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The Center for Public Integrity

Environment : Big Oil, Bad Air

Natural gas boom advances with little study of public health effects, report finds

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A flare from a well site is situated near a rural home in Karnes County.

Lance Rosenfield/Prime

A new study has underscored just how little is known about the health consequences of the natural gas boom that began a decade ago, when advances in high-volume hydraulic

fracturing, or fracking, and directional drilling allowed companies to tap shale deposits across the United States.

"Despite broad public concern, no comprehensive population-based studies of the public health effects of [unconventional natural gas] operations exist," concluded the report published Monday in the peer-reviewed journal *Environmental Science & Technology*.

Last week, The Center for Public Integrity, InsideClimate News and The Weather Channel [reported on the health data gap](#) in the Eagle Ford Shale, where a lack of air monitoring and research is aggravated by [a Texas regulatory system](#) that often protects the gas and oil industry over the public.

Scientists interviewed for the series said the uncertainties persist across the country. In the words of one expert, scientists "really haven't the foggiest idea" how shale development impacts public health.

Gas and oil production releases many toxic chemicals into the air and water, including carcinogens like benzene and respiratory hazards like hydrogen sulfide. While residents near drilling areas in Texas reported symptoms that are known to be caused by these chemicals, including migraines and breathing problems, it was impossible to link them to the drilling boom because no studies could be found that prove cause and effect.

The new study, led by John Adgate at the Colorado School of Public Health, examined available research on the environmental, social and psychological impacts of shale gas drilling. It was the first time anyone had tried to tackle the question in a systematic way, Adgate said.

The researchers found that much of the existing work "isn't explicitly tied to health." Many studies analyzed the level of pollutants in the air or water, but didn't track how the exposures are connected to local health trends. Other studies used health surveys, but didn't compare the respondents' results with the health of the larger surrounding community.

What's needed, Adgate said, are comprehensive studies that examine possible connections between chemical exposures and community health trends. But these types of studies require substantial funding and good baseline data, both of which are hard to obtain.

"You're not going to find anything if you don't look, and some people think we shouldn't be looking, or that it's not worth looking," he said. "We do know a lot of these things are hazardous, and we just need to develop a system ... [that] provides people with a reasonable level of certainty [on the] effects, or lack thereof."

Health impacts will vary based on local geology, weather patterns, operator practices and other factors, Adgate said, so it would make sense to set up a study that tracks people from different parts of the country.

Regulators are well aware of the knowledge gap. In 2012, the Government Accountability Office — an investigative arm of Congress — reviewed more than 90 studies from government agencies, the industry and academic researchers **and concluded that** oil and gas development "pose inherent environmental and public health risks, but the extent of these risks ... is unknown, in part, because the studies GAO reviewed do not generally take into account the potential long-term, cumulative effects."

On the issue of air pollution, the GAO said the studies "are generally anecdotal, short-term, and focused on a particular site or geographic location ... [They] do not provide the information needed to determine the overall cumulative effect that shale oil and gas activities have on air quality."

Bernard Goldstein, a professor emeritus at the University of Pittsburgh and a co-author of the paper, pointed to a need for well-designed studies in large populations. Scientists could analyze a community before, during and after drilling begins, or compare the health of residents in communities close to and far from a shale play, he said.

Both Adgate and Goldstein cited major barriers in funding. "There hasn't been a lot of money thrown at this problem," Adgate said. "It's a contentious issue as everybody knows, and nobody's stepped up to say we're going to fund independent research."

Goldstein said the National Institute of Environmental Health Sciences — part of the National Institutes of Health — has started to fund some studies, but the results won't emerge for years. Adgate suggested more public-private partnerships like the **Health Effects Institute**, an independent research organization that studies vehicular air pollution. It is jointly funded by the Environmental Protection Agency and the auto industry.

Goldstein, a doctor and toxicologist who served as an assistant EPA administrator under President Reagan, sees the lack of research as a failure of transparency. "The impression I have is, there's at least some part of industry that believes it's better not to have these studies, because they believe it will lead to toxic tort lawyers suing the industry."

There seems to be little interest in obtaining better data, he said. Two years ago, he led **a study that analyzed** the membership of three advisory committees established by President Obama and the governors of Maryland and Pennsylvania. All three groups were tasked with studying the impacts of shale gas, yet Goldstein and his colleagues found that none of the 51 members had a medical or health background.

"The current lack of almost any support for research directly related to the health effects of unconventional gas drilling is shortsighted and counterproductive," he said in 2012 [in testimony before the House Energy and Environment Subcommittee](#). "This is not a one-time event in a single location whose health effects could be hidden by simply not looking for them ... [The] only cost-effective time ... to make this investment is now rather than to wait until the inevitable clamor for such research when diseases begin to appear that are associated with natural gas drilling activities."

This report is part of [a joint project](#) by The Center for Public Integrity, InsideClimate News and The Weather Channel. Lisa Song is with InsideClimate News and Jim Morris is with the Center for Public Integrity.