

Hydrocarbon Toxicity

FACT SHEET

Overview

Through our Hydrocarbon Toxicity project, we research and address the gaps in knowledge regarding chronic toxic effects of oil, dispersed oil and in-situ burn (burning spilled oil) residue under study conditions similar to the cold marine waters in our region.

The biggest data gap is at the chronic level instead of the acute level. We have been looking recently at the components that are most involved in chronic effects. These are:

- Polynuclear aromatic hydrocarbons (PAH) - a class of hydrocarbon compounds
- Water accommodated fraction (WAF) - the mix of water and hydrocarbons resulting from oil naturally dispersing in water
- Chemically-enhanced water accommodated fractions (CWAF) – the mix of water and hydrocarbons resulting from chemically dispersed oil in water.

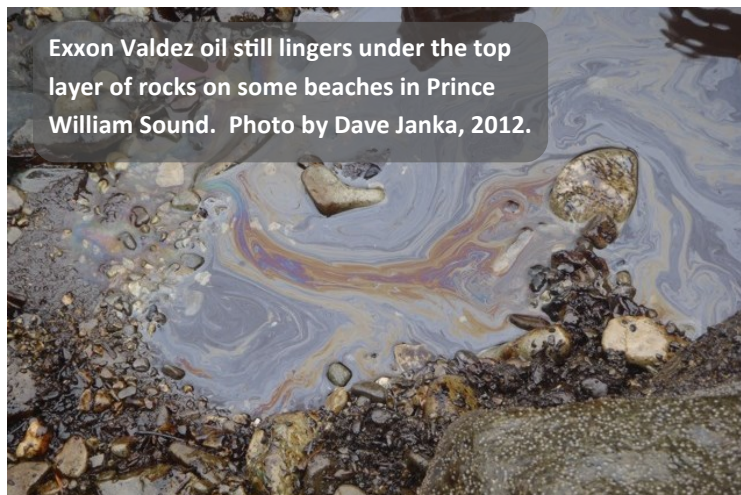
These materials are included on the Environmental Protection Agency's lists of compounds that have been identified as chemical pollutants.

The data from this project will be of important use to our long term environmental monitoring and dispersants projects. We hope to enhance our understanding of the major classes of compounds that result from spilled oil and the in-situ burning process.

We will be testing to determine the chronic toxicity of these substances and evaluate how they behave in a dispersant and oil mixture. We will be working to identify appropriate

We are currently funding two separate areas of the research through this project.

1. A group effort between the Canadian Department of Fisheries, Queens University and the U.S. Environmental Protection Agency are using 5-6 classic bio-indicators. These indicators were previously used more in acute toxicity testing. These efforts are looking at chronic toxicity.
2. The National Oceanic and Atmospheric Administration's Auke Bay Lab has been using state of the art analytical techniques to show immediate physiological



biomarkers for testing chronic toxicity derived from crude oil hydrocarbons.

The work will also involve a literature survey on the polar PAH related fraction in Alaska North Slope crude oil and the toxicological and associated endocrine disruption issues.

This project will ultimately help improve decision-making for oil spill responders.

(and behavioral) changes. They are also looking at relating those changes to genetic impacts on Cytochrome P450 a1a, an enzyme that helps break down organic substances, such as hydrocarbons, in cells.

NOAA's current work plan will be completed in 2013, with plans for follow-up genomics work done the next year. The follow-up work will compare next generation genetic biomarkers in Pacific Herring and Pink Salmon with present-day biomarkers determined during the current experiments.

This project is part of the work of the council's Scientific Advisory Committee. For more information, contact council project manager, Joe Banta, banta@pwsrccac.org. On the web: www.pwsrccac.org

Prince William Sound Regional Citizens' Advisory Council ~ Citizens promoting environmentally safe operation of the Alyeska terminal and associated tankers.



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