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Dispersant-Related Oil Spill Response Communication Tools: Toward an Enhanced Approach to Conveying Complex Topics in an Approachable Manner

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During the response to the Macondo Well release in the Gulf of Mexico in 2010, it became evident fairly quickly that there was a potential disconnect between existing scientifically-based information relating to the use of oil spill dispersants and the information that was readily available to the general public, the media, and government officials.

At best, both sets of information were aligned and provided a valuable perspective to those who sought an increased understanding of the workings of oil spill response tools. At worst, there was a large misalignment and the information that was available to the public did not accurately reflect the known science of what dispersants have been designed to achieve. In this latter case, conclusions about dispersant use may have been formed incorrectly, providing a backdrop upon which individuals were not able to develop an informed opinion regarding the use of dispersants.

In the case where incomplete and potentially unbalanced information is used to inform the public, it is possible that negative effects will result, i.e., opinions may be formed based on fear of the unknown, causing a delayed or less than optimal decision making process. While it is recognized that decisions made during a spill response may be challenging and may involve an environmental trade-off, an informed public can be a valuable asset during the stages of an emergency response when the pros and cons of the specific response options are being debated. To assist with an informed dialog, it is important to have materials available that accurately

reflect the scientific principles upon which they are based, but without requiring extensive study of their details for a general understanding of their primary assumptions and conclusions.

This paper summarizes recent efforts to develop readily available materials that can provide a better understanding of the use of dispersants during an offshore oil spill response. These efforts have been focused on developing simple yet effective tools which describe dispersants within the framework of an oil spill response tool box and the scenarios in which these tools may be used for the most positive environmental effect.

INTRODUCTION:

The use of dispersants, both at the water's surface and during sub-sea applications, was a critical element in preventing significant oiling of sensitive shoreline habitats during the Macondo Well oil spill response in 2010. However, misunderstandings and a perception that significant knowledge gaps existed led to a number of substantial and generally unanticipated restrictions on dispersant use during the response. This might have been alleviated if an effective two-way risk communication process between various interested parties, decision makers and influencers had existed in advance, especially since the establishment of a trust-based communication process can serve to improve "the credibility of decisions and enhance the prospects of compromise solutions being achieved" (Gough, 2006).

In light of this, it is not unreasonable that industry and government both need to effectively communicate the risks and benefits of all oil spill response tools. More specifically, the factors associated with dispersant use need to be better understood, especially with respect to the safe and effective use of dispersant products. To gain a better understanding of their value to an oil spill response, additional research should focus on the behavior and long term fate of dispersed oil in the water column when dispersants are applied near the sea floor. Issues and concerns such as these were raised and led to the formation of the American Petroleum Institute's (API) Joint Industry Oil Spill Preparedness and Response Task Force (JITF) in the fall of 2010 (API, 2010).[1]

A set of near term actions was developed and a key focus area was on dispersant use. The primary goals of these actions were to improve understanding regarding dispersants and to develop a series of concise fact sheets and/or other communication tools addressing various aspects of dispersants, e.g., effectiveness, trade-offs, safety and health aspects. Project teams were established and summary reports of the JITF activities are available for 2011 and 2012 (API 2011; 2012). The 2013 summary report is currently being developed and will be available at the API website in the near future.

[1] In response to the Gulf of Mexico (GOM) incident, the U.S. oil and natural gas industry launched a comprehensive review of offshore safety. Four Joint Industry Task Forces (JITFs) were assembled to focus on critical areas of GOM offshore activity: the Joint Industry Offshore Operating Procedures Task Force, the Joint Industry Offshore Equipment Task Force, the Joint Industry Subsea Well Control and Containment Task Force, and the Joint Industry Oil Spill Preparedness and Response Task Force. http://www.api.org/oil-and-natural-gas-overview/exploration-and-production/offshore/api-joint-industry-task-force-reports

With respect to dispersants, in addition to fact sheets, other materials have been developed with a goal of distilling complex topics relating to risk communication down to a level that is appropriate for a wide range of potential stakeholders, including the public, government agency personnel, non-governmental organizations, and the media. It is critical to have these materials developed and widely available in advance of any future spills. It is also important to take into account that different individuals take in information by a variety of routes and it is advantageous to have different forms of reference materials available, whether visual, textual, complex in nature or in a simplified format.

While the effort being described is primarily an effort of the API, it is being performed in concert with other dispersant-related oil spill response communication activities occurring around the globe (i.e., with IPIECA (formerly the International Petroleum Industry Environmental Conservation Association) and the International Association of Oil and Gas Producers – the OGP). In particular, the OGP and IPIECA have established a joint industry project (JIP) focused on oil spill response (OSR). This OSR JIP has initiated discreet projects or provided support to projects initiated by other oil industry trade associations (e.g., API) in a number of subject areas that were determined by the Global Industry Response Group (OGP-IPIECA, 2011). Of particular relevance to the API effort is the goal to develop communications tools focused on such topics as Net Environmental Benefit Analysis (NEBA), an important risk-based decision-making process (OGP-IPIECA OSR JIP, 2011).

COMMUNICATION TOOLS:

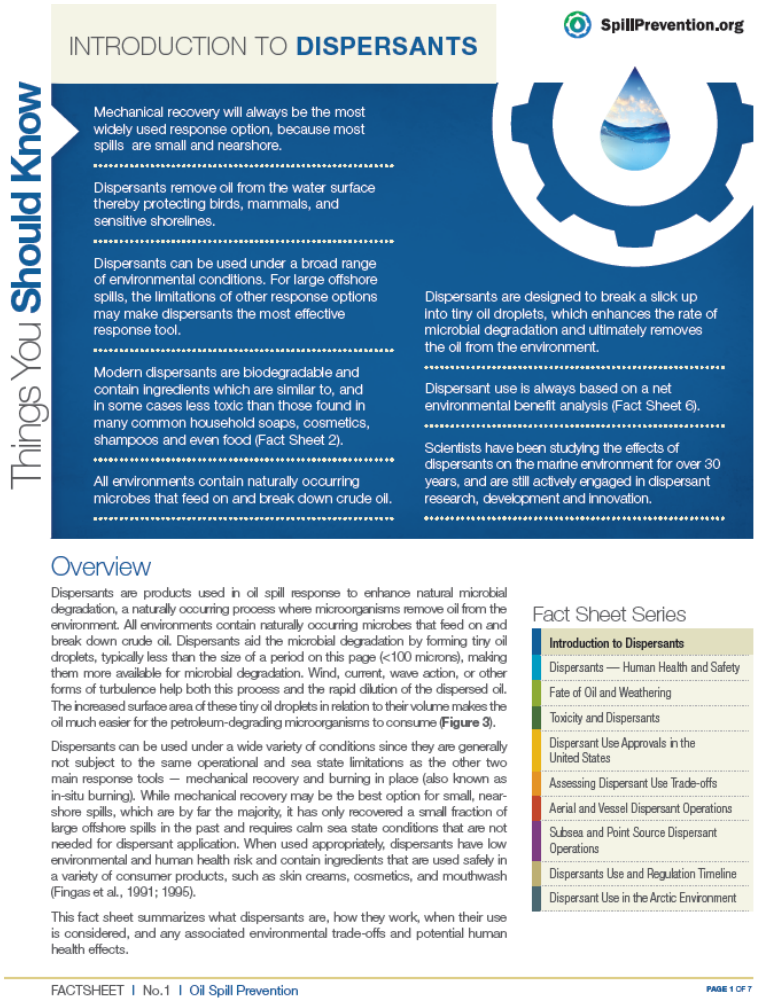
While it is often possible to find numerous references to support a particular issue in the field of oil spill response technologies, many of these are relatively dense with complex technical subject matter that does not translate easily into a public discussion of the topic. During an emergency response such as that encountered in the event of an oil spill, it is important to have accurate materials available that can help inform those who are responsible for making critical decisions. The challenge is to bridge the gap between technical reference materials (e.g., journal articles) and overly simplistic products that do little to inform the reader. With this in mind, the communications project team identified 10 topics that would lend themselves to fact sheets that could be made available to interested parties.

Fact Sheets

The purpose of developing fact sheets was to provide information on the salient topics in a format that lends itself to being understood and providing additional references in the event that the reader wishes to learn more. The ten fact sheet topics have been or are in the last stages of development:

- Introduction to Dispersants
  Provides a general understanding of dispersants and how they serve as an oil spill response tool. While the goal is to never have an oil spill, it was recognized that if a spill were to occur, responders must be able to select the best response options in order to minimize any impacts on people or the environment. Dispersants may be used under a wide variety of conditions since they are generally not subject to the same operational and sea state limitations as other response options making them an essential tool in the oil spill response tool box (Figure 1 shows the first page of this Fact Sheet).

Figure 1: Introduction to Dispersants Fact Sheet



- Dispersants — Human Health and Safety
  Summarizes the potential human health and safety considerations for dispersant use for the public and response workers and explains the likely routes of exposure and the relative risks of exposure by the public and response workers to oil, dispersed oil, and dispersant that may result when applying dispersants to spilled oil.

- Fate of Oil and Weathering
  Explains what happens to oil as it remains in the environment. Understanding the behavior of the oil as it weathers during a spill response is key to ensuring that dispersants are used most effectively.

- Toxicity and Dispersants
  Provides an overview of potential effects to the environment that may occur when dispersants are used. Toxicity is the potential of a substance to cause harm in a living organism. Whether a substance is harmful depends on the concentration of the substance and the duration of exposure. Studies have shown that most dispersants are less toxic than most crude oils and that adding dispersant in low levels at appropriate application rates has little effect on the overall toxicity of the oil.

- Dispersant Use Approvals in the United States
  Summarizes the process and decision-making required for dispersant use approval in the United States, including the testing requirements for inclusion on the EPA's National Contingency Plan Product Schedule. If an oil spill occurs, oil spill responders must weigh environmental and social impacts and make trade-offs, if necessary, so that the oil and the response options used do as little harm as possible to the community and the environment. The National Oil and Hazardous Substance Pollution Contingency Plan (NCP) provides the basis for oil spill response in the United States.

- Assessing Dispersant Use Trade-offs
  Discusses the trade-offs and evaluation factors used by decision makers to determine whether the use of dispersants is warranted for an oil spill. It is intended to provide a clearer understanding of dispersants, how their use is authorized, and their consideration in Net Environmental Benefit Analysis (NEBA)-based decision-making process.

- Aerial and Vessel Dispersant Operations
  Summarizes the operational capabilities and potential benefits of dispersant use at the water surface. This includes the application process, equipment, and planning requirements when applying dispersants to the water surface by aircraft or boat.

- Sub-sea and Point Source Dispersant Operations
  Examines the use of dispersants in a focused response operation such as that which would exist in the event of a sub-sea release or in the immediate vicinity of a vessel or platform release.

- Dispersants Use and Regulation Timeline
  Summarizes the history of dispersant development, use and the government regulations associated with their use.

- Dispersant Use in the Arctic Environment
  Covers a number of the unique aspects of dispersant use and possible limitations associated with the Arctic environment.

Scan and Glance Documents

In addition to the development of the before mentioned dispersant fact sheets, the need to communicate the basics of oil spill dispersants through materials that are not as in-depth as the fact sheets or other, more detailed sources of information was identified by the API JITF dispersant communications project team. While it is important to have relatively in depth materials, there is also a significant role to be played by risk communication products that can be understood at a much more basic level, i.e., "scan and glance" documents.[2] However, it should be remembered that regardless of the level of detail, all of the materials to be developed must be consistent and supported by the foundation of scientifically accurate fact-based references.

[2] The use of the concept and value of "scan and glance" documents was brought to the project team's attention by personnel of The Clearing: http://theclearing.com/content/company

With this in mind, higher level, more easily approached communications materials were created that cover several key topics. These are intended to be used as supporting educational products that will be broadly available by a variety of means, e.g., via website postings or as the basis of video presentations. The primary goal of this part of the API JITF and OGP-IPIECA OSR JIP efforts was to develop a product that can benefit the entire stakeholder community by providing a suite of materials. The Dispersant Communications Project Team believes that consistency of message will be more effective in educating the broader public on the potential value of dispersant use. At the present stage of the project, the end products have been reviewed by representatives from government agencies and industry and are in the final stages of production. The first higher level products were focused on:

- Dispersants
  Examines the fundamentals of the value of dispersant use during oil spill response scenarios.

- Net Environmental Benefit Analysis
  Provides an understanding of the process employed during a NEBA-based evaluation of response options.

Figure 2 shows an example of the graphics employed in the scan and glance products. Both of these materials are complete and publicly available (API Scan, 2013). A video has been developed as well that provides a very easily understandable explanation of the NEBA process used by the oil spill response community to make the best choices during an incident. Information is provided on why a NEBA-based process is appropriate and how the resulting decisions are intended to protect the common values of a potentially affected community (API Video, 2013).

Figure 2: Example of Scan and Glance Document

Outreach Workshops on the Eastern Shores of Virginia and Puget Sound, Washington State

In addition to printed or electronically-based subject matter, efforts were made to actively engage communities that could possibly be affected in the event of an oil spill release and the subsequent response. During the spring and fall of 2012, two workshops were held to explore the possible value of direct engagement between the spill response community, government agencies and representatives from the public (Figure 3 shows a number of attendees from the workshop on the east coast). These regional workshops provided structured opportunities for

representatives responsible for developing or implementing policies and procedures related to response communications during oil spill incidents to focus on and discuss effective dispersant communications with stakeholders such as the media and general public, elected and appointed officials, local community members, fishermen and other government agencies (e.g., EPA regarding the dispersant listing process and the US Food and Drug Administration (FDA) for seafood safety). The workshops reviewed topics such as spilled oil behavior, offshore response options, decision making challenges during an oil spill, and dispersant application and use. In addition to presentations and a discussion of a simulated passing tanker spill, participants had ample opportunity for one-on-one discussions with a variety of oil spill response subject matter experts. Attendance was good at both events and feedback has been positive. It was felt that the workshop could serve as a template to foster discussion in other regions as well and this will be explored in the near future.

Figure 3: Participants at Wallops Island Workshop

Figure 4: Dispersant Demonstration During Wave Tank Open House

Academic/Government Agency Wave Tank Test Facility Open House

An open house was held for academic researches and government agency personnel at

the federal Bureau of Safety and Environmental Enforcement (BSEE)-managed large scale wave tank test facility in Leonardo, New Jersey. The goal of these three, one-day sessions was to provide an opportunity for academic researchers, especially those being funded by the Gulf of Mexico Research Initiative (GoMRI), and government agency personnel to see first-hand the manner in which dispersants work in a near real-world test setting. As shown in Figure 4, it was possible for attendees to observe the application of a commercial dispersant to crude oil in near real world conditions in order to see how quickly and effectively dispersion may occur.

Past experience has shown that the ability to observe the action of dispersants in the large scale BSEE tank is an effective way to convey their ability to disperse oil slicks in a manner that small-scale, experimental tests cannot. The open houses, which also had lecture and discussion components in class room-like settings, proceeded without difficulty and positive feedback was obtained from many of the participants (NOAA, 2013). Indications are that scheduling similar events in the near future would be of value.

FUTURE EFFORTS:

The project team is currently examining the best methods for sharing the work products that have been developed as effectively and as broadly as possible. This includes the consideration of social media outlets and internet-based outlets as well as the production of more traditional hard copy materials. Additionally, it is expected that presentations at technical meetings and industry forums will continue, since these serve as valuable gauges of the technical value of the materials amongst those who may be called upon to use them.

An important challenge is to ensure that these and other materials are aligned with respect to the technical validity of their content. The goal is to have materials that stand the test of time, and are readily available to provide support during discussions that may occur in the future regarding the oil spill response tool box. At the present time, the materials have been prepared in English, but it is recognized that availability in other languages is desirable, for example, the official and working languages of the United Nations: Arabic, Chinese, English, French, Russian, and Spanish.

CONCLUSION:

The communication tools discussed above have been tested in a number of venues including international conferences, regulatory meetings, industry technical discussions, and at public open houses. In general, the materials have been positively received and they have been used to promote engaged discussions with the full range of potential stakeholders in advance of an oil spill. Suggestions for enhancing the tools will be incorporated in future versions as work continues to provide the best scientifically-supported work products available with respect to understanding why dispersants would or would not be used during an oil spill response.

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