

RDC BAA White Paper Submission to USCG Oil Spill Response Portal June 7

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Integrating Shoreline Remediation Technologies for Fast-Track Response

A Team of Louisiana-based oil spill response and remediation companies are offering to assist the USCG in developing a 'fast track' response to cleaning oiled marsh shorelines, barrier island beaches, wetlands, navigation waterways, as well as oiled ships and response vessels while in the water. The technologies work together.

The concept is to optimize the use of physical, chemical and biological methods to expedite the RECOVERY of oil from various sensitive ecosystems with minimal impact to wildlife and habitat. The approach integrates the use of the following remediation technologies, all of which are currently available in Louisiana:

- Oil skimmers designed for shallow water, limited access and suitable for manual deployment from skiffs in marsh; easy to control and position for optimal recovery
- Oil-water separator boxes suitable for placement in shallow water adjacent to fringing marsh to collect oil; light weight, portable and easy to deploy from skiffs
- Shoreline cleaner that facilitates the recovery of stranded oil rather than emulsifying into the water column; acts to 'lift and float' oil emulsion from substrate
- Mild surfactant-nutrient solutions used to rinse off residual hydrocarbons, improve oxygen penetration to sediments and enhance natural biodegradation of remaining contaminants, used alone for lightly oiled areas or after shoreline cleaner
- Absorbent boom made from dry peat moss as a biologically active material to absorb and biodegrade residual oil after recovery of bulk oil; degrades in place
- Oxygenation enhancement with time-release tablets of alkaline peroxides

The mechanical equipment is light, portable and easy to deploy in marshes and small bays or wetlands using shallow draft skiffs, airboats and tunnel boats. They are field proven equipment manufactured and/or distributed in Louisiana.

The biochemical treatment products consist of the following:

- **CytoSol BioSolvent** – Dissolves, 'lifts and floats' the oil emulsion off vegetation, shoreline, & substrates for recovery by mechanical skimmers; the product is made from vegetable oil & fats. It includes nutrients to facilitate biodegradation of residual oil. Listed on NCP Schedule of Products (1997). It is licensed in CA as a shoreline cleaner (1997) and was tested most recently during the 2007 spill on SF Bay; also used for cleaning vessels in water. Videos of pilot testing with oil emulsion May 22: www.cytosolbiosolvent.com

- **Proteus 168-Tx Chem-HE 1000** – A mild surfactant and nutrient ‘rinse’ used to facilitate the removal of light coatings of oil on vegetation, shorelines and rocky substrates; It proves to be an excellent ‘second step’ to the CytoSol Process (follows the Biosolvent application, above). Listed on EPA’s NCP Schedule of Products since 2005. Extensive experience in oil spills clean-up. The surfactant improves penetration of oxygen and nutrient into sediments and facilitates the biodegradation of residual petroleum after bulk recovery. Distributed in Louisiana. See www.proteusint.net
- **BioMatrix** – A dry peat (<10% moisture) absorbent formulated for use in oil spills as a powder to be broadcast after the bulk recovery of oil from shorelines (e.g., following the CytoSol Process & Proteus 168 treatment). It is available in other formats, including floating absorbent boom. The material can be left behind as it rapidly decomposes the absorbed traces of oil. It would be an excellent technology to integrate with CytoSol and Proteus treatments of marshes, shorelines and oiled response vessels (in water). Biomatrix (Spill Sorb) is listed on the NCP. See www.biomatrixusa.com

These products have been field tested in various remediation applications and have been listed on the National Contingency Plan Schedule of Products for years. The oxygenation technology is less well tested in oil spill applications and is in the process of completing the requirements for the EPA to be listed on the NCP:

- **Aqua Pucks** – Time release tablets of alkaline peroxides that release hydrogen peroxide gradually into oily water and remediation zones to oxygenate the active biodegradation of petroleum by naturally occurring hydrocarbon-degrading bacteria. Extensive field experience with treating contaminated lagoons, eutrophic ponds, storm water, sewer outfalls and Ag runoff. Aqua Dynamics Solutions. See www.aquadynamicssolutions.com

This Team of companies is already engaged in research collaborations with the University of Louisiana (Department of Engineering) and Louisiana State University as we seek to fund their research. The researchers may be contacted upon request.

The concept of **integrating** various oil cleaning technologies would allow the USCG and other response agencies to field test the ‘tool box’ of individual ‘tools’ together, as combined, sequential methods for sensitive habitat and shoreline remediation.

The Team facilities include our Spill Response Center, Wet Chemistry Laboratory and Pilot Testing Facility at **Rapid Energy Services** in Lafayette, LA. www.rapidenergyservices.com. Rapid is hosting the technology integration effort and facilitating with product blending, deployment infrastructure and oil field industry expertise. **CytoCulture** maintains a full service environmental microbiology laboratory to monitor populations of HC-degrading bacteria. www.cytoculture.com. We have laboratory data for heterotrophic HC-degrading aerobic & anaerobic bacteria from samples collected at an oiled marsh on May 19.