

# Unsafe levels of toxic pollutants in heavily fracked Ohio county

May 25 2015, by David Hasemyer, Insideclimate News

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Emissions from fracking operations may be exposing people to some toxic pollutants at levels higher than the U.S. Environmental Protection Agency considers safe for long-term exposure, according to scientists from Oregon State University and the University of Cincinnati.

The researchers took air samples in Carroll County, Ohio, where there are 480 permitted wells - the most in any of the state's 88 counties. The team found chemicals released during oil and gas extraction that can raise the risk of cancer and respiratory ailments.

Researchers caution they don't want to create undue alarm with their findings, but they say they hope the results will highlight the urgent need to conduct more in-depth studies of fracking emissions and their potential effects on human health.

"What we see here suggests that more needs to be known about the risks people face when exposed," said study co-leader Erin Haynes, a University of Cincinnati scientist.

Haynes' co-author on the study agrees.

"You can't extrapolate to every situation, but the findings in our study might give one pause to want more information on air quality if they were living near these kinds of operations," said Kim Anderson, an environmental chemist with OSU's College of Agricultural Sciences.

Based on the data collected, researchers calculated the cancer risk posed by airborne contaminants in the Carroll County study areas. For the worst-case scenario - exposure 24 hours a day over 25 years - they found that a person anywhere in the study area would be exposed beyond the threshold the EPA deems acceptable.

The lifetime cancer risk in the study area estimated for maximum residential exposure was 2.9 in 10,000, compared with the the EPA's acceptable risk level of 1 in 10,000, according to the study. Anderson cautioned that the study numbers are worst-case estimates and can't predict the risk to any individual.

The EPA did not respond to questions about the findings.

The study focused on pollutants known as [polycyclic aromatic hydrocarbons](#) (PAH). These are organic compounds containing carbon and hydrogen, found in fossil fuels.

The study mirrored other research conducted in heavily fracked areas of the country, including Texas and Pennsylvania, that have focused on [volatile organic compounds](#). These chemicals, including benzene and toluene, also are carbon-based chemicals in the same chain as those studied in Ohio-and they present similar dangers to [human health](#).

With fracking on the rise across the country, the study's authors and other scientists say there are too many unknowns about the potential health effects associated with the toxic chemicals released from oil and gas operations.

In Texas, where fracking is booming, InsideClimate News and the Center for Public Integrity found that air emissions from oil-and-gas development are among the least regulated, least monitored and least understood components in the extraction-and-production cycle.

The Ohio study, which appears in the journal *Environmental Science & Technology's* online edition, is part of a project co-led by Cincinnati's Haynes, OSU's Anderson, her graduate student Blair Paulik, and Laurel Kincl, director of OSU's Environmental Health Science Center.

In the Ohio study, Anderson and her colleagues collected air samples from sites near gas wells in Carroll County over three weeks in February 2014. The county sits on top of the Utica Shale formation, where oil and gas are extracted by hydraulic fracturing - fracking - a process in which the shale is shattered by a pressurized mix of water, sand and chemicals.

The county, 70 miles southeast of Cleveland, is booming with natural gas development, with 421 wells at the time of the study.

A map of wells developed by the Ohio Department of Natural Resources Oil and Gas Resources Division shows Carroll County at the epicenter of fracking in Ohio. Carroll County now has 480 permitted oil-and-gas sites, well ahead of the next two counties, Harrison (341) and Belmont (245).

The study began when a group of residents approached Haynes, a public health expert at the University of Cincinnati, seeking information about health risks from natural gas extraction near their homes.

"They were wondering about the smells and what was happening because of how close all of this was coming to their homes," Haynes said. "And with more wells coming to the county, they had some growing concerns and a lot of questions."

None of those people said they were sickened by breathing the air, but they wanted to know more about the potential consequences, Anderson said.

"There was some concern with all of the wells that were starting to go in around their homes," Anderson said. "People want to know; wanted to get answers about how all the (fracking) activity might be affecting them."

Anderson and her associates teamed with Haynes to design a study that relied on volunteers to collect air samples in Carroll County, which has about 30,000 people. After volunteers were recruited through a community meeting and word-of-mouth, air samplers were placed on the properties of 23 volunteers who lived or worked at sites ranging from immediate proximity to a gas well to a little more than three miles away.

The aluminum box monitors contained treated material that absorbed contaminants. The volunteers were trained in proper handling of the samplers and documenting data.

At the conclusion of the study, the samplers were sealed in airtight bags and returned to Anderson's lab at OSU for analysis.

The samplers picked up high levels of pollution associated with fracking in the areas studied, according to the report. Levels taken within one-tenth of a mile of a well were highest; they decreased by about 30 percent in samples taken a little more than three miles from a well.

David Brown, toxicologist and co-founder of the Southwest Pennsylvania Environmental Health Project, a nonprofit environmental health organization, said the study's findings should send a message to federal and state regulators that the rules governing exposure to emissions generated by fracking need revising to reflect the growing number of people being exposed.

"You are starting to have sufficient information showing that something is going on, what the exposures are and what the associated health

problems are," Brown said. "Somebody, the EPA or state government, is going to have to step up and recognize the problems people face and what needs to be done to protect them."

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Citation: Unsafe levels of toxic pollutants in heavily fracked Ohio county (2015, May 25)  
retrieved 23 April 2024 from

<https://phys.org/news/2015-05-unsafe-toxic-pollutants-heavily-fracked.html>

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