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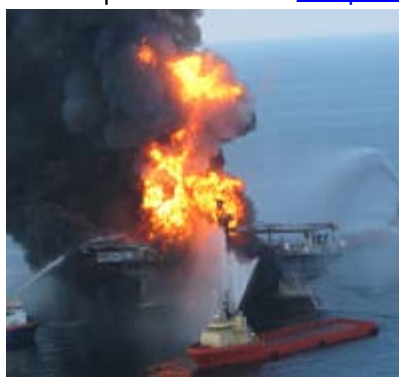
Technical Textiles *Wipe Up!*

By J. Michael Quante

Textiles have been used by the cleaning industry for centuries to mop, wipe, scrub, polish, and dust. However, today's messes pose challenges for a whole new generation of textiles to tackle.

Oil Spills

The explosion of the [Deepwater Explorer](#) off the Gulf Coast of the United States in April 2010



generated a massive oil spill fouling both water and beaches. The need for effective cleanup technology made news worldwide. Various technologies were applied for recovery and removal of the oil. Although most of the technology being used for oil spill cleanup is [decades old](#), research efforts are underway to change this. For high profile, ocean cleaning technology, there is the [Wendy Schmidt Oil Cleanup X Challenge](#). Some of the top ten finalists incorporated textiles in their solutions. Skimmers can include oil-loving (oleophilic), fiber-based materials in disk, brush, drum, or mop-rope configurations to separate and recover the oil. Booms can also have textile components to help absorb oil. New barrier and oil absorption products are

being developed for use on beaches, coastlines, and smaller waterways as well.

Disaster can sometimes be the mother of invention. It can also be the mother of adaptation. Consider the [Fibertect](#) sorbent material developed by Seshadri Ramkumar's team at Texas Tech University. Initially developed for use as chemical warfare decontamination wipe for the US military, Ramkumar saw the potential for Fibertect to effectively remove oil contaminating the Gulf and its beaches, and successfully tested the product there. Fibertect is a three-layer material consisting of two



Fibertect Mitt
Photo: First Line Technology, LLC, Chantilly, Va., USA

external layers of nonwoven raw cotton sandwiching an inner layer of activated charcoal. It provides a unique one-two punch: not only does the cotton readily absorb the oil from the water, the charcoal also traps volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) from the oil that can be harmful to workers and others exposed to them. Fibertect stuffing can be used in PVC-coated oil cleanup booms.

Ramkumar says that the sorbent can hold up to 15 times its weight in oil and is reusable (6-10 times) and biodegradable. The use of West Texas dry land cotton, containing up to 2% wax, may further improve Fibertect's oil absorbing capabilities. According to Ramkumar, research continues with biodegradation studies, recycling, and efficacy trials. Fibertect is [available](#) as pads, sheets, perforated roll, hand mitts, and stuffing. It can be used for many different [applications](#) in the oil and natural gas industry and defense sectors.



Wiping Using Fibertect
Photo Credit: First Line Technology, LLC Chantilly, Va., USA

Beach protection during the Gulf oil spill crisis also got a boost from [HeiQ Materials AG](#) and its partners, the [TWE Group](#) and [Beyond Surface Technologies](#), by forming the Oilguard consortium and developing the oil absorbing, water repellent nonwoven [Oilskill](#). These partners quickly combined their skills in nonwovens manufacturing and special chemistries for applying oleophilic, hydrophobic textile effects to create Oilskill. This product was produced and available in large quantities a few weeks after the crisis began thanks to this effective collaboration. It is one of only 300 technologies (out of 120,000 submitted) chosen by BP's Alternate Response Technology Team for actual deployment. The product also received certification by the US Environmental Protection Agency (US EPA) for use in oil spill situations. According to the company, as of September 2010, the US Coast Guard considers Oilskill a proactive technology that can prevent large-scale oil contamination of beach and coastal areas.



Oilskill Cleaning Up Beach
Photo: HeiQ Materials AG



Oilskill in Action
Photo: HeiQ Materials AG

"Oilskill can absorb about 600% oil based on its own weight...is also very tear resistant and therefore uniquely suitable for heavy duty use that includes [resisting] the forces of wind and water." says Kristofer Skantze, head of sales and marketing at HeiQ. Maximum product dimensions are 5.3 m × 210 m, a suitable length for beach protection applications. These products are also available for the cleaning of boats and for separation of oil from water in rivers and streams. Oilskill hoses and sandbags will also be made available to assist in cleanup operations.

But, what can be done with all of that oily waste? Amazingly, industry is already providing answers. General Motors is using [oil-soaked absorbent boom materials](#) in the Chevrolet Volt's air-deflecting baffles, adding a new dimension to creative textile recycling.

More Messes!

Textiles serve many different roles in fighting pollution and preserving or restoring natural environments. As [air filters](#), they are unsurpassed in removing even the smallest particulates. For [water purification](#), [membranes](#) play an essential role in [textile wastewater cleanup](#) and ensuring safe drinking water for millions of people. [Geotextiles](#) help prevent soil erosion and keep the waste in place.

Once again, textile technology has adapted to meet the problems our modern world presents. The humble cleaning cloth has indeed come a long way!