



Maryland Department of the
Environment

FACTS ABOUT: HYDRAULIC FRACTURING

HYDRAULIC FRACTURING

Hydraulic fracturing is a general term. All hydraulic fracturing has this in common: the goal is to create or enlarge fractures in an underground rock layer, and the means is fluid under pressure. Hydraulic fracturing allows more of what is in the rock to be released and to flow more readily. The technique can be used to improve the yield of:

- Water wells
- Vertical oil and gas wells
- Horizontal oil and gas wells

DIFFERENT TYPES OF HYDRAULIC FRACTURING

The different forms of hydraulic fracturing are distinguished by their chemicals usage, the pressures used, the amount of water used and the use of small particles (proppants) to keep the fractures from closing. They also differ in how much of the land surface is used during drilling and well development, and how much land surface can be restored to a natural state (reclaimed) while the well is in production.

- Hydraulic fracturing of water wells has been done since the late 1960s. It uses relatively small amounts of water, 1,000 gallons to 18,000 gallons. The pressure applied is generally less than 3,000 pounds per square inch. If chemicals are used at all, they are chemicals certified for use in potable water. Surface disturbance is typically a fraction of an acre and the site is reclaimed as soon as the water well is operational.
- Hydraulic fracturing of oil and gas wells has been done since the late 1940s (“traditional hydraulic fracturing”) to increase the production from these wells. It typically uses 20,000 to 80,000 gallons of fluid, proppant and reportedly about 700 to 2,800 pounds of chemical additives. The size of the surface disturbance is similar to a new home construction site and most of the disturbed land can be reclaimed once the well goes into production.
- High volume slick water fracturing was developed in the 1990s. It uses millions of gallons of water, more proppant than traditional hydraulic fracturing and a different combination of chemicals -- including friction reducers that give it the “slick water” name. One hundred thousand pounds or more of chemicals can be used per well. Pressures up to 13,500 pounds per square inch are applied. The drill pad is typically from 3 to 5 acres. Once the well is producing, the pad size can be reduced, and the area not needed is reclaimed. The remaining pad, generally about 1.5 acres, will be completely reclaimed only after the wells on that pad are no longer producing.

HYDRAULIC FRACTURING IN MARYLAND

Water wells have been hydraulically fractured in Maryland.

When Texas Eastern Transmission Corporation converted the Accident gas field in Garrett County to gas storage in the late 1960s, it reportedly reworked existing wells, drilled additional wells, and used hydrofracturing techniques to increase the “deliverability” of the formation. It is apparent from the year that it must have been traditional hydraulic fracturing.

Available records indicate that permits were modified in 2006 for three existing gas storage wells in Maryland. These wells are in the Oriskany Sand, not in the Marcellus Shale. The wells were stimulated in 2007 with acidic water in volumes ranging from 2,000 to 4,000 gallons. One of these wells was further stimulated in 2007 with 125,000 pounds of a mixture of water and 20/40 mesh sand. For all of these wells, the water was contained in tanks; the flowback was contained in trucks; and the flowback and produced fluids were hauled to disposal sites outside of Maryland. The volumes indicate that the wells were not subjected to high volume slick water hydraulic fracturing.

A new well was permitted in 2006; according to the permittee, this well was not hydraulically fractured.

No permits have been issued to date in Maryland for gas exploration or production from the Marcellus Shale. No high volume slick water hydraulic fracturing has occurred in Maryland.



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