



A Call for a Twenty-First-Century Solution in Oil Spill Response

An Analysis of the BP Macondo Spill Cleanup

A Lawrence Anthony Earth Organization (LAEO) Research Paper

---PREVIEW---

The guidance material contained in this work is a constructive offering for every oil-producing country in the world and associated industry members who have mutual concerns for their potentially contaminated ecosystems. Its recommendations have begun to be adopted in numerous countries and by industry with now several instances of successful use in large-scale cleanups on spills of significance.

It should be noted that the content of this *Preview* and the complete body of work it stems from, has been peer reviewed by qualified oil spill response professionals and several former/retired EPA scientists/toxicologists and legal professionals with 25 years experience assessing this type of information while serving with the U.S. Environmental Protection Agency.

How to Measure Effective Response:

One of the critical points brought forth is a fundamental principle overlooked during and after the 2010 BP oil spill cleanup:

The foremost reason one cleans up an oil/chemical spill is to *REMOVE* the pollutants/toxicity from the environment as rapidly as possible so that living organisms can survive and the ecosystem can sustain itself.

Utilizing this principle as an inherent and elementary standard for oil spill cleanup policy and guidance establishes a valuable frame of reference by which one should evaluate response methods, (e.g. in situ burning, mechanical recovery, sorbents, chemical dispersants, and other agents such as bioremediation) as to their effectiveness, safety and economic viability.

Oddly, four years after the BP spill incident and many subsequent industry conferences and published studies later, minimal changes have been made in oil spill response plans and tool kits which signifies expensive future problems and inadequacies. This was notably evident in the most recent March 2014 Houston Ship Channel barge collision where a 170,000 gallon spill disrupted approximately \$1.5 billion in shipping commerce and impacted countless migratory birds and continues to threaten a multi-billion dollar fishing and tourism industry because of its spread to the sensitive bird nesting, fish spawning and wildlife habitats in Galveston Bay.

Outmoded Standards:

LAEO's independent team of researchers maintains that the current U.S. spill remediation standard of "25 percent removed" is an unacceptable industry benchmark for an *effective spill response*, particularly when research has found there is existing, already proven remediation technology fully available that attains vastly superior results. The question is, how did these sub-standard outcomes become the acceptable norm?

It appears that educators and experts in the field may have lost their perspective during the past 25 years with standards gradually watered down over time as “*the best one could expect under the circumstances*”. Some have even asserted that fully cleaning up an oil spill is not even possible.

LAEO’s analysis and research paper invites and advocates for the possibility of an alternative stance and outlines a workable oil spill clean up system that would hold firm Clean Water Act standards to a more complete removal of chemical spills, with greatly reduced costs and environmental impacts. Embracing such a standard would ultimately compel the necessary science and technology advancements and planning into action and raise the bar in expected results with greater efficiencies and economic advantages. It is unfortunate that industry and regulators alike have *unknowingly* subscribed to a technologically obsolete but entrenched system for handling oil spill accidents and pollution. The broad *consensus* on ‘how we have always done things’ has clouded the thinking of those with even the best of intentions!

This manifestation in thinking was clearly evident and expressed in the *Proceedings of the National Academy of Sciences* (PNAS) journal of December 2012 issue. The special feature on the 2010 BP spill response (“*Perspective--Science in Support of the Deepwater Horizon Response*”) completely omitted the importance of the above principle (removing the toxicity and damaging characteristics of oil from the environment to the highest possible degree) as the basis for measuring response effectiveness. While hailing the cleanup as *successful*, the *Perspective*, co-authored by federal interagency scientists and other experts, also acknowledged, “*Despite aggressive recovery and removal efforts, only around one-quarter of the oil was removed by the federally directed response.*”

Chemical Dispersants and Public Perception Issues:

Both industry and federal agencies have continued to assert that chemical dispersants serve a useful purpose in spill response toolkits; especially in worse case spill scenarios. However, public perception and the growing controversial science and environmental concerns over dispersant use are a major issue and problem for responsible parties, OSROs and government regulators. For instance, amongst the thousands of media and journal reports, the [Australian 60 Minutes](#) investigative report airing in August 2013 lead to Australian government officials announcing a suspension on the use of chemical dispersants in their waters and active work to find better solutions.

This *Twenty-First-Century Solution* paper reveals a legitimate concern that the track record of federal agencies tasked with protecting oceans, other waters and natural resources lays bare their continued assertions of false premises that (a) the negative effects of chemical dispersants are uncertain and “need more study before anyone will truly know the effects for sure,” and (b) there are no known better methods at this time. Holding to these erroneous beliefs, they continue to use, stockpile and solely pre-authorize toxic chemical dispersants as a necessary spill response method.

With ample studies cited, LAEO builds a science-based case for restricting the use of chemical dispersants in response plans and replacing them with existing, proven, vastly superior nontoxic solutions, one of which is listed on US EPA’s National Contingency Plan (NCP) product schedule and so could be deployed immediately.

Existing Solutions in the NCP:

LAEO researchers examined the NCP listed spill-response methodology—Bioremediation Category *Enzyme Additive Type/OSE II*—finding it met the criteria of rapid detoxification of an oil spill while diminishing the adhesive properties of a spill quickly preventing the oiling of shorelines, birds and other wildlife. The solution paper also contains a revised Bioremediation Fact Sheet that fully explains the mode of action and workability of this clean up system for use on open water spills.

Calling for a complete change in methodology for ocean and open water environment spill response is a necessity if one keeps in mind again that the only reason for the existence of contingency plans and preparedness at all is to protect vulnerable ecosystems and human health by removing the harmful compounds and other damaging aspects of an oil spill so that living organisms, from the tiniest microbes up to the largest mammals, can survive.

Differentiating Research:

While considerable presentations have been made by many covering the *lessons learned* from the Gulf of Mexico BP Deepwater Horizon disaster, this paper advances considerably different thinking on the subject with practical solutions that have gained wide consensus from oil spill response professionals in many key oil-producing regions of the world. This new perspective makes for an easily implemented change in spill

cleanup methodology, without added expense or newly required deployment systems raising the bar in Clean Water Act standards with economically viable solutions.

Written and compiled by the Lawrence Anthony Earth Organization's (LAEO) Science and Technology Advisory Board, the oil spill solution paper includes:

- An understanding of the Clean Water Act
- Identification of *misguidance* in the U.S. National Contingency Plan (NCP), which has been clouding On-Scene Coordinator decision making and cleanup results
- Common misconceptions about bioremediation agents
- Corrected science guidance related to bioremediation techniques, NCP category definitions, and modes of action in marine and freshwater environments
- Identification of non-toxic methods for updating contingency plans including:
 - How to assess spill cleanup products
 - Feasibility assessment criteria
 - Alternatives to chemical dispersants

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