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Indian-origin scientist has solution for oil spill

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As BP struggles to contain the oil spill in the Gulf of Mexico, an Indian-origin scientist from Texas University has created a special cotton fabric that can clean up crude oil up to 40 times its weight and help in cleaning efforts.

Seshadri Ramkumar, Associate Professor of the Texas Tech Institute of Environmental and Human Health, has created a non-woven environment-friendly cotton carbon absorbent wipes, Fibertect.

"Cotton fibre contains 0.5 per cent wax, which enables it to soak up 40 times its weight," Ramkumar said.

"The chemistry of cotton makes it the ideal material for oil absorption with its waxiness, strength when wet, absorption capacity and ability to biodegrade," explained Professor Ramkumar, who described his discovery as "a blessing in an ironic situation."

"The synthetic booms soak up only a third of what cotton absorbs and are not landfills. They will stay put forever," he added.

"Add chemicals and it could absorb up to 70 times its weight," he said.

Through his research with nonwoven cotton, Ramkumar may have found an all-natural way to absorb oil from spills.

Rather than spending money and effort on containment structures and synthetic materials, he recommends utilizing cotton.

Ramkumar is surprised that why cotton had not been considered earlier,

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reported the A-J's Alyssa Dizon.

"We are the only ones...to my knowledge...focused on taking cotton to oil absorption using nonwoven technology," he said.

Unlike apparel production, there is no need to go through the expensive processes of dyeing, bleaching and weaving the cotton.

Since the explosion of an offshore rig more than a month ago, scientists and London-based BP oil company have been trying various methods to contain or soak up as much oil as possible, largely with limited or no success.

One cotton product Professor Ramkumar invented last year was Fibertect, a commercially sold nonwoven decontamination wipe that absorbs toxic chemical substances.

This is significant because now that the oil has reached the coastline, the nonwoven cotton technologies potentially could be doubly beneficial.

"Any wildlife rehabilitation that will occur we believe could be assisted with the Fibertect invention as well as other nonwoven applications from his lab," said Ronald Kendall, founding director of Tech's environmental institute.

"There are just so many applications of Dr Ramkumar's technology to take cotton and turn into products that we never even thought of before," he added.

The potential benefits of Dr Ramkumar's research stretch far beyond helping preserve the environment from natural and man-made disasters and raising Texas Tech's reputation in the higher education community nationally and internationally.

New opportunities for cotton are always good news for producers, especially if it will help them sell low-quality cotton, said Shawn Wade, director of communications for Plains Cotton Growers.

Several million feet of booms, lightweight tubes used to recover oil, have already been tossed into the ocean according to the National Oceanic Atmospheric Administration.

What makes Fibertect different from other cotton absorption technologies, however, is its combination with carbon.

It is a three-layer design consisting of a top and bottom layer of cotton to absorb oil and a middle layer of carbon that absorbs hydrocarbons and harmful carcinogenic vapours released from the oil.

Ramkumar said his unique use of activated carbon fabric in oil clean-up is extremely beneficial because the toxic vapours could potentially destroy ecosystems and cause cancer in humans if they are not absorbed.

Ramkumar said he and other researchers are simply taking what nature provides and applying it in new ways.

"Mother Nature has given cotton wax to protect it," said Ramkumar.

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"The natural wax on the cotton helps to hold the oil together. So, wax has affinity towards oil, and then the carbon has affinity towards vapour, it holds the vapour."

Because Fibertect is all-natural, unlike synthetic plastic booms previously used to clean oil spills, it is 100 per cent biodegradable and one sheet can be wrung and reused up to five times.

According to www.propublica.org, the only cleaning method currently being used by BP is dispersants, which is an aerial spraying technique.

The dispersant most commonly being used is Corexit EC9500A, which the Environmental Protection Agency has shown to be more toxic and less effective than other methods.

Ramkumar said the problem with Corexit EC9500A, besides the fact that it itself is toxic, is that it simply breaks down the oil into tiny particles which remain in the water and can be harmful to marine life and humans.

He said Fibertect eliminates this problem because it absorbs the oil rather than break it down.

Samples of Fibertect have been sent to be BP but no decision has been made on whether or not to use it.

Haldenby and Ramkumar said if they do decide to use it, this could be a big step towards a National Research University status for Texas Tech.



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