



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 27 2010

THE ADMINISTRATOR

The Honorable Edward J. Markey
Chairman
Subcommittee on Energy and Environment
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Thank you for your May 17, 2010 letter requesting information from the U.S. Environmental Protection Agency (EPA) relating to the use of dispersants in the Gulf of Mexico following the April 20, 2010 Deepwater Horizon mobile offshore drilling unit explosion and resulting oil spill. Since these events, the Administration's efforts have focused on responding to the disaster and ensuring that BP, the responsible party, stops the discharges, removes the oil, and pays for all costs and damages. EPA is a key part of those efforts.

EPA chairs the National Response Team (NRT) and co-chairs the Regional Response Teams (RRT), comprised of several federal and state stakeholders with unique roles and responsibilities that contribute to decision-making for the oil spill response activities. Further, we share the responsibility for prevention and preparedness with USCG and several other federal agencies, including the National Oceanic and Atmospheric Administration (NOAA). EPA and USCG have a strong relationship and work closely on oil spill response activities regardless of where the spill occurs.

EPA recognizes and shares your concern regarding the use of large quantities of dispersants during operations to contain the spill. There are environmental trade-offs and uncertainties associated with the widespread use of extraordinary quantities of dispersants in general. The unprecedented nature of the continuous discharge of crude oil from a mile beneath the ocean surface, and the threat that oil poses to the Gulf's sensitive coastal ecosystem requires us to consider all options. Dispersants have been shown to be effective at breaking down the oil into small droplets that will more readily degrade in the marine environment and are an important tool, along with mechanical approaches and burning, for dealing with the oil in the ocean. At the same time, given the lack of scientific information about the impact of the dispersants in the circumstances and quantities for this release, EPA has worked closely with its federal partners to ensure an aggressive dispersant monitoring plan is implemented by BP and that data are regularly and rigorously reviewed.

Of particular note, these efforts have resulted in significant reductions in the overall quantity of dispersants being used. The authorization of the use of dispersants subsea, where it is being applied directly to the oil at the principle leak site, has made it possible to reduce the use of surface application. Surface application is now being used as a last resort and only with specific written authorization from the Coast Guard.

EPA is responsible for maintaining the National Contingency Plan (NCP) product schedule, which lists chemical and biological products available for Federal On-Scene Coordinators (OSCs) to use in spill response and cleanup efforts. The decision to use dispersant during an oil spill incident follows a three step process:

- First, a dispersant must be listed on the NCP product schedule. Section 311(d)(2)(G) of the CWA requires that EPA prepare a schedule of dispersants, other chemicals, and other spill mitigating devices and substances, if any, that may be used in carrying out the NCP.
- The decision to use dispersants must be made in accordance with the appropriate Regional Response Team pre-approval guidelines and checklists.
- If the RRT representatives and the Department of Commerce and the Department of Interior natural resource trustees approve in advance the use of certain products under specified circumstances as described in the preauthorization plan, the OSC, in this case the United States Coast Guard (USCG), may authorize the use of the products without obtaining the specific concurrences.

Enclosed are responses to your specific questions. Please be assured that the Agency is committed to continuing to provide full support to the USCG and the Unified Command (UC), and will continue to take a proactive and robust role in monitoring, identifying, and responding to potential public health and environmental concerns. If you have further questions or if we can be of further assistance, please don't hesitate to contact me, or your staff may contact Arvin Ganesan at (202) 564-4741.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lisa P. Jackson', with a stylized, flowing script.

Lisa P. Jackson

Enclosure

1. It is my understanding that the main dispersants applied so far are from a product line called Corexit, some of which had their approval rescinded in Britain more than a decade ago, because laboratory tests found them harmful to sea life that inhabits rocky shores.

a. How did EPA ensure that this dispersant's toxicity to aquatic life was evaluated?

b. Was its toxicity to mollusks and other sea life that inhabit the Gulf of Mexico coast evaluated, and if so, what were the results? If not, why not?

c. If EPA relied on toxicity studies for coastal morphologies different from that of the Gulf Coast, what was done to evaluate the applicability of those studies for the use of the dispersants in the Gulf of Mexico environment?

d. Was the toxicity to other subsurface aquatic life evaluated? If so, please provide details, and if not, why not?

Answer: It is our understanding that the criteria and testing of a dispersant to be listed on the UK product list are technically different than the criteria that are used in the United States. Dispersants must pass two tests in the UK to be approved:

1. A "sea test" which compares the relative impact of a water/dispersant/oil mix versus a sea water and oil mixture on brown shrimp. If the impact (morbidity, lack of movement, etc.) of the dispersant mixture appears to be worse than the seawater/oil mixture, the dispersant is not approved.

2. A "rocky shore test" looks at the impact on clams associated with direct spraying of dispersant onto the spilled oil or just the oil itself. If the dispersant causes "more harm" (which could be simply that the clam loses adhesion with the rock), then that dispersant is not approved for use.

The Corexit products (9500 and 9527) passed the sea test but did not pass the rocky shore test and therefore were not listed for use in the UK. However, the UK test does not determine whether the "inherent toxicity" is the reason for failing the test; rather, the test looks at the "relative harm" associated with the dispersant.

In the United States, we require a standard test of inherent toxicity (LC50 for 48 and 96 hours) which is used to compare various dispersant products relative to a standard #2 fuel oil. In addition, dispersants are not used on shorelines in the United States. They may be used only beyond 3 miles from shore and in water that is at least 10 meters deep.

EPA required toxicity tests to standard test species, including a sensitive species of Gulf of Mexico invertebrate (mysid shrimp) and fish (silverside) which are common species in Gulf of Mexico estuarine habitats. The invertebrate and fish species tested are considered to be representative of the sensitivity of many species in the Gulf of Mexico, based on years of toxicity testing with other substances. There are additional toxicity data for

other species available in the scientific literature. The toxicity of mollusks and other sea life were not evaluated as part of the EPA required tests.

2. How is EPA tracking the volume of dispersants being used both in both surface and subsurface applications? How does EPA plan to determine whether their use causes harm to the aquatic ecosystem they come into contact with?

Answer: The volume of dispersants being used by BP in both surface and subsurface applications is being reported to the Unified Command, which includes EPA, NOAA and the Coast Guard. These Agencies are providing oversight during the sampling and analysis process, as well as data interpretation. The sampling plan includes measures of dissolved oxygen and a biological assessment (e.g., Rototox toxicity test). Such tests can be a proxy to understand impacts to aquatic ecosystems. Additional water sampling and analysis plans for the surface monitoring are currently being finalized.

3. Is EPA fully aware of all chemical constituents contained within the two formulations of Corexit dispersants currently being used? If so, please provide a list of each such constituent.

Answer: EPA is aware of the chemical constituents contained within the two formulations of Corexit dispersants currently being used., NALCO has agreed to waive their CBI claim for a combined list of constituents for both COREXIT 9500 and 9527. The following list of chemicals has been developed for distribution by EPA.

Item	CAS Registry Number	Chemical Name (TSCA Inventory)
1	57-55-6	1,2-Propanediol
2	111-76-2	Ethanol, 2-butoxy-
3	577-11-7	Butanedioic acid, 2-sulfo-, 1,4-bis(2-ethylhexyl) ester, sodium salt (1:1)
4	1338-43-8	Sorbitan, mono-(9Z)-9-octadecenoate
5	9005-65-6	Sorbitan, mono-(9Z)-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs.
6	9005-70-3	Sorbitan, tri-(9Z)-9-octadecenoate, poly(oxy-1,2-ethanediyl) derivs
7	29911-28-2	2-Propanol, 1-(2-butoxy-1-methylethoxy)-
8	64742-47-8	Distillates (petroleum), hydrotreated light

4. Did EPA ensure that tests were conducted to evaluate the efficacy and toxicity of the 18 dispersants it has approved for use? What were the results of the tests?

a. Did EPA rank the dispersants in terms of efficacy (in dispersing the sort of crude oil that is spewing into the Gulf of Mexico) and toxicity (to the sort of aquatic life contained in the Gulf of Mexico), as was asserted by the May 13 2010 article in Greenwire? If so, please provide this ranking. If not, why not?

- b. Does EPA instruct entities who wish to use dispersants to use the most effective and least toxic dispersants in a particular operation? If so, then did EPA instruct BP to use Corexit? If not, does EPA lack the authority to prescribe the use of specific formulations?**
- c. Does EPA expect users of dispersants to themselves examine the safety and efficacy data that is applicable to the conditions of intended use and select the least toxic and most effective approved formulations?**
- d. Please provide copies of all documents, emails and other correspondence related to BP's use of dispersants in response to the Deepwater Horizon catastrophe.**

Answer: EPA evaluates dispersant according to the criteria listed under 40 CFR part 300.915 which includes measure of effectiveness and toxicity. EPA provides this information on our website, but we do not rank dispersants according to those measures. The required toxicity tests for placement on the NCP includes tests on a sensitive species of Gulf of Mexico invertebrate (mysid shrimp) and fish (silverside) which are common species in Gulf of Mexico estuarine habitats. The invertebrate and fish species tested are considered to be representative of the sensitivity of many species in the Gulf of Mexico, based on years of toxicity testing with other substances.

Under the National Contingency Plan, the Federal OSC, in this case the Coast Guard, has the discretion to choose a dispersant on the NCP Product Schedule. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making this decision. On May 20, 2010, the EPA and the Coast Guard issued a directive requiring BP to identify and use a less toxic dispersant, after EPA approval, from the NCP Product List.

Additionally, EPA is currently addressing your request for documents, emails and correspondence.

- 5. How do water temperature and pressure effect the degradation of dispersants?**
- a. Will the fact that the water temperature at the Deepwater Horizon leak is just above freezing affect the time it takes for the molecules to be degraded? If so, please elaborate.**
 - b. Have studies been performed to assess the efficacy or toxicity of the compounds at freezing temperatures? What are the results of these studies?**
 - c. How does the high pressure at the depth of the leaking wellhead affect where chemical dispersants and oil molecules spread in the water column? Does high pressure also affect the rate of degradation of oil and chemical molecules, and if so, how?**

Answer: The degradation of dispersants may be influenced by many factors including temperature and mixing efficiency. The test conditions under which dispersants are approved for listing on the NCP Product Schedule are listed under 40 CFR part 300.900 and appendix C to 40 CFR part 300. EPA recognizes that application of dispersants at the source of the oil discharge in deep water is a novel application of this technology.

Thus, as indicated above, EPA and our federal partners are monitoring the subsea application of dispersants.

6. What information has EPA collected about the long-term effects of dispersants accumulating in sediment at the bottom of the ocean floor? Please provide these materials to me. If no such information has been collected, then why did EPA approve their use at the ocean floor? What effect could the accumulation of large volumes of dispersants on the ocean floor have on bottom-feeding organisms such as shrimp?

Answer: The application of dispersants to the oil discharge at the depth of the Deepwater Horizon is a unique, novel and challenging situation. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making decisions about the use of dispersants. BP has utilized both surface and subsurface dispersants. Therefore, EPA and the Coast Guard are requiring BP to implement a robust sampling and monitoring plan. EPA is constantly reviewing data to determine if the subsurface application of dispersants is adversely impacting the environment more than the oil alone. Tests with mysid shrimp and silversides are considered to be representative of a broader range of species based on tests with many substances over the years.

7. Has EPA determined whether chemical dispersants can accumulate in the tissue of fish and other aquatic life (including plants and un-hatched eggs) in the same or similar manner as other toxic materials such as mercury? If so, please provide documentation regarding what accumulations are likely, including materials regarding the implications for human health if the fish are consumed. If not, why not?

Answer: EPA has not determined whether chemical dispersants can accumulate in the tissue of fish and other aquatic life similar to mercury or other toxic materials. Results of initial testing indicate that ingredients in COREXIT, the dispersant currently being used do not appear to have bioaccumulative properties. FDA will continue to monitor the use of dispersants and evaluate any impacts to seafood.

8. Did EPA consider a variety of scenarios for the interaction of the dispersants with the oil plume when applied at the depth of the Deepwater Horizon leak? If not, why not? Did any scenarios considered include the formation of large underwater plumes at various depths, as appears to have occurred based on a preliminary scientific investigation as reported Sunday? If so, please provide all related documents. How does EPA plan on monitoring the long-term effect that these chemical dispersants have on aquatic life in the Gulf of Mexico?

Answer: The application of dispersants to the oil discharge at the depth of the Deepwater Horizon is a unique and challenging situation. The OSC considers the efficacy of the dispersant, environmental impacts, and availability among other things, when making decisions about the use of dispersants.

Regarding recent media reports of underwater plumes, NOAA has stated that the research team has not reached any definitive conclusion about the composition of the undersea layers they discovered. Characterization of these layers will require analysis of samples and calibration of key instruments. The hypothesis that the layers consist of oil remains to be verified.

EPA plans to significantly increase our research on the potential human and environmental risks and impacts of the release of crude oil and the application of dispersants, surface washing agents, bio-remediation agents, and other mitigation measures. An additional funding request for this research was included in the Administration's recent legislative submission related to the BP oil spill.

9. Is EPA aware of the ecological impacts of simultaneously using different formulations of dispersants during the mitigation efforts? Does the combination of chemicals change the toxicity or efficacy of the dispersant? If so, please provide documentation.

Answer: EPA is not aware that different dispersants have not been used simultaneously in this response, although initially there was some overlap of the use of both of COREXIT 9500 and 9527.

10. Given the start of the Atlantic hurricane season on June 1, did EPA consider the impact of the dispersants on marine life in a rapidly mixed water column should a hurricane develop in the Gulf of Mexico? If so, what did EPA determine? If not, why not?

Answer: EPA is a part of the RRT and the NRT (National Response Team) which are comprised of various federal agencies with unique roles and responsibilities that contribute to decision-making for all response efforts. We are working together to evaluate the constantly changing conditions in the Gulf of Mexico, including impacts of hurricane season and the impact of dispersants on the aquatic environment.

11 . EPA has stated that although it has approved the use of chemical dispersants on surface and subsurface applications it "reserves the right to halt the use of chemical dispersants at any time if new data show more serious environmental harm is occurring." How is EPA monitoring environmental harm? What metrics or other problems does EPA consider to be cause for halting use of chemical dispersants?

Answer: As part of the RRT, EPA is monitoring several factors at various depths including conductivity, temperature, and depth (CTD). The monitoring utilizes several techniques including:

- Fluorometer

- Laser In Situ Scattering and Transmissometry (LISST) Particle Analysis
- Dissolved Oxygen
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation
- Rototox toxicity testing (subsurface only)
- UV-Fluorescence testing

On a daily basis, EPA is evaluating all the data generated by the tests above and makes a daily decision on whether to proceed with subsurface application.