

**Oil Spill Research and Development Projects
Recommended by the
Pacific States/British Columbia Oil Spill Task Force
February, 2002**

I. Higher Priority Research Recommendations:

Pipeline repair: Following the Trans-Alaska Pipeline System (TAPS) bullet hole spill and subsequent response, the need for improved technologies for emergency pipeline repair (especially in high pressure, hazardous environment situations) became apparent. (Primary agency contact: Alaska Department of Environmental Conservation)

Dispersants:

- Cold-water dispersant effectiveness: Research dispersant effectiveness under cold-water conditions to provide a more environmentally realistic evaluation compared to available laboratory studies. (Primary agency contact: Alaska Department of Environmental Conservation)

- Effects of Dispersants on Salmonid Smolts - Develop an exposure apparatus for salmon and steelhead smolt and examine the impacts to these species from real world exposure periods and concentrations of dispersants and dispersed oil. The exposure protocol would be similar to that used during the Office of Spill Prevention and Response (OSPR) research program to study the impacts of dispersants and dispersed oil on selected planktonic organisms. The investigation would look at both lethal and sublethal end points associated with exposure to dispersants and both fresh and weathered crude oil. During a Section 7 consultation meeting with the National Marine Fisheries Service (NMFS) concerning dispersant use in the waters off California, one of the first questions asked by NMFS was, what effect does dispersants and dispersed oil have on salmon and steelhead smolt? This is a question that the OSPR research program was beginning to address when the research program was eliminated. The research topic was considered to be important an issue to investigate due to the presence of salmon and steelhead on the endangered species list, the lack of information on the topic in the literature, and any use of dispersants in near shore waters during smolt migration season could pose a threat to both species of smolt. Further, the NMFS has made it clear that they would require information of the effect of dispersants and dispersed oil on smolt in a Section 7 consultation for dispersant use in State waters (waters from 0 to 3miles offshore). This research would also benefit Alaska, Washington, and Oregon. (Primary agency contact: California Office of Spill Prevention and Response)

Tundra treatment techniques: The initial Alaska Tundra Treatment Guidelines document was produced in 2001. Additional research is warranted to validate the procedures in the document, including case studies of past spills which have impacted the tundra, documentation of re-growth in impacted areas and analysis of soil samples at previous spill sites. The continual refinement of cleanup thresholds is envisioned based on new data from spills of opportunity. Developing standard sampling protocols for each of the three major contaminants would also be included. Research should also focus on whether such treatment techniques are transferable to wetlands and alpine areas in other locations. (Primary agency contact: Alaska Department of Environmental Conservation)

II. Recommendations for additional or ongoing oil spill R&D:

Management of oily wastes in remote locations: Marine oil spills May require management of oily wastes collected in remote shorelines. We recommend further development of simple, (low-tech), and environmentally-sound treatments of oily wastes by:

- forced air-curtains to burn piled oiled woody/organic debris on a beach (effectiveness, technological requirements, emissions)
- bioremediation of collected oiled organics (wood, algae) using temporary land-sites or large barges as platforms (effectiveness, residues, technological requirements).

In addition to oil spills, some of our member jurisdictions are plagued by discarded fishing vessels and other commercial vessels found abandoned on beaches, many of which are contaminated by oily wastes. Often the full cost of removal is a government responsibility. Further development of effective waste treatment technologies would help reduce those costs. (Primary agency contact: BC Ministry of Water, Land, and Air Protection)

In situ burning of oil spills in broken ice: Conduct field or laboratory tests of in situ burning of oil in Arctic waters. Tests should evaluate the ignitability and combustion efficiency of oil in various states of weathering in broken ice and cold water conditions. The principle objective should be to measure the efficacy and specific conditions needed for successful burning. (Primary agency contact: Alaska Department of Environmental Conservation)

Viscous crude oil pumping and storage: Building upon previous work, research techniques for recovery, storage and pumping of recovered cold viscous crude oil and emulsions. Investigations could include further work on testing different methods and products for annular injection to enhance pumping and reduce fluid viscosity. (Primary agency contact: Alaska Department of Environmental Conservation)

Heavy fuel oil transfer and storage: Like the pumping of cold crude oil and emulsion, the lightering of heavy fuel oils has been shown to be a major spill response concern during a large vessel grounding such as the New Carissa or M/V Kuroshima . The window of opportunity for lightering grounded vessels may be very small, especially if the vessel loses power and therefore its ability to keep the oil heated and in a fluid state. Further research into heavy oil transfer and storage technologies could improve these efforts in the future. (Primary agency contact: Alaska Department of Environmental Conservation)

Sonic Bird Hazing Research: Evaluate the effectiveness of new spill response bird hazing sonic bouys technology. Two manufacturers of sonic bouys claim the ability of the devices to deter waterbirds from approaching oil spills. Given the substantial costs associated with addressing oiled wildlife, these devices could be extremely cost effective by reducing wildlife casualties. OSPR has initiated controlled field studies to evaluate the efficacy of the equipment which has shown promise in selected applications/habitats. Additional studies are needed to determine if this equipment should be made a standard part of response equipment for West Coast OSROs. (Primary agency contact: California Office of Spill Prevention and Response)

Marine Resources At Risk Mapping: NOAA oil spill response/ ESI (geomorphology/natural resources) maps are a critical tool in oil spill response planning and spill response yet no coordinated program exists to ensure the accuracy of the marine wildlife resources shown on the maps. Since marine birds and mammals are likely to be the most visible casualties of oil spills, it is essential that response agencies, industry and OSROs have current information on the locations of the primary bird colonies and mammal rookeries. Aerial surveys utilizing photo documentation should be conducted every 2-3 years throughout the west coast to update the ESI maps. Reliable/consistent funding source is needed to ensure the completion and updating of this work. (Primary agency contact: California Office of Spill Prevention and Response)

Natural Resource Damage Assessment Research Recommendations

Automated Wildlife Search and Collection Procedure: The goal of the project would be to develop an automated process for the collection, assessment, categorization and reporting of injured wildlife search and collection data. Specific objectives would to (1) develop a hand-held miniature computer and GPS unit that can be taken into the field and used by search and collections teams to record required information (currently this is being done with paper records); (2) develop appropriate software to manage and assess the collected data; (3) develop an electronic Chain-of-Custody protocol; (4) develop an electronic tracking system for oiled wildlife submitted for rehabilitation; (5) incorporate download electronic data into routine forms used in the intake and processing of oiled wildlife; (6) develop a real-time information link for IC, Wildlife Search and Collection Coordinator, Spill Response Coordinator and Wildlife Operations Branch Chief. (Primary agency contact: California Office of Spill Prevention and Response)

Bird Deposition Study

Many oil spills result in dead seabirds. Because not all impacted seabirds are recovered, the actual number impacted must be estimated from the birds that are found. One area that causes uncertainty in injury assessment is the deposition rate of oiled birds in the vicinity of reflective beaches (i.e. cliffs and bluffs that are swept at high tide or all the time). These birds may become beat up in the surf and sink, they may be driven by currents to adjacent sandy beaches, they may strand and be washed out to sea, or they may potentially rewash on adjacent beaches. This study will examine the fate of such birds through experimentation at beaches with varying characteristics. (Primary agency contact: California Office of Spill Prevention and Response)

Restoration Meta-Analysis of Ecological Benefits and Financial Costs

The rise in the use of Habitat and Resource Equivalency Analysis (HEA and REA) has aided greatly in allowing RP's and Trustees to quantify resource injuries and calculate appropriate restoration. However, this method places a premium on information regarding restoration projects. Such information regarding the ecological benefits (both in degree and duration) and the costs of the projects is widely scattered and difficult to obtain. This project would collate and centralize available data , summarizing it in a single document. Projects will be looked at according to the various habitat types they benefit (e.g., saltmarsh, freshwater wetlands, riparian corridors, instream biota-- high and low gradient). (Primary agency contact: California Office of Spill Prevention and Response)

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