlet Tribes worked very hard to get the attention of OW-OST, to make the study happen and to ensure that it was as meaningful as possible.

The current report which presents a summary of the data was prepared by Dr. Roseanne Lorenzana, D.V.M., Ph.D., EPA Region 10, Office of Environmental Assessment. Dr. Patricia Cirone provided editorial review.

## EXECUTIVE SUMMARY

These data were collected by EPA Office of Water (OW), Office of Science and Technology with assistance from Port Graham and Nanwalek Tribal residents and professional staff. Field sampling was conducted between June 5 and July 24, 1997. This report is a summary of the data, only. For chemical concentrations which were detected, the average, maximum and minimum values are presented. The individual data on an accompanying compact disk (Appendix C).

A total of 81 tissue samples comprised of seven fish species, eight invertebrates and three plant species were sampled and analyzed for concentrations of 161 chemicals. These results provide a good survey data set for environmental chemicals present in uncooked, whole body tissues samples of these Cook Inlet biota. There were detections of global contaminants: mercury, organochlorine pesticides, and PCB congeners. On the other hand, there was minimal detection of another ubiquitous contaminant group, dioxins and furans. In the 81 tissue samples analyzed for dioxin and furan congeners, only one type of dioxin, OCDD, was detected in one duplicate chinook salmon sample (13 ppt). Detectable concentrations of dioxins and furans were not found in other Cook Inlet tissue samples. The detection of many individual PAH compounds in the Cook Inlet tissue samples may have resulted from the use of very sensitive methods. Approximately one-half of the 104 individual PAHs were detected in fish, invertebrate and plant samples. Chinook tissue samples had the highest total average PAH concentration (253 ppb).

The biota species which were sampled, the size of the biota and the harvest locations were intended to represent those traditionally used by members of the four Alaskan tribal villages of Tyonek, Seldovia, Port Graham and Nanwalek. However, all possible harvest sites were not evaluated. And, not all fish, invertebrate and plant species consumed in a traditional diet were included in this survey. It is unlikely that this one-time sampling is representative of contaminant concentrations in these species over the entire lifetime of a human who consumes these species.

Whole-body samples such as these are representative of exposures to the biota, itself, or predators that consume the whole body. Combining several individuals into a single sample (composite sample) precluded the availability of chemical concentration data for individual fish, invertebrate or plant samples. These data contain no definitive information to distinguish wild versus hatchery or pen-raised fish.

The sensitivity of the analytical methods used in this study should be carefully considered when using these data. In some cases, the methods were more sensitive than data sets for other comparable fish samples (e.g. polycyclic aromatic hydrocarbons). But, there were also cases in which the methods were less sensitive than other data sets (e.g. dioxins and furans). Information on the sensitivity of method is provided in Appendix C.

Comparisons were made with market basket food contaminant data published elsewhere and with Columbia River (Washington, Oregon USA) fish contaminant data. With few exceptions, contaminant concentrations in Cook Inlet area species were similar or lower.