



## Alaska Department of Environmental Conservation

# Oil Spill Dispersant Fact Sheet

### *What are Dispersants?*

Dispersants are oil spill response tools that may be considered for use when mechanical equipment, such as containment boom, sorbents, and skimmers are unable to effectively remove free oil from water surfaces in a timely manner. These chemical mixtures break slicks into tiny droplets that entrain and diffuse into the water column, using wave, wind, and/or tidal energy. These tiny droplets have increased surface-to-volume ratios and can be dissolved, digested, or broken down by natural processes such as biodegradation, photodegradation, and reduction/oxidation to form less stable compounds. Therefore, dispersants do not immediately reduce the amount of oil in the environment, but change its distribution, persistence, and potential effects. Droplets less than 70 microns in diameter stay suspended, whereas larger droplets may resurface. This reduces the risk of oil stranding upon environmentally sensitive areas, such as estuaries, shorelines, haul-outs, rookeries, nearshore and intertidal areas.

### *Why are they used?*

Dispersants are not considered to be a primary response tool because the primary goal is to recover and remove oil from the environment. When this becomes unfeasible, dispersants are one of many non-mechanical response options that may be considered. They redistribute the location of toxic compounds from the surface to subsurface and produce a short-term toxicity spike, but significantly reduce the persistence of toxic compounds. Since mechanical recovery has many limitations, it is not always practical or effective. In fact, less than 20% of

crude oil is typically recovered from large, marine spills by mechanical recovery methods. Therefore, other response tools are considered when mechanical recovery becomes impractical or insufficient.

Environmental trade-offs are analyzed when dispersant use is considered. If favored, small-scale pilot testing must show that dispersants are having the desired effect in prevailing environmental conditions before large-scale use is approved. Approval for large-scale use must be renewed during each operational period (typically 24 hours). Approval is only granted after spill response managers have coordinated with natural resource trustees and a narrow set of conditions exist.



*Test of aircraft dispersant application equipment during CANUSDIX drill. (ADEC Photo)*

## Conditions for Use

As with all response options, dispersants have specific conditions in which they are most effective.

- ◆ Dispersants are designed for crude oil spills in saltwater.
- ◆ Water depth must be 10 fathoms (60 feet) or more to ensure adequate mixing depth and minimize exposure to the ocean floor.
- ◆ Wind, currents, grinding ice, and/or tidal action must provide enough energy to mix dispersants with oil.
- ◆ Natural dispersion is favored when winds exceed 30 mph.
- ◆ Dispersant use is most effective before oil weathers or slicks break apart (typically within 96-120 hours after a release).
- ◆ Dispersant use is discouraged near shorelines and sensitive habitats.
- ◆ Dispersant use may be preferred when shoreline damage or harm to wildlife is projected to exceed the risks from oil dispersing into off-shore waters.
- ◆ There must be enough dispersant on-hand to maintain specific oil-to-dispersant ratios for the estimated volume of oil released.

## Rules for Use

Alaska law requires all companies that handle large quantities of oil to produce an oil spill prevention and contingency plan, or C-plan. In order for dispersants to be considered, companies must describe the following response preparations in their C-plan:

- 1) Means to assess environmental consequences and ability to provide continuous monitoring of a spill's environmental effects;
- 2) An inventory of response equipment and supplies, including a description of their type and toxicity;

- 3) Identification of all state/federal permits and approvals necessary to use dispersants along with the method and projected timeline for obtaining these permits/approvals after a release;
- 4) A plan for protecting environmentally sensitive areas, areas of public concern, and the public, itself, from potentially adverse effects of dispersants and dispersed oil.

## Approval Process

The National Contingency Plan identifies the role of key agencies when dispersant use is considered:

- ◆ The U.S. Coast Guard's Federal On-Scene Coordinator must approve dispersant use, with
- ◆ Concurrence from the U.S. Environmental Protection Agency representative to the Regional Response Team (RRT), after
- ◆ Consultation with the U.S. Department of Interior and Department of Commerce natural resource trustees (when practicable), and
- ◆ Concurrence of the State On-Scene Coordinator from the Alaska Department of Environmental Conservation, when State waters are threatened.

In order to expedite the approval process, the Alaska Regional Response Team has developed guidelines that include designated preauthorization areas for dispersant use.

These guidelines can be found in the *Alaska Federal/State Preparedness Plan for Response to Oil and Hazardous Substance*

*Discharge/Release* (i.e. The Unified Plan) at:

<http://dec.alaska.gov/spar/perp/plans/uc.htm>

For more information on oil spill response in Alaska, please visit the Alaska Department of Environmental Conservation's website at <http://dec.alaska.gov/spar/perp/index.htm>.