



Communities on the Horizon

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An Informative Q & A about Dispersants

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The dispersants being used on the Deepwater Horizon drilling disaster has brought about many questions in regard to their safeness to the water and wildlife above and beneath the Gulf. The following is a Q&A provided by Kristina Peterson of the University of New Orleans CHART with Joe Banta, Project Manager for Environmental Monitoring of Prince William Sound Regional Citizen's Advisory Council. Mr. Banta's organization has done research on dispersants for many years.

1. What dispersant is being used? Is it one or a combination, what are the chemical properties?

We do not have a direct link in to the Unified Command that is managing the spill response so we don't know for sure all of the types of dispersants being used. The most prevalent dispersants in our country are Corexit 9527 (an older formulation) and Corexit 9500 (a newer formulation) originally developed by Exxon. We understand that all the dispersants stockpiled in our region of Alaska have been requested by the UC and are being shipped there. This was reported to be a stockpile of around 85,000 gallons of mostly Corexit 9527.

I will attach a variety of web links below that provide additional information, including some articles that refer to types of dispersant being used in the Gulf of Mexico. One of the articles states that over a third of the world's dispersant stockpiles have already been used on the spill. We have seen no statements on the efficacy of the dispersants use on this spill and by the size of the slick it appears that the dispersants are not having much of an impact.

Dispersants used on the waters of the United States must be approved by EPA and can be found listed in the Federal Register National contingency Plan Subpart J. There are 14 approved dispersants at this time. Because there are this many dispersants, it should be safe to assume that multiple dispersants are being used and that there may be some mixing of them, as a limited number of aerial application packages are being used. Here is a link to a factsheet about Subpart J - <http://www.epa.gov/oem/docs/oil/ncp/NCPfactsheet.pdf>. And here is Subpart J listing the 14 approved dispersants - <http://www.epa.gov/oem/docs/oil/ncp/schedule.pdf>.

As far as their chemical properties, dispersants are chemical substances applied to spilled oil that disperse oil into the water column rather than leaving it floating on the surface in a slick. This is similar to the effect of the use of soap on greasy dishes. One useful resource that provided information on the chemical ingredients and effects of dispersants is a Materials Safety Data Sheet (MSDS). A web search for the dispersants name and "MSDS" will find multiple sites with the MSDS sheets and discussions on them.

2. Does the dispersant have any residuals?

Dispersants use is based on the concept of them dissolving the oil into droplets that will then dilute and

spread out the oil and over a long time period allow microbial degradation to break down the hydrocarbons in the droplets. If they aren't spread over the oil they then will not mix with it and could remain on/in the water surface for some time. One of our organizations concerns that has been shown in the research is that the dispersed oil tend to resurface and re-coalesce. Some of the links below will provide information to explore this issue further.

3. How long will it remain in the environment, and in what form?

That question is really difficult to deal with based on the immensity of the spill and the lack of information coming out of the Unified command with regard to the efficacy of the dispersant applications. Based on the discussions above, if mixed with the oil successfully, dispersants should remain with the oil, and, as it has oil components to it, it will likely break down in a similar rate as the oil. While our organization has concerns about oil remaining in the environment up here for years (we can still find EVOS oil on beaches more that 20 years later) and for dispersants not being effective in our colder waters on North Slope crude, the warmer waters and temperatures of the Gulf of Mexico may help speed the breakdown of oil and dispersants, but a timeframe is very difficult to come up with on that subject.

4. What effect will the dispersant have on marine life; from spawning to adult?

This is difficult to answer easily due to the many differences in marine species and the exposures based on their life cycles, but it is clear that sensitive life stages like eggs and larvae are more sensitive to dispersed oil than adults of various species. In general, oil is more toxic than most modern dispersants. Our organization has determined that most research on dispersants and dispersed oil is from an acute toxicity perspective and that much less work has been done on chronic toxicity impacts. We have recently begun to study this issue of chronic hydrocarbon toxicity and should have study results in the next one to two years.

We also have tried to track dispersants research in a comprehensive manner in an effort to provide a one-stop source for dispersants research. You can find that research on our website - <http://www.pwsrca.org/projects/EnvMonitor/dispers.html> at the lower section of the page in an Excel spreadsheet - "A database for the 2008 dispersants literature surveys" and in a written summary on the issues - "A Review of Literature Related to Oil Spill Dispersants 1997-2008." This review summarizes studies done on many species and could be of use to explore the issues in this question further.

5. Can the dispersant create a toxic situation, for plant, animal and/or human life? Are we exchanging a toxin we can see (floating crude) for one we cannot (dispersed crude with chemical attachment)?

The research summarized in our report "A Review of Literature Related to Oil Spill Dispersants 1997-2008" provides information about studies on plants and animals, including some on species from the Gulf of Mexico region. Human health effects are discussed in MSDS sheets for dispersants (as referred to above).

There are trade-offs between removing oil from the surface and leaving it on the surface. Leaving oil on the surface increases exposure to water surface users, usually macro-fauna such as seabirds and marine mammals, as well as fish that come to the surface for air or to jump, etc. or seaweeds. Dispersing oil into the water column exposes the sealife in the water column to the hydrocarbons, i.e. fish, larval forms of fish and shell fish, invertebrates, etc. This is discussed further in our review discussed above and in the National Academy of Sciences Report cited below.

Websites and Links for More Information:

- News Articles discussing dispersants use:

ProPublica

<http://www.propublica.org/article/bp-gulf-oil-spill-dispersants-0430>

Grist

<http://www.grist.org/article/2010-05-03-how-risky-is-the-dispersant-strategy-for-addressing-the-gulf-spi>

- PWSRCAC Resources

<http://www.pwsrcac.org/projects/EnvMonitor/dispers.html>

- Research Resources and Other Sites

2005 National Academy of Sciences Report - Oil Spill Dispersants: Efficacy and Effects

<http://dels.nas.edu/Report/Spill-Dispersants-Efficacy-Effects/11283>

International Maritime Organization

http://www.imo.org/environment/mainframe.asp?topic_id=225