

THE CAPE ROMANZOF CONTAMINANT MIGRATION AND SUBSISTENCE RECEPTOR STUDY

A COOPERATIVE PROJECT WITH YKHC, USAF, AND THE VILLAGES OF CHEVAK, SCAMMON BAY, PAIMIUT, AND HOOPER BAY

OBJECTIVES

There are two primary objectives for this project: (1) determine if site-related chemicals are present in fish, mammals, shellfish, and other ecological receptors at Cape Romanzof LRRS at concentrations that may pose unacceptable risk to humans consuming contaminated biota, and (2) determine if site-related contaminants pose unacceptable risk to ecological receptors that frequent Cape Romanzof LRRS and surrounding areas by direct contact with soil, sediment, and surface water and exposure via ingestion of water, soil, sediment, or contaminated biota. Contaminant residue levels in tissues of ecological receptors will be used to evaluate contaminant bioavailability, transport, and potential adverse effects to human health and the environment.

Target Species

The media and species were selected to determine if: (1) contaminants are transported from the site, (2) are accumulating in the food web, and (3) are affecting the people in the region who consume these species as part of their subsistence diet.

The media includes freshwater, brackish, and marine waters. Sediment samples include those found in freshwater creeks, brackish ponds and rivers, bays, and shoreline samples in the Bering Sea. Biological organisms are as follows:

Common Name	Scientific Name	Sample	Analytes
Blue mussel	<i>Mytilus edulis</i>	3 groups of 50 individuals per sample	PAHs, OCs, PCBs, Trace Metals
Alaska razor	<i>Siliqua alta</i>	5 samples of 50 individuals per sample	PAHs, OCs, PCBs, Trace Metals
Chitons	Chitons (to be identified).	3 groups of 50 individuals per sample	PAHs, OCs, PCBs, Trace Metals
Tomcod	<i>Eleginus gracilis</i>	24 liver 24 whole body - liver	PAHs, OCs, PCBs, Trace Metals PAHs, OCs, PCBs, Trace Metals
Herring Roe & Kelp	<i>Clupea pallasii</i> Kelp (to be identified)	3 groups of 500 gms of eggs 3 groups of 1 kg of kelp stripped of eggs	PAHs, OCs, PCBs PAHs, OCs, PCBs
Ringed seals	<i>Phoca hispida</i>	6 samples blubber 6 samples liver	PAHs, OCs, PCBs PAHs, OCs, PCBs, Trace Metals
Spotted seals	<i>Phoca largha</i>	6 samples blubber 6 samples liver	PAHs, OCs, PCBs PAHs, OCs, PCBs, Trace Metals
Beaver	<i>Castor canadensis</i>	15 samples liver 15 samples 50 gm muscle	PAHs, OCs, PCBs PAHs, OCs, PCBs
Plants	To be identified	3 samples of 1 kg cleaned plants per species	PAHs, OCs, PCBs, Trace Metals
Bering Cisco whitefish	<i>Coregonus laurettae</i>	24 whole fish	PAHs, OCs, PCBs
Alaska Blackfish	<i>Dallia pectoralis</i>	24 whole fish	PAHs, OCs, PCBs
Dolly varden	<i>Salvelinus malma</i>	12 whole fish	PAHs, OCs, PCBs
Burbot	<i>Lota lota</i>	?	PAHs, OCs, PCBs

Analysis

- 1) Sediment, water, shellfish, herring roe & kelp, fish, beavers, plants, and seal samples will be sent to B&B Laboratory (College Station, Texas) for analysis of PAHs, Organochlorine pesticides, PCBs, and trace metals.
- 2) Samples of sediments and one-liter water samples will be sent to CT&E (Anchorage) for analysis of diesel range organics using the AK102 methodology.

