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Groundwater quality and fracking: current understanding and science needs

The National Ground Water Association in the United States hosted workshops in 2014 and 2017 to bring together a group of nearly 100 prominent North American hydrology researchers to assess the current understanding of potential risks to groundwater quality from hydraulic fracturing ("fracking") and unconventional oil and gas development. The consensus from both meetings was that fracking poses two main risks to groundwater quality: 1) stray gas migration, and 2) potential contamination from chemical and fluid spills. Risk assessment is complicated by the lack of pre-drilling baseline measurements, limited access to well sites and industry data, the constant introduction of new chemical additives to frack fluids, and difficulties comparing data sets obtained by different sampling and analytical methods. Specific recommendations to reduce uncertainties and meet science needs for better assessment of groundwater risks include improving data-sharing among researchers, adopting standardized methodologies, collecting pre-drilling baseline data, installing dedicated monitoring wells, developing shale-specific environmental indicators, and providing greater access to field sites, samples, and industry data to the research community.

Biography

Daniel J Soeder is director of the Energy Resources Initiative at South Dakota School of Mines & Technology in Rapid City, SD, USA. He joined SD Mines in May 2017 with eight years of experience as a research scientist at the Morgantown, WV campus of the U.S. Department of Energy (DOE) National Energy Technology Laboratory, where he investigated the environmental risks of unconventional oil and gas development, and 18 years as a hydrologist with the U.S. Geological Survey (USGS) studying groundwater contamination on the U.S. east coast, and nuclear waste isolation in Nevada. Prior to joining the USGS, he spent a decade with the Gas echnology Institute in Chicago, researching hydrocarbon production from unconventional resources. He also worked as a DOE contractor collecting and characterizing Eastern Gas Shale Project cores. He holds a BS from Cleveland State University, and an MS from Bowling Green State University (Ohio), both in geology.

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