

# Stanford professor discusses techniques for minimizing environmental impacts of fracking

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Natural gas from hydraulic fracturing generates income and, done well, can reduce greenhouse gas emissions, air pollution and water use compared to coal and even nuclear energy. However, widespread use of natural gas from fracking could slow the adoption of wind, solar and other renewables and, done poorly, release toxic chemicals into the environment.

Robert Jackson, the Kevin and Michelle Douglas Professor of Environment and Energy at the Stanford School of Earth Sciences, will discuss how to minimize the water and air impacts of fracking and other unconventional energy-extraction techniques on Dec. 18 at the American Geophysical Union's Fall Meeting in San Francisco. [The talk](#), titled "Minimizing the Water and Air Impacts of Unconventional Energy Extraction," takes place at 2:55 p.m. PT, at the Moscone Convention Center in Moscone West, Room 3018.

"Switching from coal to [natural gas](#) for electricity generation will reduce sulfur, nitrogen, mercury and particulate pollution regionally," said Jackson, a senior fellow at the Stanford Woods Institute for the Environment and Precourt Institute for Energy. "But [natural gas extraction](#) can also increase [volatile organic compounds](#) and other air toxins locally, creating a potential health threat. One key message is that best practices matter a lot for environmental stewardship, and some companies have stronger best practices than others."

Based on research to date, primary threats to water resources come from surface spills, wastewater disposal and drinking-water contamination through poor well integrity. Jackson will discuss recently published and new data on water contamination in the Marcellus and Barnett shales of Pennsylvania and Texas, respectively.

Natural gas power plants typically emit less carbon dioxide, a major contributor to global warming, than coal-fired plants. But methane, the main ingredient in natural gas, is 34 times more effective at trapping heat than carbon dioxide over a 100-year time scale, according to a recent report by the Intergovernmental Panel for Climate Change. Jackson and his colleagues have found that methane leakage is a significant problem in the U.S. natural gas industry.

According to Jackson, critical needs for future research on unconventional energy extraction include data on the impact of greenhouse gases and [air pollution](#) on ecosystems and human health, the potential contamination of surface and groundwater from drilling and spills, and the frequency of well-integrity failures.

Provided by Stanford University

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