Industry says the drilling is conventional BUT How is high-volume hydrofracturing different?

Developed in the late 1990s, not the 1940s.

Really began to be used more extensively after 2005, when exempted from several important provisions of the federal environmental regulations

“Slick-water hydraulic fracturing” because it uses a different mix of chemicals than the older methods—reducing the amount of gelling agents and adding friction reducers (thus the term “slick”)

The hydraulic fracturing technique to be used in the Marcellus shale is also known as “high volume” hydraulic fracturing (HVHF) because it uses much more fluid than old hydraulic

How is high-volume hydrofracturing different?

More fresh water

More chemicals

More toxic air emissions

More toxic waste requiring disposal

More heavy truck traffic

More intense, industrial-scale development

More fresh water used

HVHF typically uses 2 to 7.8 million gallons of fluid (or an average **5.6 million gallons**)

Each well can be "fracked" up to **18** times, using millions of gallons of water each time

70 - 300 times more water than conventional hydrofracturing!

More chemicals

2005 – 2009: 14 Oil and gas service companies used more than 2,500 hydraulic fracturing products containing 750 chemicals and other components.

Industry claim – no problem, only 1% of the solution.

How much is 1% of 5-7 million gallons?

50,000 – 70,000 gallons of chemicals

Between 2005 and 2009, the oil and gas service companies used hydraulic fracturing products containing 29 chemicals that are

- known or possible human carcinogens,
- regulated under the Safe Drinking Water Act for their risks to human health, or
- listed as hazardous air pollutants under the Clean Air Act.

•These 29 chemicals were components of more than 650 different products used in hydraulic fracturing

Naturally occurring radioactive materials

The problem is not only what goes in, but also what comes out ….

NORM: normally occurring radioactive materials – strontium, uranium, radon, etc.

Heavy metals: lead, mercury, etc.

Methane gas

Chemicals and other additives

Impact on drinking water resources

Surface spills

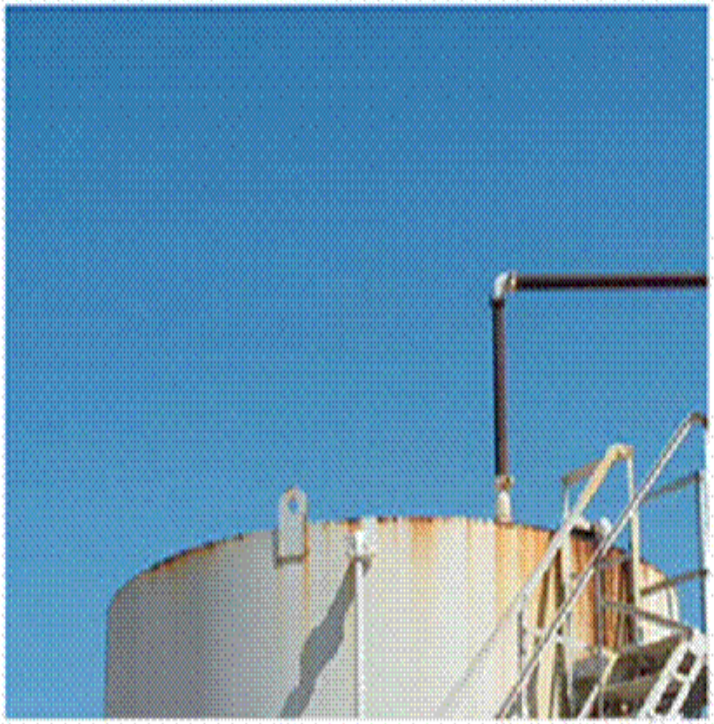
Abandoned wells & natural faults

Gas migration into aquifers from high pressure (recent peer reviewed Duke study – 17% higher methane in water near fracked wells)

May be located near heavily populated areas or areas with private wells

Horizontal orientation increases likelihood of pollution because more likely to run under surface water sources – aquifers, lakes, streams, springs, rivers

More toxic air emissions



Emissions are invisible to the naked eye

Larger disturbed areas, significant footprint

Each well pad can be 4 – 5 acres (or larger)

Contain multiple wells – up to 8 per well pad

Multiple horizontal “fracks”

More industrialization – *not* your grandfather's well

Preference for many wells in a region

Average density in Marcellus shale is expected to range from 6 – 8 wells per square mile (based on 640 acre unit) to 16 or more per square mile

Infill wells and drilling in other shale layers can increase well density even more

More truck traffic

One well may require:

1,760 to 1,905 trips

Typical well pad with 7 wells = **13,000** round trips to local roads

Includes tanker trucks for water , sand, drilling rig equipment, waste (flowback) water removal

The Halliburton Exemption

Important environmental oversight and regulation of the natural gas production was removed by the executive branch and Congress in the 2005 Federal Energy Appropriations Bill

Exempted from important provisions of the:

Clean Water Act (CWA)
Safe Drinking Water Act (SDWA)
Clean Air Act (CAA)
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)(Superfund)
Emergency Planning and Community Right to Know Act (EPCRA)(Toxic Right-to-Know Act)

New U.S. EPA study

EPA will investigate how fracking affects drinking water – budgeted at $3.5 million over 2 years

- First study findings will be released in 2012
- Full report will be issued in 2014

Study to be transparent and peer reviewed, 4 hearings

EPA's study is based on *life cycle impacts* of fracking fluids

Impacts from water demands and the air pathways included

Ohio is not prepared for high volume, horizontal hydraulic hydrofracturing

SB 165 (2009) – First modernization of Ohio's 40 year old oil and gas drilling laws

Did not adequately address the challenges from intensive industrialization from high volume, horizontal hydraulic fracturing

Important environmental and public health protections related to the use of toxic chemicals, well siting, air emissions, public safety, and more, were left unresolved

2010 "STRONGER" Report (State Review of Oil and Gas Environmental Regulations) noted that . . . "future program changes in Ohio would be necessitated by the anticipated development of the Marcellus and Utica Shales" THESE CHANGES HAVE NOT BEEN MADE