

# Sandia experts help when sinkhole opens up in Louisiana

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This Aug. 3 aerial shot released by the Louisiana Department of Natural Resources shows the sinkhole near Bayou Corne, La., which has grown since it first began forming in August. Sandia researcher David Borns is part of a group of experts providing technical evaluations about possible causes and remedies for the sinkhole. Credit: Louisiana Department of Natural Resources

The U.S. Geological Survey turned to Sandia National Laboratories for

help when the earth opened up last month near Bayou Corne, La.

Sandia's David Borns is providing technical evaluations in weekly teleconferences about possible causes and remedies for a 300-foot-wide [sinkhole](#) there.

"We try to be of support to adding expertise to federal and [local governments](#) when they're faced with understanding technical issues that impact their resources," said Borns, a geotechnology and engineering manager.

Authorities have been trying to determine whether the sinkhole was caused by the [collapse](#) of an abandoned brine mining cavern along the margin of the Napoleonville Salt Dome or by something else. The operator of that cavern has drilled a [borehole](#) into the cavern at a depth of 3,500 feet to learn whether the cavern is the cause. The results of the drilling will determine what the technical evaluation committee recommends, Borns said.

The sinkhole opened up overnight on Aug. 2 off the western edge of the salt dome near Bayou Corne. It was reportedly originally about 300 feet deep, but Borns said only one part was that deep; the rest was about 50 feet deep.

"There were some broad impacts to the area," he said. "A nearby community was evacuated, this big sinkhole formed, and it forced the closure of a two major [natural gas](#) pipelines."

The USGS, which is known for its seismic expertise, already had been keeping an eye on the area because of harmonic tremors that began in June, along with gas bubbling up at seven different locations in the wetlands of Bayou Corne and nearby Grand Bayou.

"What they were seeing was some sort of fluid movement through fractures, which they thought might be the natural gas that was bubbling up in the bayou," Borns said.

Authorities first thought the source might be a broken pipeline, but all pipelines checked out. Then they started exploring whether something was happening within the caprock or surrounding sediments where natural gas comes from. The harmonic tremors continued for about six weeks but stopped after the sinkhole formed. Since then, only small seismic events continue to be recorded near the cavern under investigation, Borns said.

The cavern was developed for brining operations, in which companies dissolve salt to extract chlorine for use as a precursor for petrochemicals, he said.

On Aug. 22, the Louisiana Governor's Office of Homeland Security and Emergency Preparedness formally asked Energy Secretary Steven Chu for help from Sandia. The Labs previously worked on cavern collapse and sinkhole formation problems on Weeks Island, La. Borns said Sandia experts are called in once or twice a year to study similar concerns.

The USGS had suggested the state of Louisiana include Sandia on technical conference calls based on the Labs' expertise in salt and salt caverns. Sandia began working on salt formations in the 1970s, when it began investigating the geomechanical response of salt caverns as a potential medium for underground nuclear weapons testing, Borns said. About the same time, some authorities proposed using underground nuclear shots in salt to create storage caverns for natural gas, he said.

Sandia's studies of salt mechanics led to decades of research on the Strategic Petroleum Reserve, which has two locations in Louisiana and

two locations in Texas, and on the Waste Isolation Pilot Plant, or WIPP, which stores radioactive waste from defense programs in rooms excavated in ancient [salt](#) beds near Carlsbad, N.M.

Provided by Sandia National Laboratories

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