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Fossil Fuels

Hazards of Open Pits for Storing Wastewater From Fracking Is Focus of New Study

In 2013, industry produced 8 billion gallons of oil in California and 130 billion gallons of wastewater, according to the report.

By David Hasemyer
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An unlined oil wastewater pit in Kern County, California. A new report by two

Unlined open-air wastewater pits brimming with the toxic leftovers of fracking and other types of oil and gas development are threatening California's air and water quality, according to a study by two national environmental organizations.

A visit to a series of wastewater pits in California's Central Valley that sickened researchers prompted the study, according to the authors. Oil and gas drilling has been generating vast amounts of waste in the region for decades.

The report was issued by Clean Water Action and Earthworks, both based in Washington, D.C.

The groups' findings further document the risks of using unlined pits for oil and gas wastewater disposal and challenge whether California's regulatory system adequately addresses the hazards. The report highlights threats to water, air and health; documents regulatory failures; and proposes immediate remedies.

"The discharge of wastewater into unlined pits threatens water resources, including potential sources of drinking and irrigation water, and impacts air quality due to the off-gassing of chemicals from the wastewater," according to the 28-page report, "In the Pits."

The study's conclusions reflect the same issues that worry people in states from Texas and Pennsylvania to Colorado and New Mexico where fracking—hydraulic fracturing—is creating billions of gallons of wastewater that often ends up in open pits.

In most states where fracking is booming, InsideClimate News found that air emissions from oil and gas waste are among the least regulated, least monitored and least understood components in the extraction and production cycle.

The California study focused on a series of pits in Kern County, around Bakersfield. The report suggests that hundreds of pits throughout the state and especially those in the heavily drilled Central Valley pose environmental and health threats.

“We think this is potentially the biggest impact of oil and gas development in California,” said Andrew Grinberg, oil and gas program manager for Clean Water Action, in issuing the report.

California is the fourth-largest oil producing state in the U.S., according to the report. In 2013, the industry produced 8 billion gallons of oil in California while generating 130 billion gallons of wastewater, or approximately 15 barrels of wastewater for every barrel of oil, according to the report.

There are more than 400 active oil-and-gas industry pits in California where toxic chemicals, heavy metals and volatile organic compounds seep into the ground and evaporate into the air, according to the report. The industry uses similar wastewater pits across the country.

The majority of the California pits are near waterways, increasing the likelihood that spills and surface-to-groundwater migration will affect water resources, the report found.

A review of public documents by the organizations disclosed that an underground plume of pollution matching the characteristics of the wastewater in a Kern County pit stretched nearly a mile from the holding pond.

Independent air sampling performed for the environmental organizations at one disposal site identified 24 volatile organic compounds and methane. In addition, the concentrations of Benzene and 2-Hexanone were above the Long Term Effects Screening Levels used by the Environmental Protection Agency to gauge potential health consequences, according to the report.

These chemicals pose risks ranging from cancer and neurological damage to headaches, nausea and nosebleeds, said Jhon Arbelaez, Earthworks' California organizer.

"We are very concerned about the health effects from air contamination from these pits," Arbelaez said. Yet very little has been done to document the hazards to human health from waste pit emissions, he said.

This wastewater has largely escaped rigorous oversight because of decisions Congress and the U.S. Environmental Protection Agency made decades ago, when oil and gas producers lobbied to get most of their waste exempted from federal hazardous waste regulations.

Tom Frantz, a Kern County almond farmer whose 36 acres of land sits in the midst of oil and gas development, said the peril posed the pits extends beyond the mostly rural area.

"We need to have clean water and air to produce healthy foods," he told reporters. "Whatever is disposed of in that cheap, sloppy manner will cause a disaster for farmers and

The organizations recommend that the State Water Board immediately prohibit discharge of oil and gas wastewater into unlined pits, determine where water sources have been contaminated by waste from the pits and develop a clean-up plan. The groups also called for the California Air Resources Board to increase oversight of open-air pits to prevent off-gassing of dangerous air pollutants and greenhouse gases.

Douglas K. Patteson, supervising water resource control engineer for the California Regional Water Quality Control Board's Central Valley Region, said the agency has been working to identify unlined pits and update their permit status. The board plans to prohibit unlined pits where they pose an unacceptable threat to ground water, though the agency doesn't believe all pits pose the same risks, he said.

"The Board has made it a top priority to inventory and analyze the potential threats to drinking water from the existing sumps, particularly any remaining active ponds that are overlying good quality groundwater," he said. The agency will take enforcement actions when violations are found, he said.

Dave Clegern, a spokesman for the California Air Resources Board, said the agency couldn't comment because it hadn't reviewed the report.

The study focused on one set of pits near McKittrick, Calif., where oil companies dispose of more than 4 million gallons of wastewater daily from surrounding oil fields, according to the study. Clean Water Action researchers reported that from a distance they saw a large tanker truck that appeared to be dumping water into the ground, according to a

As researchers neared the site, warning signs cautioned of the possible presence of hydrogen sulfide, a poisonous gas associated with oil and gas. Once at the site and out of their vehicles, group members were immediately hit with a noxious odor, according to the report.

“Several tied bandanas around their mouths and noses to block the fumes,” the report said. “In less than five minutes, many in the group complained of nausea and headaches.”

What they found were a few dozen long, narrow ponds, including some with liquids of different shades of green, brown and black. At one pond, two pipes were discharging steaming black and green fluids into to the waste pool where vapors rose off the surface.

“A thick black ring of what appeared to be oil rimmed the bank, and a shimmering black layer floated on the surface,” according to the report. From there, pipes connected the first pond to other, larger ponds stretching hundreds of yards into the distance.

Read the report:

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