

Natural Gas from Rock

The Marcellus Shale is a large domestic natural gas reserve that could meet the United States energy needs for 25 years. The 350-million-year-old geologic formation stretches from New York to West Virginia on land that is largely undeveloped. It was once thought that it was too difficult to extract natural gas from the Marcellus Shale, but new drilling technology allows energy companies to tap this vast reserve. The natural gas is removed by a process called hydraulic fracturing, or fracking. During this process, the shale is drilled and millions of gallons of water, sand, and chemicals are pumped into the shale at high pressure, shattering the shale and releasing the natural gas trapped within. While some of this water remains below ground, contaminated water is also stored in ponds, trucked to wastewater treatment plants, or disposed of by spraying it on nearby land.

- (a) Identify and describe TWO water-related environmental problems associated with fracking.
- (b) Natural gas is considered to be a better fossil fuel for the environment than coal is. Discuss TWO environmental benefits of using natural gas as a fuel compared to using coal.
- (c) Describe TWO environmental drawbacks, not related to water use, of using the fracking process to extract natural gas from shale.
- (d) Describe one economic benefit to society of using fracking to obtain natural gas from shale.
- (e) Nuclear power is an alternative to using natural gas or coal as a fuel for generating electricity. However, there are also problems associated with nuclear power plants. Describe TWO negative environmental impacts associated with nuclear power.

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