

Researcher finds methane from oil spill has entered food web

13 March 2014

When millions of gallons of oil spilled into the Gulf of Mexico four years ago, so did large volumes of methane, or natural gas.

Now, researchers from Florida State University and Florida A&M University have confirmed that [methane](#)-derived carbon has entered the Gulf's food web through tiny organic particles floating in the Gulf.

"All this methane was released into the Gulf and then in a few months, it disappeared," said Jeffrey Chanton, professor of chemical oceanography at Florida State. "What happened to it? It got absorbed by bacteria and that bacteria got incorporated into the food web."

Chanton's study, published in the premier issue of a new journal, *Environment Science & Technology Letters*, reports that 28 percent to 43 percent of the carbon found in the tiny floating particles which are ubiquitous in the Gulf is related to the Deepwater Horizon [oil](#) spill and derived from the uptake of spill-methane by bacteria.

Chanton and colleagues Jennifer Cherrier, an associate professor of environmental science at FAMU, and Thomas Guilderson, a researcher at Lawrence Livermore National Lab, used carbon isotopes to match carbon from methane with carbon in plankton and floating particles.

The presence of methane is not cause for alarm though, Chanton said. Overall, it has a benign impact on the food that makes it from the sea to people's dinner tables.

But, it is of importance for oceanographers and other ecologists studying the area.

The population of methane-eating bacteria bloomed when the oil and gas spill occurred, and the bacteria were very efficient in converting the gas into biomass. That energy efficient process is

significant because it also provides for a symbiotic relationship between the [bacteria](#) and certain deep-sea creatures, particularly mussels, which are often found around cold seeps.

A cold seep is an area of the ocean floor where methane, hydrogen sulfide and hydrocarbon fluid often form a pool.

Chanton's research is supported by Ecogig, a 20-member research advisory board created to allocate the money made available by the BP/The Gulf of Mexico Research Initiative.

It is also supported by the Deep-C Consortium, a group of 10 universities and research institutions, including Florida State, working on Gulf of Mexico research to discover the impact of the oil spill.

The consortium has undertaken a number of projects as part of a \$20 million, three-year grant to investigate the impact of the oil spill on the Gulf of Mexico.

Unfortunately, said Chanton, this is the first time that large-scale research has been done in the region. There is insufficient scientific baseline data on the ecology of the Gulf up to this point.

Because of this lack of baseline data, it may be difficult to get a total picture of the changes that have occurred as a result of the oil spill.

"We don't know what the damage was because we don't have a baseline knowledge," he said.

More information: "Fossil Carbon in Particulate Organic Matter in the Gulf of Mexico following the Deepwater Horizon Event." J. Cherrier, J. Sarkodee-Adoo, T. P. Guilderson, and J. P. Chanton. *Environmental Science & Technology Letters* 2014 1 (1), 108-112, [DOI: 10.1021/ez400149c](https://doi.org/10.1021/ez400149c)

Provided by Florida State University

APA citation: Researcher finds methane from oil spill has entered food web (2014, March 13) retrieved 25 May 2019 from <https://phys.org/news/2014-03-methane-oil-food-web.html>

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