

**Findings and Conclusions from the Alternative Coastal Protection and Clean-Up
Technology Workshop
Hosted by EPA and Other Agencies in the National Incident Command
Held on June 5, 2010 at UNO**

EPA and the National Incident Command (NIC), with assistance and participation by numerous other federal agencies including NOAA, USCG, and USDA, held a workshop at the University of New Orleans Lindy Boggs Conference Center in New Orleans on June 5 with key emergency response and local ecosystem technical experts. Over 30 experts participated in the workshop, which included a discussion of the NIC process and other federal efforts and breakout sessions on technologies and techniques that fell into three areas: “Keep it out” (containment and prevention measures), “Get it out” (short term approaches to oiled systems), and “Get rid of it” (bioremediation). The session was held in order to facilitate the discussion between the federal partners and the local scientific experts in the region and to engage all interested parties in the process more fully. The discussion relied heavily on a draft National Response Team (NRT) document “Oil Spill Response Strategies for Coastal Marshes During the Deepwater Horizon MC252 Spill” which is now posted on the Deepwater Horizon response website (www.deepwaterhorizonresponse.com).

It is critical that the entities, individuals and institutions that have expertise and experience in the Gulf of Mexico region be involved fully in the process of evaluating new technologies and approaches to the cleanup and restoration of these varied ecosystems. There has been tremendous work and sound research into these systems and that expertise should inform the current response and recovery efforts.

Provided below is a summary of the key findings of the workshop. The notes capture the flow of the discussion and general consensus points.

General points:

- While resilient, this is has been a stressed ecosystem. The ongoing oil release is further taxing this system and requires that all parties take immediate and drastic measures to protect this system, potentially strengthen its resilience, and clean up damage to it from the oil release.
- The interrelationship of the tidal marshes to river flows to the structure of barrier islands is something that must be considered fully when deploying various cleanup and prevention technologies. One technique cannot be applied to all systems. The differences between bays, beaches and marshes need to be respected and treated accordingly
- Local expertise on tidal flows and ecosystems must be engaged and involved in the decision-making process, including decisions about how, when and where to deploy preventative measures.

- All of the experts agreed that it is imperative that science drive these policy decisions. Creating engineering solutions without sound science runs the risk of leaving this region to suffer new, unintended consequences.
- The National Incident Command has established the Interagency Alternative Technology Assessment Program (IATAP) to provide an orderly and unified mechanism for initial screening, evaluation, and application of promising technologies. EPA, along with the USCG, MMS, and NOAA staff participates in the IATAP. Under the structure established by the NIC, EPA is assigned with evaluating promising Alternative Response Technologies. The overall objective is to deliver the best technological tool box for coastal protection and clean up to the ongoing emergency response efforts. A notice of the process was published in the Federal Register on June 4 and more information can be found on the Deepwater Horizon response website (www.deepwaterhorizonresponse.com) under “suggestions”.
- Good technologies should be used in the right situations and all technologies and approaches are situation dependent. With respect to marshes, for example, the experts agreed that the best technology may be nature itself.

Recommendations for prevention:

- Keeping oil out of the marshes and off of the coastline is, by far, the preferred emphasis, by all parties.
- We should link the fine-scale estuary and tidal zone hydrologic models already developed by regional universities and consortia to the empirical observations and regional scale modeling being used in this response. This could allow us to construct a more useful physical barrier movement and deployment strategy.
- There should be a quick evaluation done, based on data and science, of the last 6 weeks of oil movement observations, river flow, and wind/water currents to determine the effects of Mississippi River flow on movement of oil.
- Experts urged the federal government should consider managing water flow to facilitate an improved use of the Mississippi river flow as an oil movement management technique, keeping in mind environmental impacts of water flow decisions, including life cycles of aquatic species, etc. Initial review has begun by the Army Corps of Engineers and preliminary discussions with affected states initiated already.
- There should be a more robust and widespread use of near-shore sentinels, to supplement the ongoing forecasting and observation work being conducted. This could be as simple as deploying crabbers to lay absorbent boom in positions to provide an early detection system.

Recommendations for areas where oiling has occurred:

- The participating experts posited that there are many things that should not be done to respond to post landfall gross oil contamination, especially to marsh/mangrove ecosystems, as the harm caused by certain measures would exceed the benefits of the action. These include:
 - Do not use actions which will drive oil into sediments, including walking around in marshes
 - Do not burn oil-contaminated vegetation if there was insufficient water depth (threatening root damage) or if the potential for re-oiling of the same area existed
 - Do not apply dispersants in marshes. The objective of any intervention should be to make the oil easier to recover – “lift and float”
 - Avoid high pressure washing which would tend drive oil deeper into marshes or sediment
 - Do not wipe blades of marsh grasses
- Use of any measure should be situation and ecosystem specific. One size does not fit all and the unique characteristics of these areas must be respected.
- In marshes, several techniques should be included in the toolbox and further explored. These include:
 - Polypropylene (PPL) sorbent booms appeared to be effective with relatively high surface area and affinity for oily product.
 - The effectiveness of other sorbent boom materials (such as Kenaf or wood shavings) should be compared to PPL for surface area, product affinity, weight, disposability, and cost
 - Deluge flushing using ambient water at low pressure could assist in dislodging material. This could be combined with confined volume skimmers; new products are on the market.
- The effectiveness of any techniques should be evaluated over time and adaptive management practiced. For example, ambient water washing should be monitored for erosion risks, and to see when the oil recovery curve began to flatten out.
- Any physical removal interventions should be evaluated for its potential benefit relative to natural attenuation.

Recommendations for bioremediation:

- The participating experts stressed that a key caution is that heavy human traffic or vessel traffic in the vegetative areas should be limited and mechanical measures should not disrupt the substrate.
- The marshes of the Gulf Coast are quite resilient to oil infiltration and have natural mechanisms for self-remediation. Many of the experts believed that vegetative impacts

for directly impacted areas would recover in a window of 1 to 3 years and that in some cases perhaps up to 5. For example, during hurricane Katrina, there were numerous (over 100) smaller crude and refined oil spills, with the top 6 crude spills depositing about 8 million gallons. In many cases the recovery in these areas has been in the 1 to 3 year time frame.

- Generally speaking, waters in the Gulf of Mexico and along the Gulf Coast are not nutrient limited and therefore, the addition of nutrients (fertilizer) would not likely have an effect of speeding recovery.
- Oxygen is the other key ingredient for robust biological activity and digestion of oil. In some cases using an organic sorbent could “wick” the oil to a higher oxygen zone. That would have to be balanced against other methods such as fresh water diversions that are oxygenated or even oxidizing agents.
- Augmentation of biology through either bacteria or fungi addition was not generally viewed as necessary or helpful for these ecosystems.
- Seeding or planting, where necessary and where the seeding or planting activity would be done with minimal physical intrusion, should be explored and included as a possible technique.
- Fire is another technique that could provide benefit, but not until after the key growing seasons. Fire could serve to recycle needed nutrients, and generate an environment of biological succession that could be rejuvenating for the marsh but if done at the wrong time or without proper water, this could cause irreparable harm to root systems and substrate.