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16450
Dispersant
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Dear Sir-

I have enclosed a point paper in order to present my position as the current Captain of the Port, Prince William Sound on the use of chemical dispersants as a potential response tool to an oil spill. As has previously been published, other organizations and individuals have different positions on the subject and I feel it is necessary to present our position on this issue. I also feel it is necessary to present facts backed by scientific data to balance the emotional sides already presented to ensure the public is also aware of the potential benefits of dispersant usage.

If you would like to discuss any of this information prior to publishing, please do not hesitate to call me at the above number.

Sincerely,

Ronald J. Morris
Captain, U. S. Coast Guard
Commanding Officer
Marine Safety Office Valdez

Is there a place for Chemical Dispersants in oil spill response?

As the current Federal On Scene Coordinator (FOSC) and Captain of the Port for Prince William Sound I have been involved in debates regarding the use of chemical dispersant application to an oil spill on numerable occasions, most recently in the Spills of National Significance (SONS) exercise which was held September 21-23, 1998. A SONS is a rare catastrophic spill where the response overwhelms local resources, affects a broad geographic area, and/or generates high media and political interest. The event scenario which was being responded to during the SONS exercise involved a laden tanker going aground at Middle Point on Montague Island at the South end of Prince William Sound. In excess of 300,000 barrels, or 12,600,000 gallons, of North Slope crude was released and then started to travel through Montague Straits and La Touche Passage in Prince William Sound towards the Gulf of Alaska, Kenai Peninsula, and Kodiak. The potential impact of a spill of such magnitude would be tremendous. To mount an effective response all available resources must be available which include alternate technologies such as *in situ* burning, bioremediation, and dispersant application.

The primary tool in all oil spill response efforts remains mechanical recovery. During the exercise, all available mechanical resources were deployed and engaged, and additional mechanical resources were ordered from outside the region. However, from past experiences, it is known mechanical recovery is on the average only 20% effective. Mechanical recovery equipment is limited by sea conditions, visibility, and oil encounter rates, i.e. if oil doesn't exist in sufficient thickness, the skimmer's effectiveness is reduced. In order to accomplish Western Alaskans exercise participants, i.e. Kodiak National Wildlife Refuge, Kenai Fjord National Park, and Alaska National Wildlife Refuge, number one priority; "keep the oil off our beaches", dispersant application was proposed and used. Keeping the oil off beaches is very important as the environmental impact to beaches is very long term. The decision to use dispersants is made by the Unified Command, which consists of the USCG, Alaska Department of Environmental Conservation (ADEC), and the responsible party, and they file a permit application with the Alaska Regional Response Team (AKRRT) requesting to apply dispersants. The AKRRT acts as an advisory board to the FOSC. It is comprised of federal, state, and local governmental agencies with means to participate in response to pollution incidents (for more information on the role of the AKRRT, please visit www.AKRRT.org.) The dispersant application process requires an assessment of the environmental benefits as well as damages which could be

expected as a result of dispersant application to an oil slick. It is important to realize that the water under a spill is already polluted because oil will disperse naturally, albeit slower, without the application of chemical dispersants due to mixing. When oil spills into water, conditions such as wind, water temperature, and wave energy affects the oil causing changes in both its chemical and physical properties; a process collectively known as weathering. Following evaporation, natural dispersion, followed by biodegradation, is the most important process in the breakup and disappearance of a slick. Once weathering has reached a certain stage, usually between 48-96 hours, the effectiveness of chemical dispersants may be reduced. Hence the decision to apply chemical dispersants must be made relatively quickly to gain maximum benefit. Chemical dispersion of the oil augments the overall clean up effort by enhancing the natural dispersion. Once under the surface, the dispersed oil plume undergoes rapid dilution thereby facilitating the natural biodegradation processes by creating greater surface area exposure for oil eating micro-organisms to access the oil. Dispersant application ultimately increases the effectiveness of the response by reducing beach impact, reducing the amount of free floating oil on the surface where it harms sea birds and mammals, and by making the remaining free floating oil less adhesive to birds and mammals.

There have been concerns voiced from the public over the potential carcinogenic effects of dispersants. Scientific studies show the particular dispersants which would most likely be used in this area are not carcinogenic. They may irritate the skin and eyes if a person was to come in close contact with the chemical. However, considering the current dispersant guidelines do not allow for dispersant application in shallow water and near shorelines, the effect on any human population should be minimal if any at all. To avoid dispersant exposure to responders, they would be well clear of the area where the dispersants are applied.

Prior to being placed on the EPA's National Contingency Plan Product Schedule signifying approval for use in the United States, a dispersant is put through several tests, one of which is effectiveness. Effectiveness measures how well a product breaks up oil into microscopic droplets which would then be dispersed into the water column. According to a study commissioned by the Prince William Sound RCAC and released in April, 1997, Corexit 9527, a dispersant stockpiled in Prince William Sound, has been shown to be 30%-95% effective on Alaska North Slope crude in laboratory testing supported by corresponding results of 30%-80% effectiveness in sea trials. This demonstrates Corexit 9527 does have the potential to disperse

Alaska North Slope Crude to some degree of effectiveness. Furthermore, the same study states greater levels of operational effectiveness will be achieved by repeat applications of dispersants. The same study showed when chemical dispersants are applied, oil is dispersed in tiny droplets through the upper 15-20 feet of the water column. The dispersed droplets do not resurface, but rather distribute throughout the ocean with the aid of strong ocean currents.

Once in the water column, the droplets of dispersed oil are exposed to naturally occurring oil-eating micro organisms. Studies after the Exxon Valdez spill showed that these organisms were common in the waters of Prince William Sound due to the presence of coniferous trees and needles which contain turpentine oils. The oil-eating micro organisms are well adapted to breaking down the turpentine oils for food and are also capable of degrading crude oil as an additional food source. This is not to say chemically dispersing oil is without disadvantages. The rapidly diluting cloud of dispersed oil, whether it be from natural or chemical dispersion, is potentially harmful, for a short period of time (hours), to planktonic plants and animals including planktonic eggs and larvae of fishes. Dispersed oil could cause mortality to bottom dwelling species such as clams if dispersants were applied to slicks on shallow water. For this reason, dispersants are currently only applied when sufficient water depth, more than 30 feet, exists to allow for dispersion without bottom impact.

The decision to apply dispersants involves making environmental trade offs, keeping net environmental benefit as the goal. The decision is made in conjunction with the AKRRT, Scientific advisors, Federal and State regulators, the spiller, and the citizens of Alaska. Because of all the issues involved in this decision process, the best time to discuss dispersant application is not during a response, but rather in the planning process when pre-approved zones are determined. Pre-approval involves defining scenarios where dispersant application is acceptable, where further study is needed, and where dispersant application will not be acceptable. In Prince William Sound there are a few pre-approved zones for dispersant application. A pre-approved designation means the Unified Command does not have to file an application with the AKRRT as the AKRRT has already granted their approval. In these pre-approved zones, dispersants are an acceptable alternative and could be considered to supplement the mechanical response. Pre-approval does not mean dispersants will automatically be used, and certainly will not be used in place of mechanical recovery. The same parties that make the final decision during the response should be involved in the planning process. In March 1998 a two-day International Dispersant

conference was held in Anchorage. This conference brought together National and International experts in the field of dispersant study, conservation groups, regulators from both the State and the Federal governments, as well as citizens from Prince William Sound communities affected by the M/V Exxon Valdez spill and citizens from the Shetland Islands affected by the M/V Braer spill. The conference yielded much new information and informative panel discussions. The AKRRT Science and Technology committee has committed to reviewing the current dispersant guidelines and updating them to incorporate the new information presented at the conference. Everyone involved in a spill response has the same goal; mount an effective response while minimizing the environmental impact. The U.S. Coast Guard supports the use of chemical dispersants to achieve this goal.