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AOL NEWS SPECIAL REPORT

THE NANOTECH GAMBLE

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Scientists Oppose Nano-Dispersant for Gulf

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Andrew Schneider Senior Public Health Correspondent

(May 28) -- The massive Gulf of Mexico oil spill has already hemorrhaged anywhere from 18 million to 40 million gallons of oil into the water, leaving federal and state emergency response officials desperate for any way to capture the spreading raw crude and protect the U.S. coastline.

But this week, scientists in the U.S., Canada, South America and elsewhere pleaded with the government not to approve one option: a dispersant that contains unidentified and possibly untested nanoparticles.

Seventeen environmental, public health advocacy and research organizations [wrote a letter](#) to EPA Administrator Lisa Jackson asking that her agency refuse to allow the use of a nano-based dispersant produced by Green Earth Technologies in response to BP's oil leak, the worst in U.S. history.

The Stamford, Conn.-based company says it sells "totally green" products created from nanotechnology and wishes to scatter G-Marine Fuel Spill Clean-UP! on land and in water affected by the BP rig collapse, the letter warned.



Green Earth Technologies

Green Earth Technologies wants permission to use this product created from nanotechnology to help disperse gulf oil. That is opposed by environmentalists who argue that nanoparticles have been shown to be toxic to humans, mammals and aquatic life.

And Green Earth Technologies is not at all subtle about lobbying hard to obtain expedited approval for the use of the nano-dispersant. The company's green logo is a large G with wings with "Save the Earth" on one side and "Sacrifice Nothing" on the other.

"Call GET and your congressman ... need to act fast and G.E.T. Going!" urges a line at the bottom of their promotional material, websites and advertisements.

That's pretty much the last thing that those who signed the letter want to see happen.

They say that manufactured nanoparticles have been shown to be toxic to humans, mammals and aquatic life. In their letter to Jackson, they included citations to specific peer-reviewed studies documenting those findings.

"We should not blindly trust a company that will not disclose the exact nature of the manufactured nanomaterials it proposes to dump into the sea. You or I wouldn't trust a stranger who wanted to dump undisclosed chemicals in our backyards, and the EPA shouldn't trust this corporation," said Ian Illuminato, health and environment campaigner for Friends of the Earth, which distributed the letter to EPA.

Secret Ingredients

Beth Burrows, who heads the environmental think tank the Edmonds Institute and is also a signatory, expressed concerns about the secrecy that protects manufacturers from having to disclose what's in their product.

"In the case of this nano-dispersant, we do not know what the ingredients are because the companies who make it have the legal privilege of keeping its composition secret so as to protect their 'confidential business information,'" Burrows told AOL News.

Because of the secrecy, the public cannot predict what will happen when these nanomaterials are given access to a new environment, she said.

"By using these untested dispersants, we may simply be entering a new phase of pollution -- one potentially worse -- more costly to the ecosystem, the critters who live there, and those who ultimately make a living and eat from the products of that ecosystem. All of us," she added.



John Moore, Getty Images

The use of tiny particles to break up the gulf slick has come under fire, with some scientists fear that manufactured nanoparticles can travel up the food chain from smaller to larger organisms. Here, a crab skirts tar balls on Grand Isle, La.

The nanotech company admits: "This dispersant formula is protected by trade secrets pursuant to Occupational Safety and Health Agency."

EPA Administrator Jackson was fervent in her testimony before Congress that if proper regulation of toxic material is to occur, companies must be forbidden from hiding behind the confidential business information barricade, as [AOL News reported](#) in a March series on nanotechnology.

This week's letter challenged her to keep that vow.

"The undersigned public-interest organizations respectfully urge the EPA to deny approval of this and similar projects that seek to release nanoscale chemicals or chemicals measuring less than 300 nanometers into the environment. ... We fully oppose this irresponsible, unscientific, and dangerous experiment," the letter continued.

Product Safe, Company Says

Green Earth's website says its nano emulsion technology is "a unique blend of plant derived, water based and ultimate biodegradable ingredients specifically formulated to quickly emulsify and encapsulate fuel and oil spills."

In a news release, Jeff Marshall, the company's chairman and CEO, reported that, "The (spraying) planes are on the ground and ready to go; we are just waiting for the green light from BP, EPA and FEMA.

"There seems to be a lot of confusion as to who has the authority to approve these types of initiatives, so we hope to cut through the red tape as quickly as possible," he added.

AOL News asked a company spokeswoman specifically about the safety and health testing of the dispersant and which nanomaterial Green Earth uses. She said she would have Marshall answer the questions.

But late Thursday, she said that Green Earth declined to comment.

Marshall explained on his website that the small particle size (1 to 4 nanometers) of his dispersant enables it to penetrate and break down long chain hydrocarbon bonds in oils and grease and holds them in a colloidal suspension when mixed with water. Further, he says that EPA has ruled that all of his ingredients are nonhazardous.

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The EPA was asked if it had blessed or even evaluated the nano-dispersant. A spokesperson pointed to the agency's latest list of 118 approved oil controlling products and said that Green Earth's nanoproduct was not on the list.

The EPA says that so far, BP has probably sprayed or dumped a million gallons of various dispersants onto the surface of the gulf, or a mile down at the spewing Deepwater Horizon leak site or into the center of submerged, moving lakes of oil in between.

An EPA toxicologist told AOL News that "there is concern over the toxicity and possibility of harm to the environment, cleanup workers and sea life of some of the agents on the approved list."

He said "increasingly frustrated" EPA scientists and investigators have been working around the clock to verify and back-track the accuracy of the toxicity data of the authorized dispersants, often stymied because some were approved 20 or more years ago.

"If you're adding nanoparticles into the mix, how does anyone know what the health risk is to humans let alone shrimp, crab, fish and other coastal wildlife," said the veteran risk assessor, who didn't want his name used because he wasn't authorized to speak for the agency.

Concerns for Shrimper, Workers

For weeks, Dr. Michael Harbut, and other occupational medicine specialists have been voicing concerns about fishers, shrimpers and workers on the cleanup and response teams being exposed to the chemicals accompanying the penetrating stench of the oil vapor and the dispersants.

Turns out those concerns were well founded.

The Coast Guard said that late Wednesday, it had to order a cleanup fleet of more than 100 boats back to their respective ports after seven crewmen on four different vessels fell ill, probably from the inhalation of toxic vapors. Five were released from the hospital, and the other two were being observed. Reports differ on whether the workers were wearing the government-approved respirators.

The report of the possible use of nano-dispersants has outraged Harbut, who heads the Environmental Cancer Initiative at Michigan's Karmanos Cancer Institute.

"A decision to use nanoparticle-based dispersants in the gulf is less an engineering or environmental decision, but more a public health and individual patient care issue. As does asbestos, nanoparticles have been shown to cause an aggressive cancer called mesothelioma," he said.

And like asbestos in its early usage, human health effects of exposure, ingestion or breathing of nanoparticles have been rarely observed, let alone studied.

"To dump tons of nanoparticles into the food and respiratory cycle in this manner is irresponsible," Harbut told AOL News

"The EPA and OSHA are well aware of carcinogens and other toxins which permeate neighborhoods and workplaces unfettered or inadequately regulated, but for political, economic or other reasons have been left to kill thousands of Americans every year. This is a record that doesn't justify trusting the agencies or the oil companies to do the right things on their own."

The EPA and the Coast Guard are trying to monitor which dispersants BP is using. But environmentalists say it's almost impossible to know what unauthorized materials and oil cleanup concoctions are being used by marina and dock operators and frustrated fishers, shrimpers and crabbers fighting to save their vital breeding grounds.

There is also clear scientific evidence showing that manufactured nanoparticles can travel up the food chain from smaller to larger organisms, thus allowing the toxic properties of manufactured nanoparticles to take hold in the animal food chain, scientists say.

"There is a very legitimate concern that nanosize particles employed in a dispersant could have a seriously damaging effect on the ecology of the ocean and sea life," said Wenonah Hauter, executive director of Food & Water Watch.

"The use of nanotechnology in the ocean is making an irresponsible experiment, and no one knows what the consequences are for the ocean or our food system."

Back-and-Forth Arguments

The entire issue of safety to the environment, sea life and humans has been hurled back and forth from Washington to the Gulf Coast in increasing ferocity. The EPA's Jackson told BP to reduce the amount of dispersants it was dumping into the water. BP ignored the request, the EPA boss said in a news conference last week.

"Due to the unprecedented nature of this event, BP has used dispersants in ways never seen before. That is in terms of both the amount applied -- which is approaching a world record -- and in the method of application," Jackson explained.

She said that dispersants were having some effect but "continue to be the best of two very difficult choices. Their use inevitably means that we are making environmental trade-offs."

But her remarks leave it unclear whether Jackson's agency will approve a nano-dispersant like Green Earth's product.

"We are still deeply concerned about the things we don't know," she said. "The long-term effects on aquatic life are still unknown, and we must make sure that the dispersants that are used are as nontoxic as possible. Those unknowns -- and the lengthening period of this crisis -- are why we last week directed BP to look for a more effective, less toxic alternative to their current dispersant."

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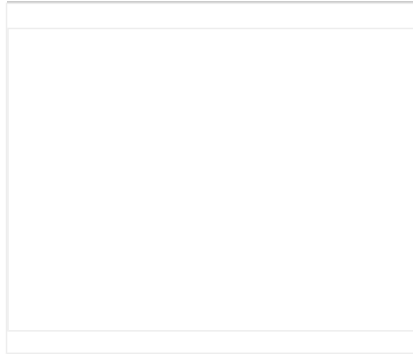
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A light-conducting silica nanowire wraps around a strand of human hair. The hype generated by nanotechnology comes from the big things its tiny creations can do. But a growing body of research shows that with some nanomaterials, their ultra-smallness poses significant health threats.

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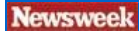
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