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Tech professor says cotton product could help with oil spill

By Alyssa Dizon | AVALANCHE-JOURNAL

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Story last updated at 5/16/2010 - 12:29 am

With the country scrambling to find ways to clean up the oil spill in the Gulf of Mexico, a Texas Tech professor said the South Plains may just have the answer.

Rather than spend money and effort on containment structures and synthetic materials, Seshadri Ramkumar, associate professor of the Texas Tech Institute of Environmental and Human Health, recommended cotton.

Ramkumar, who creates rolls of nonwoven cotton at his Nonwovens & Advanced Materials Laboratory at Reese Center, said the idea came to him a few weeks ago, and he was surprised cotton had not been considered earlier.

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



On April 20, an explosion at the Deepwater Horizon rig leased by London-based oil company BP caused the massive spill. Experts say the rig, located 50 miles off the Louisiana coast, has been leaking oil at a rate of 200,000 gallons per day. Since then, scientists and BP have been trying various methods to contain or soak up as much oil as possible.

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

Cotton fiber contains 0.5 percent wax, which enables it to soak up 40 times its weight, Ramkumar said. Add chemicals and it could absorb up to 70 times its weight, he said.

According to the National Oceanic Atmospheric Administration, several million feet of booms, lightweight tubes used to recover oil, have already been tossed into the ocean. Those synthetic booms, Ramkumar said, soak up only a third of what cotton absorbs and are not biodegradable.

"You take those plastics and where do you put them? In landfills," he said. "They will stay put forever."

In addition, a little cotton can be stretched a long way and be produced domestically.

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

Ramkumar and his small group of graduate students have been researching ways to turn discounted, low micronaire cotton into valuable, high-tech products. Micronaire measures the cotton's quality; discounted cotton has micronaire of less than 3.5. The lower the quality, the more discounted the cotton price becomes, so Ramkumar wanted to find alternative markets to use that harder-to-sell cotton.

"You don't have to reinvent the wheel - all we are doing is we are developing a product which is logistically better and convenient using cotton," he said.

One value-added discounted cotton product he invented last year was Fibertect, a commercially sold nonwoven decontamination wipe that absorbs toxic chemical substances.



Zach Long

Dr. Seshadri Ramkumar of Tech Institute of Environmental and Human Health believes he has found a new market for discounted cotton and a solution to cleaning up the oil spill in the Gulf of Mexico. (Zach Long)

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Cotton boom advantages

- 1 gram of cotton can absorb 40 grams of oil.
 - Strong when wet.
 - Environmentally sustainable.
 - Cost-effective.
 - Alternative market for discounted cotton.
- #### NOAA oil spill cleanup
- Total response vessels: 526.
 - Containment boom deployed: More than 1.1 million feet.
 - Containment boom available: More than 300,000 feet.
 - Sorbent boom deployed: More than 320,000 feet.
 - Sorbent boom available: More than 850,000 feet.
 - Boom deployed: More than 1.4 million feet (regular plus sorbent and fire boom).
 - Boom available: More than 1 million feet (regular plus sorbent and fire boom).

As oil continues to contaminate the Gulf, Ronald Kendall, founding director of Tech's environmental institute, said it could only be a matter of time before it reaches the Texas coast.

Kendall and a team of scientists have been taking frequent trips to the coast to monitor the water and marine life, and he said the nonwoven cotton technologies could be very useful.

"Any wildlife rehabilitation that will occur we believe could be assisted with the Fibertect invention as well as other nonwoven applications from his lab," he said. "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."

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

"It puts the discounted cotton in a different ball game," said Appachi Arunachalam, a graduate student in Ramkumar's lab. "You go from a push market to a pull market."

About 35 percent of the region's crop has a low micronaire, Ramkumar said.

Overall, producers lost about \$25 million from the 2009 crop and \$29 million from the 2008 crop.

However, with the majority of the region's 2009 crop sold, there will most likely not be enough cotton to produce booms at this time, said Jay Yates, an agriculture economist with the Texas Agri-Life Extension Service. There may be some cotton still in merchants' storehouses, but to produce nonwoven booms in bulk, one would need to wait for the 2010 crop.

Whether cotton booms are used for oil spills or other future spills, Ramkumar was confident in the profitability of nonwoven cotton. If he had to, he would even use his year-old lab to mass produce it himself.

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TEXAS TECH/Professor says nonwoven technology could offer solution to Gulf oil spill, provide alternative market for growers' lower-quality fiber

- Oily water recovered: More than 5 million gallons.
- Dispersant used: More than 475,000 gallons.
- Dispersant available: More than 215,000 gallons.
- Overall personnel responding: More than 13,000.

Reader Comments

Posted by: [txold1](#) at May. 16, 2010 at 6:29:46 am + 1 Rating

this is a dynamite idea,,,,push it bucause i believe it might work

Posted by: [txold1](#) at May. 16, 2010 at 6:30:41 am + 1 Rating

because

Posted by: [Mercaptan](#) at May. 16, 2010 at 9:08:24 am + 2 Rating

I saw a video of a couple of redneck hicks from Louisiana demonstrating how you could take coastal burmuda hay and blow it on top of the slick and let it float around. It won't sink and the oil sticks to it and it can be handled at the coast with equipment that is already in place to handle sea weed when it comes ashore. I think there are many natural resources available if BP uses their heads. I just hope they get after it!

Posted by: [adunn](#) at May. 16, 2010 at 10:10:16 am + 2 Rating

Mercaptan---BP using their heads? If that had been happening, we wouldn't be in this awful mess.

But you're perfectt correct, in that there are myriad natural (mostly agricultural) product what could potentially bond to or absorb large quantities of oil, and then be relatively easy to dispose of.

I used to work as an electrician in the Littlefield denim mill, and we all used wads of the cotton lint, which was everywhere, to absorb grease and oil. Better than the "kitty litter" most mechanic shops use.

Posted by: [Pappion](#) at May. 16, 2010 at 10:38:58 am

A lot of variables there for this emergency to deal with but why didn't they do what the UAE did in their far greater oil spill? They brought in all their ships (all!) and contained the spill - that one was larger than the Exxon and this one combined. What on earth is wrong with asking for help, and using what was known to work??

Posted by: [RedR8dr4Life](#) at May. 16, 2010 at 10:49:52 am

Earlier this week ABC News had a story about four or five different inventors that went to New Orleans to show how their inventions could help with this. But, of course, BP hadn't agreed to meet with any of them.

With what is now the biggest oil spill in history, you would think BP would consider any and every solution; instead, they've adopted a bunker mentality while the spill just gets worse.

Posted by: [RedR8dr4Life](#) at May. 16, 2010 at 10:51:44 am

Pappion, was writing my comments about the same time and you asked exactly what I was thinking: Why isn't BP being more proactive in asking for help/solutions.

Evidently, they're incapable of using common sense.

Posted by: [windman](#) at May. 16, 2010 at 3:45:51 pm -1 Rating

A giant maxipad! MAXITECH! :)

Posted by: [windman](#) at May. 16, 2010 at 3:47:45 pm -1 Rating

On a more serious note, just send the TTU Administration and the Board of Regents, maybe they can suck up oil like they do tuition money...they've gotten about 10% more efficient every year. I even bet they could negotiate a deal to have the ol' pirate himself sail them around on his dingy.

Posted by: [arizonabay](#) at May. 16, 2010 at 11:28:17 pm

Mercaptan...do you mean this video?

<http://www.youtube.com/watch?v=k5SxX2EntEo>

This hay idea is better than what the Tech prof has come up with. It's easier to produce, takes less energy to produce it i.e. less water etc.

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