

# This oil spill 'the bad one' -- recipe for disaster

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Brown pelicans and gulls fly in front of oil booms along the shoreline at Pass a Loutre, La., where the Mississippi River meets the Gulf of Mexico Friday, April 30, 2010. Wildlife in the region is vulnerable to the looming oil spill from last week's collapse and spill of the Deepwater Horizon oil rig. (AP Photo/Gerald Herbert)

(AP) -- What makes an oil spill really bad? Most of the ingredients for it are now blending in the Gulf of Mexico.

Experts tick off the essentials: A relentless flow of oil from under the sea; a type of crude that mixes easily with water; a resultant gooey mixture that is hard to burn and even harder to clean; water that's home to vulnerable spawning grounds for new life; and a [coastline](#) with difficult-to-scrub marshlands.

Gulf Coast experts have always talked about "the potential for a bad one," said Wes Tunnell, coastal ecology and oil spill expert at Texas A&M University-Corpus Christi.

"And this is the bad one. This is just a biggie that finally happened."

It hasn't quite become a total disaster yet. But it's hard to imagine it not being devastating, said Ed Overton, who heads a federal chemical hazard assessment team for [oil spills](#). The Louisiana State University professor has been testing samples of

the spilled crude.

He compared what's brewing to another all-too-familiar Gulf Coast threat: "This has got all the characteristics of a Category 5 hurricane."

If conditions don't change quickly, devastation of the highest magnitude is headed for somewhere along the coast, said Overton, who works with the National Oceanic and Atmospheric Administration.

More than 200,000 gallons of oil a day are spewing from the blown-out well at the site of BP's Deepwater Horizon rig, which exploded April 20 and sank two days later. Crews are using at least six remotely operated vehicles to try to shut off an underwater valve, but so far they've been unsuccessful. Meanwhile, high winds and waves are pushing oily water over the booms meant to contain it. Besides BP, a slew of federal and state agencies are scrambling to minimize the onslaught of damage.

Experts in oil spills have drills every few years to practice their response for spills of "national significance." One of those practice runs took place just last month in Maine. The [Gulf of Mexico](#) leak is a "combination of all the bad things happening" and makes it far worse than any disaster imagined in the drills, said Nancy Kinner, director of the Coastal Response Research Center at the University of New Hampshire.

"This is relentless," Kinner said.

Most Americans think of Exxon Valdez when it comes to spills. But the potential and likelihood here "is well beyond that," said University of Rhode Island ocean engineering professor Malcolm Spaulding. Because the Deepwater Horizon well has not been capped and may flow for months more, it should be compared to a bigger more dangerous one from a well explosion in 1979, said Tunnell. That was Ixtoc 1, off the coast of Mexico. It

was the worst peacetime oil spill on record.

The current spill "is kind of a worst case scenario," Tunnell said.

What makes this spill relentless and most similar to Ixtoc 1 is that it's an active well that keeps flowing. The Exxon Valdez was a tanker with a limited supply of oil. The rig 40 miles from the Gulf Coast may leak for months before a relief well can be drilled to stop the flow, Kinner said.

And LSU's Overton said: "I'm not very optimistic that they'll be drilling a relief well in three months."

The type of oil involved is also a major problem. While most of the oil drilled off Louisiana is a lighter crude, this isn't. It's a heavier blend because it comes from deep under the ocean surface, Overton said.

"If I had to pick a bad oil, I'd put this right up there. The only thing that's not bad about this is that it doesn't have a lot of sulfur in it and the high sulfur really smells bad."

The first analysis of oil spill samples showed it contains asphalt-like substances that make a major sticky mess, he said. This is because the oil is older than most oil in the region and is very dense.

This oil also emulsifies well, Overton said. Emulsification is when oil and water mix thoroughly together, like a shampoo, which is mostly water, said Penn State engineering professor Anil Kulkarni.

It "makes a thick gooey chocolate mousse type of mix," Kulkarni said.

And once it becomes that kind of mix, it no longer evaporates as quickly as regular oil, doesn't rinse off as easily, can't be eaten by oil-munching microbes as easily, and doesn't burn as well, experts said.

That type of mixture essentially removes all the best oil clean-up weapons, Overton and others said.

Under better circumstances, with calmer winds and water, the oil might have a chance of rising without immediately emulsifying, but that's not happening here, Kulkarni said. It's pretty much mixed by the time it gets to the surface.

The wind and waves are also pushing the oil directly toward some of the most sensitive coastal areas: the marshlands of Louisiana and surrounding states.

And there are three types of beaches: sandy, rocky and marshy. Sandy beaches, like those in Florida, are the easiest to clean, Overton said. By far the hardest are marshlands and that's where the oil is heading first.

Marshes are so delicate that just trying to clean them causes damage, Kinner said. Once the oily mess penetrates, grasses must be cut. But it also penetrates the soil and that is extremely difficult to get out, she said.

The normal bacteria that eats oil needs oxygen to work, and in the soils of the marsh, there's not enough oxygen for that process, she said.

It's also the time of year in the Gulf of Mexico when fish spawn, plankton bloom and the delicate ecosystem is at a vulnerable stage.

Hurricane season is fast approaching in June and experts are sure the oil will still be flowing by then. Though it might seem counterintuitive, a big storm could help by dispersing and diluting the worst of the oil, Overton said.

"A hurricane is Mother Nature's vacuum cleaner," Overton said. Normally it cleans things up. But that's not a solution with a continuing spill.

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