August 9th, 2016

Re: Regional Response Team 2 – Position Paper (Imbibitive Technologies - IMBTEC)

**Executive Summary**

The purpose of the "Houston Ship Channel" Case Study was/is twofold:

- To illustrate the shortcomings of the current oil spill response regime and,
- To promote the use of oil-sensitive, super-absorbent polymers (SAPs) as a means of improving the performance and recovery of spilled oils and chemicals.

What appeared to get "**lost in translation**" during and after the presentation is that the use of **super-absorbent polymers (SAPs**) is not intended to replace the current array of equipment but to improve its' efficiencies.

An amount of push-back from RRT 2 was evident and the issue of "proving" the technology was raised, placing the onus squarely upon IMBTEC to accomplish this. Similarly, the comment that EPA neither recommends nor endorses products was also made known to the group.

Based upon past historical and well-documented statistics the current array of technologies being employed by the global spill response industry to remove significant volumes of spilled oil from the environment has failed miserably, and continues to do so.

In spite of the statistics and repeated demonstration of the ineffectiveness of the equipment and techniques being used over the past thirty years or more, EPA/USCG/NOAA are in fact condoning the continued use of this equipment and techniques and in doing so are also condoning the maintenance of the status quo when it comes to spill mitigation.

With this issue in mind concern is raised that there is absolutely no reason for an OSRO to utilize oil-sensitive, super-absorbent (Imbiber Beads®) technology even if IMBTEC were to prove beyond any doubt that it represents a superior alternative to those technologies currently being used within the spill response industry.

The point is that without "**measurable performance criteria**" on which to base the performance of an OSRO there is no need for OSROs to change the way they respond to oil spills. As has been stated previously, OSROs are compensated regardless of how much oil they remove from the environment, and as the system currently exists there is no means of measuring their performance.

As the gatekeepers for the US environment it is EPA/USCG/NOAA's mandate to protect the environment and enforce the regulations that are in place. It is assumed that the purpose of the RRTs and the NRT convening on regular occasions is to look for ways of better coordinating response operations and improving their outcome.

The irony in this is that the inability of EPA or USCG to dictate what techniques or products should be used in a given situation means that both EPA and USCG are entirely dependent upon the OSRO and its

contractors as to how an incident is dealt with.

As far as IMBTEC is aware EPA/USCG/NOAA continues to advocate "mechanical removal" of spilled oil from the environment as its first mitigation option of choice. With the inordinate amount of research being conducted on effects and behaviour of dispersant-treated oil versus research into improved recovery techniques and equipment it is not difficult to understand how much influence the oil industry is having upon this EPA policy.

The dramatic increase in the focus upon shoreline clean-up is testimony that the current array of equipment and techniques being utilized during the initial phase of a response operation is not very effective. Add to this the fact that the dispersant used during DWH did not prevent oil from coming ashore, and it is little wonder that SCAT has become an integral part of the process.

Accordingly, use of dispersant is the only "fast-attack" method currently being utilized that addresses the 1990 US Office of Technology Assessment issue of an oil slick reaching unmanageable proportions within hours of the event. The problem is that dispersant is not a "removal" technology and goes counter to the EPA's current spill response philosophy. The oil industry likes it because it allows response activity (versus recovery activity) to commence as soon as the plane can reach the spill site.

The "modern" concept of utilizing **Best Available Technology (BAT)** concerning oil spills was first introduced in 1992 (OSPAR Conference, Paris, France) as a means of protecting marine environments within the North Atlantic Ocean.

Coincidentally, the concept of utilizing BAT has been an important consideration of the US Clean Water Act since 1972, and prescribes that the best state of the art technology be employed without regard for traditional cost-benefit analysis; the criteria for use being outcome-based.

From the CWA "...***shall require application of the best available technology economically achievable for such category or class, which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants***"

The push-back by environmental and special interest groups to oil industry expansion through off-shore, pipelines, road & rail transport expansion is well-founded based upon the industries' performance (or lack of performance) over the last thirty – forty years.

The inability of EPA/USCG/NOAA to dictate and enforce that **Best Available Technologies** be used during spill events has effectively hamstrung any opportunity to advance the state-of-the-art from where it was thirty, forty or even fifty years ago.

The Case Study presented during the RRT 2 Meeting in April 2016, illustrated that the cost of employing BAT with respect to Imbiber Beads® use on oil and chemical spills represents genuine "value" versus what passes for the popular (widely accepted) spill response technologies used by OSROs. The benefits of being able to recover significant volumes of spilled oil are obvious yet there is no reasons for an OSRO to employ BAT. Why?

The reality is that the use of Imbiber Beads®, whether in bulk particulate form or in value-added form (i.e. booms & blankets) represents true value and eliminates the need for a lot of the ancillary operational and equipment costs associated with typical response operations. More effective response operations in the early stages of a spill event will dramatically reduce the amount of time and money needed for costly, time-consuming shoreline clean-up, which has become a mainstay of the spill response industry.

That the issue concerning "conflict of interest" for a contractor to use less effective means to clean-up a spill never seems to be addressed.

The numbers for the Case Study presented do not lie. The benefits of using oil-sensitive SAPs are so obvious as to raise the question as to why there is so much resistance by the industry to consider anything "outside the box", and at the very least to consider their use?

The 2013 USCG OSRO Classification guidelines further note that while classification provides a good indication of an OSRO's response capability, simply being a Coast Guard-classified OSRO does not **guarantee performance** during an actual spill. In this regard it should be remembered that the response plan regulations also include the following caveat: "**The specific criteria for response resources and their arrival times are not performance standards. They are planning criteria based on a set of assump¬tions that may not exist during an actual oil spill incident.**"

As a result the assessment of the success of any response operation is purely subjective, which is why in our opinion the spill response industry continues to drift along and maintain the status quo i.e. recovery statistics have remained at 10 – 15% over the last thirty years.

The increased acceptance of dispersant use and reference to Corexit 9500 is a direct result of EPA permitting the use of 800K gallons of dispersant at the wellhead, for the first time in history, during DWH. The long-term implications of its use were not known at the time and the legacy of that decision is still being written. Research currently being funded deals primarily with dispersant use and its impact upon the behaviour and effect of oil upon marine life and shorelines.

**To the best of our knowledge there is no work being undertaken on actually improving oil spill recovery methodologies?**

**Impact;** the societal and environmental impact of actually being able to improve recovery statistics by 400 – 500% (as a minimum stated within IMBTEC's objectives) over existing numbers should be selfevident to anyone reading the proposal. For the sake of clarity the following examples of how this will positively impact local economies and environments will be applicable:

- Being able to recover four or five times the volume of oil currently being recovered will impact directly upon the amount of oil that remains in the marine environment. More oil recovered means less damage to marine life and cleaner water.
- Being able to recover more oil means that less oil will wash ashore, which means that fewer animals living onshore are likely to be affected by the oil.
- Being able to recover more oil means that lengthy, costly and unsightly shoreline cleanup is reduced; thereby allowing faster resumption of shoreline activities and reducing the impact of the spill upon local citizenry.

- Being able to recover more oil means less oil will reside within the water and water column thereby making the water less toxic and safer for marine life.
- Being able to recover more oil means waterborne activities such as fishing, boating, swimming, for example will resume to pre-spill conditions that much sooner and lessen the economic impact of the spill.
- Being able to recover more oil means that damage to local fishing vessels and pleasure craft from oiling will be minimized.
- Being able to recover more oil, minimizing damage to the local economy and environment means that good public relations will be restored that much faster and minimize the workload of public officials, government officials and politicians.
- Being able to recover more oil and then recycle the oil into practical uses benefits every organization involved with the spill.

***The impact of being able to accomplish all of the above will have global implications upon how oil and HNS releases are dealt with and promotes the oil industry and EPA/USCG/NOAA as providing leading-edge technology for dealing with on-land and marine oil spill events.***

We are all aware the outcome of every oil spill since the Exxon Valdez has been exactly the same and that the same equipment and techniques employed twenty-seven years ago are pretty much the same equipment and techniques used today.

Accordingly the term **Net Environmental Benefit Analysis (NEBA)** gets interjected into oil spill operational response and mitigation analysis after each and every event.

What exactly are the environmental benefits of failing to recover 85 – 90% of any oil spilled over the past thirty years? Who is the primary beneficiary of this woeful inadequacy of the response operations being employed?

**Improve societal acceptance of pipeline, rail & offshore activities**; as stated previously the public's perception of the oil and gas industry's ability to effectively cleanup oil spills is that the industry does not know how to cleanup oil spills. The fact that Macondo/Deepwater Horizon oil spill is one of the reasons for investigating and funding innovations to the way oil spills are dealt with is testimony to this (GOM Foundation et al).

Any innovation that contributes positively to the public's perception that the oil and gas industry has improved oil spill recovery statistics is bound to impact upon their acceptance for increased exploration and development of offshore, marine and on-land activities; thereby also contributing positively to the USA and global community's economy.

IMBTEC advocates the use of oil-sensitive, super-absorbent polymers such as Imbiber Beads® and their use in conjunction with the fast-attack spill response HEROS™ Treat & Skim™ System for improving the recovery of spilled oil as opposed to relying upon the same equipment and techniques that have been proven more cosmetic than effective over the past twenty-seven years since the Exxon Valdez.

Imbiber Beads® AAT™
RE-DEFINING ENVIRONMENTAL SOLUTIONS

*"The Imbiber Beads® performed exactly as the manufacturer stated, absorbed fuels and left the water standing … The ability to capture and contain a free phase liquid is without equal in most cases…*" **US Air Force – Management Equipment Evaluation Program**, Eglin AFB, FL

Yours truly,

John S. Brinkman, President
Imbibitive Technologies