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BP oil spill: Deepwater Horizon and Hurricane Alex

How will BP's Gulf clean-up survive the earliest start to the hurricane season for 15 years, asks Michael Day.

By Michael Day
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Hurricane Alex, which passed over the Gulf of Mexico last week, was the first June hurricane in the Atlantic basin for 15 years. Photo: REX FEATURES

In the Gulf of Mexico last week a huge storm was brewing, as rapidly warming surface waters hit the crucial temperature of 80.6F (27C). Powered by heat transference from the sea surface, cyclones like Hurricane Alex rampage across the coastal regions of the southern states every summer. But this year Alex, and the storms that will follow, threaten to bring extra misery, spreading the huge oil slick further and wider from the stricken Deepwater Horizon rig.

Alex, the first hurricane of the season – and the first June hurricane in the Atlantic basin for 15 years – is the last thing clean-up staff need as they struggle to contain the disaster.

“Already clean-up efforts have been greatly hampered by the storm,” says Professor Ronald Kendall, head of environmental toxicology at Texas Tech University. “This is very early in the season to have a storm the size of Alex. This does not bode

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well for the months to come.”

The US National Oceanic and Atmospheric Administration agrees, predicting an “active to extremely active” hurricane season this year. The movement of the storms will be crucial. Those coming from the south-west are likely to move the oil out into the Gulf. Storms coming from the east risk flooding the coastal areas.

But the immediate concern is that storms will undermine the drilling of relief wells, which many consider the best hope of stopping the leak. BP is trying to bore two auxiliary channels into the well to fill them with mud and concrete and plug the hole.

Hurricanes also threaten the effort to siphon off the oil at its source, as it continues to gush at a rate of 50,000 barrels a day from a ruptured pipe on the sea floor, a mile below the surface.

Around half of this is being tapped off by a huge funnel and piped to the surface, where a proportion is burnt off and the rest carried away by boat. “If a hurricane hits, the operation will have to be shut down, so you’re looking at 10 days with no oil recovery. That’s another 200,000 to 250,000 barrels released into the sea,” says Professor Martin Preston, a marine chemist and pollution expert from Liverpool University.

He notes, too, that the booms designed to contain the slick will not work in waves over 3ft high. A big tropical storm with 100mph winds creates 16ft swells.

But the stain on the surface, already lapping the coast of Louisiana, is only part of the story; a nasty surprise lurks underwater. “It’s not clear where or how much oil there is underneath,” says Prof Preston. “A lot of oil has gone Awol between 1,500 metres and the surface.”

Soon after the rig exploded, rupturing the pipe near the sea bed, BP took the unprecedented decision to spray chemical dispersants at the source. The chemicals help the oil emulsify – to mix with the water – and be swept away. There are serious concerns over this decision. “There is no precedent for this and no scientific study to back it up,” says Prof Preston. “The big concern is that all the volatile, toxic components have had no opportunity to reach the surface and evaporate.”

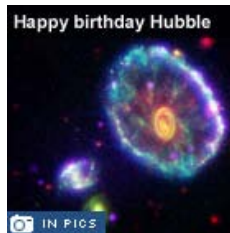
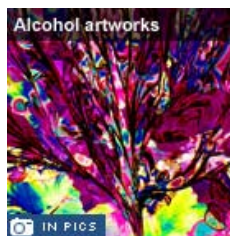
The volatile compounds present in the oil, such as benzene, are extremely toxic. They degrade in sunlight quite rapidly, but if dispersants don’t allow them to reach the surface then this is no help. “Will the underwater use of dispersants cause toxic volatiles to kill wildlife and enter the food chain? I don’t know, and I don’t believe anyone else knows either,” says Prof Preston. He suggests that the need to be seen to be doing something may have taken priority over scientific sense.

His fears are shared by Prof Kendall, who says the oil spill and subsequent clean-up represent “a very large ecotoxicology experiment”.

“I emphasise the word experiment”, he says, “because we don’t know the full ramifications, both short-term and long-term. The deep-water use of dispersants at the wellhead is an untested technique. A big question is: what is the toxicity of the dispersant and oil combination?” David Nicholas, a BP spokesman, disagrees: “This innovative sub-sea use of dispersants has been specifically approved by the US Environmental Protection Agency.”

BP has also been criticised for not preparing for the failure of the blow-out preventer. The vast safety mechanism works like a series of valves that shut off the oil in an emergency, each stage with increasing urgency. The final part is a pair of hydraulic jaws designed to crush the pipe in order to impede the flow of oil.

“This was the mechanism of last resort”, says Prof Preston, “because no one seemed to have considered what would happen should it fail. Contingency planning would have taken into account the need for action should the blow-



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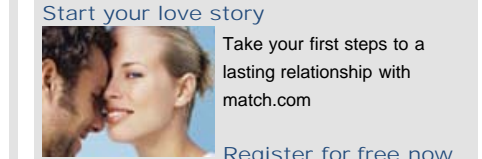
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out preventer fail. But it doesn't appear there was any."

Experts say the company is having to invent new technologies on the hoof. "The challenge they're facing is almost unimaginably difficult," says Simon Rickaby, chairman of the Institute of Marine Engineering, Science and Technology's pollution and salvage special interest group.

"A blow-out preventer has never failed before. The pipe is a mile down, in pitch darkness, under crushing pressure – 150 atmospheres. But BP is probably the best-equipped organisation in the world to deal with it."

This will be scant encouragement for the beleaguered oil giant as it frantically tries to cap the flow of oil, which has been gushing for 78 days now. Dr Rickaby says, however, that there is optimism within BP that the leak will be plugged by early August.

Meanwhile, fears about the aftermath continue. Workers have already seen 2,000 oiled birds. Animal experts say the area's brown pelicans are particularly vulnerable. Sea turtles, mostly endangered loggerheads, also appear at risk, and conservationists from the US Fish and Wildlife Service have been collecting turtle eggs from beaches in the Northern Gulf, so that an entire generation of the animals is not lost.

Scientists say there are reasons for hope. The BP crude is relatively light, allowing for easier dispersal and degradation by underwater bacteria. The warm conditions in the Gulf of Mexico also favour removal of the pollution by microbes.





"I would imagine that, within one to two years, normal functioning of biological systems in the area may have been restored," says Prof Preston. He points to the surprisingly quick recovery of the Gulf of Mexico from the Ixtoc 1 oil slick of 1979. Within five years of that incident, it was hard to find evidence of the pollution, despite around three and a half million barrels of oil pouring into the sea.

But, say the scientists, the lessons for oil firms and governments are clear. Further north in colder Arctic seas, where the US, Russia and Canada are now considering oil exploration, the scope for oil to evaporate and be degraded by bacteria is smaller, and the threat to northern wildernesses is very real indeed.



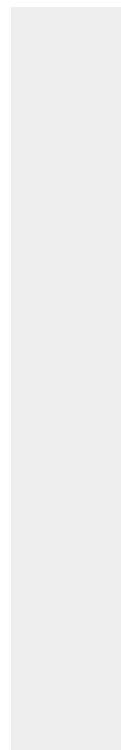
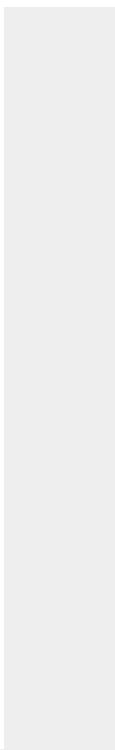
BP share price since the Deepwater Horizon oil spill began


(Share price at close of trading, prices in GBp)


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