

What's in the water?

Find out how hydraulic fracturing works – and how it can affect the water you drink.

1 Benzene

Benzene is a part of the diesel fuel that is often used as a fracking fluid. It can cause leukemia – even in quantities as low as 0.005 parts per million.

2 Arsenic

A Pennsylvania farmer – the largest supplier of heirloom tomatoes on the East Coast – found levels of arsenic at 2,600 times the EPA's standard in the water on his land.

3 2-Butoxyethanol

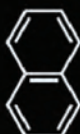
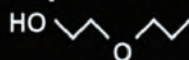
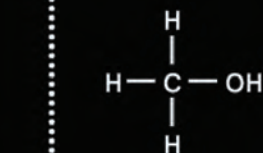
A mother developed a rare tumor of the adrenal gland after drinking water contaminated with the common fracking chemical 2-butoxyethanol near a fracking operation in Colorado.

4 Methanol

Hydraulic fracturing uses more methanol than any other chemical. Even a few ounces of it can cause blindness.

5 Naphthalene

The EPA found naphthalene, the cancer-causing chemical that moth balls are made from, in water testing wells drilled near fracking sites in Wyoming.



And that's just the beginning...

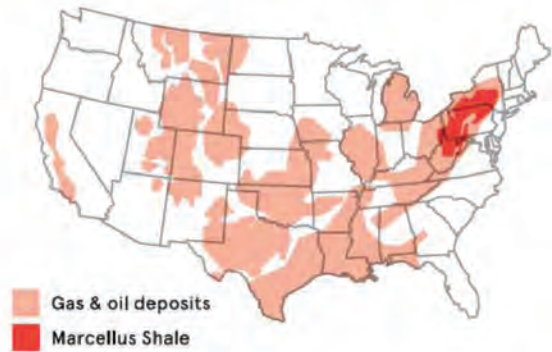


What the Frack?

Hydraulic fracturing—with all the associated processes—called fracking, is a way to extract natural gas from shale rock deep underground.

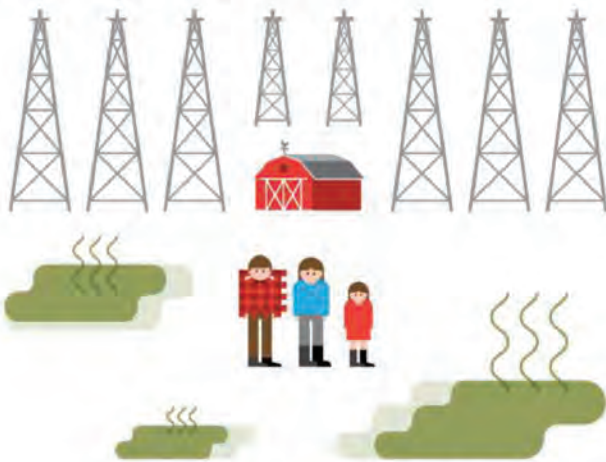
Fracking* chemicals, water, and sand are forced under massive pressure into underground layers.

The layers crack and release the gas, which is then directed to the surface and used as a source of energy after cleaning and processing.



Fracking is now taking place in 35 states. In many of those states, fracking chemicals, gas, and other substances have already contaminated drinking water supplies and harmed human, animal, and environmental health.

And now fracking is happening in the Marcellus and Utica shale layers in the Ohio River Basin. The Ohio River itself, is the drinking water source for more than three million people in six states including five major cities.

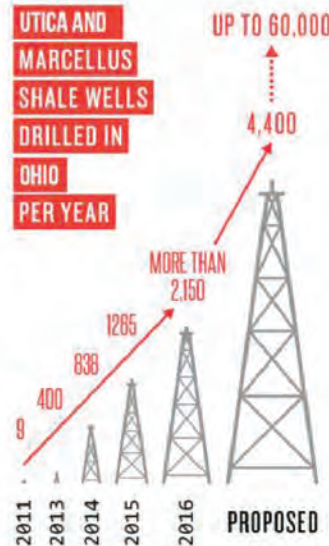


* "Fracking" is a general term used to refer to all of the industrial activities involved in gas production—including the specific technique of hydraulically fracturing rocks.

** According to the US Department of Energy, U.S. shale gas production has increased 12-fold over the last decade and this trend is expected to continue through at least 2035, rising from 5 trillion cubic feet per year in 2010 (23% of total U.S. dry gas production) to 13.6 trillion cubic feet per year in 2035 (49% of total U.S. dry gas production).

WHY NOW?

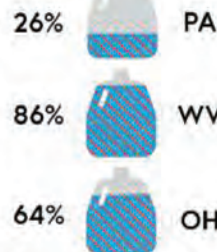
It's a boom and bust resource: prices have skyrocketed, collapsed, and then soared again since fracking started. Fracking (an expensive technology) was established in high resource areas and continues to be pursued without regard to human health, the environment, or overall economic benefit.



Expansion of drilling** is actively being pursued in the Ohio Basin. This is in portions of PA, OH, and WV that are already being drilled for gas & oil (see map).

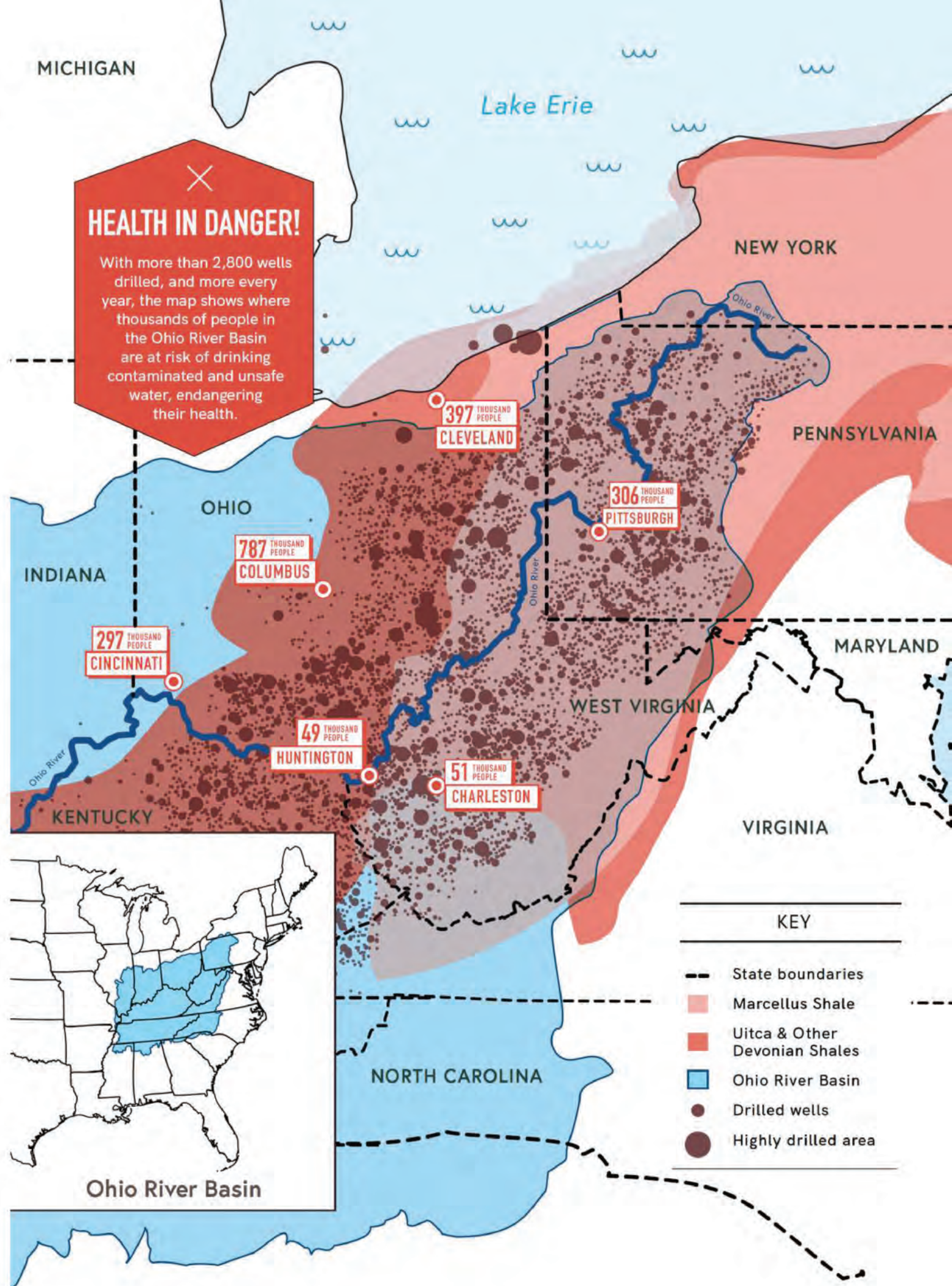
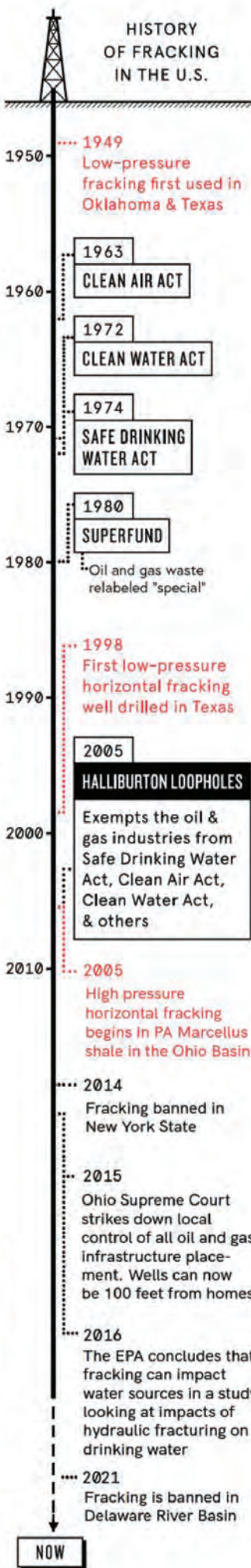
HOW BIG IS THE IMPACT?

% of each state's population whose drinking water comes from the Ohio River Basin



EACH FRACKED WELL PRODUCES MILLIONS OF GALLONS OF TOXIC RADIOACTIVE WASTE.

Fracking's air and water pollution causes documented severe health problems wherever it's done. As more and more people are impacted by fracking, the problem grows more alarming.



NOT SAFE NOT CLEAN NOT CHEAP

For more information and documentation on these fracking facts, visit: DamascusCitizens.org/ohio-references

NOT SAFE

Health Impacts

Independent scientists have identified 353 chemicals used in fracking fluids that are harmful to people. These chemicals, even in small doses, particularly in children, can burn the skin, eyes, lungs, or gastrointestinal system; disrupt the nervous system, immune system, cardiovascular system, endocrine system, and kidneys; or even cause cancer, birth defects, and infant deaths.



Food Chain

The wastes produced by fracking contain radioactivity; endocrine disruptors; and heavy metals like strontium, arsenic, barium, chromium, lead, and mercury. When these toxins leak into the environment, plants absorb them and they enter the food chain. Animals that eat the plants become contaminated, along with the meat and dairy products made from them. Many animals die, creating real economic losses for farmers.

Explosions, Fires, & Blowouts

In 2010, at a drilling operation in Clearfield County, PA, a geyser of gas and fracking fluid erupted out of control for 16 hours, shooting 75 feet into the air.

That same year, in Moundsville, WV, a methane gas explosion at a drilling rig severely burned seven workers.

Recently, vapors from holding tanks at a fracking site in Washington County, PA, exploded and caught fire. Three workers with severe burns had to be airlifted out.

In Douglas, WY, Chesapeake Energy lost control of a well, resulting in a blowout of toxic drilling muds and a gas leak that forced 67 residents to evacuate their homes.

Worker Deaths & Injuries

The Federal Department of Labor states that gas and oil workers are eight times more likely to die in a work accident than workers in other industries. Besides only being required to report deaths, not injuries, the oil and gas industry is exempt from a suite of basic OSHA worker protections.

Earthquakes

In Ohio, where there was less than one earthquake per year before fracking, now there are at least 15 times that number. These earthquakes happen when fracking wastewater is injected deep into the earth for disposal, causing stable ground to shift. But some have been connected to the hydraulic fracturing process itself.

Radioactivity

Wastewater (aka 'brine') from a Pennsylvania well showed a radioactivity level 672 times the EPA limit for safe drinking water. Some Ohio wastewater samples were three times higher than that.

The Marcellus Shale contains radium, which decays to radioactive radon gas. The radon will be piped to homes and businesses along with the natural gas collected from fracking.



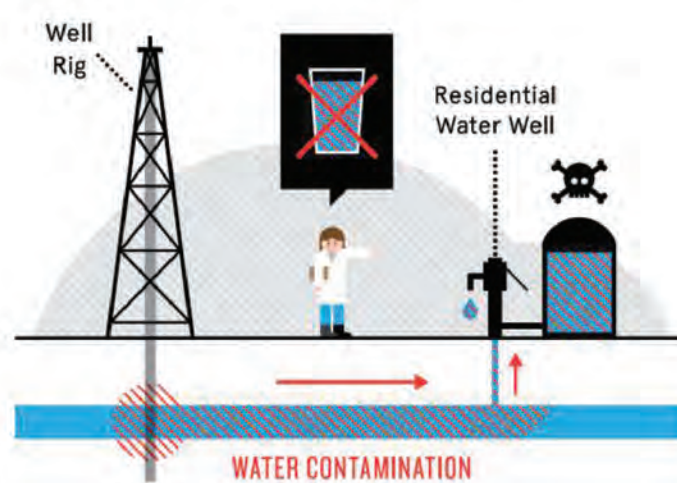
NOT CLEAN

Water Contamination

Gas wells are drilled through rocks that already contain lots of cracks. When the toxic chemicals are pumped in, they move through the cracks and end up in water supplies. 80% of fracking chemicals never return to the surface — they stay underground, seeping into drinking water over the course of months or years. This contamination is permanent and cannot be cleaned up later.

Fracking drills through layers of cracked rocks, connecting underground drinking water sources to naturally occurring salty deposits that are laced with toxic metals.

33 families in Bainbridge, Ohio, found their water wells contaminated with methane and other materials after nearby drilling.



Wastewater

Across the country, millions of gallons of fracking wastewater (euphemistically called "brine") are produced daily. The wastewater contains heavy metals, volatile petroleum compounds, oil, grease, salts, and radioactivity from deep underground. When this hazardous waste was released in a forest in West Virginia, all of the plants and half of the trees died.

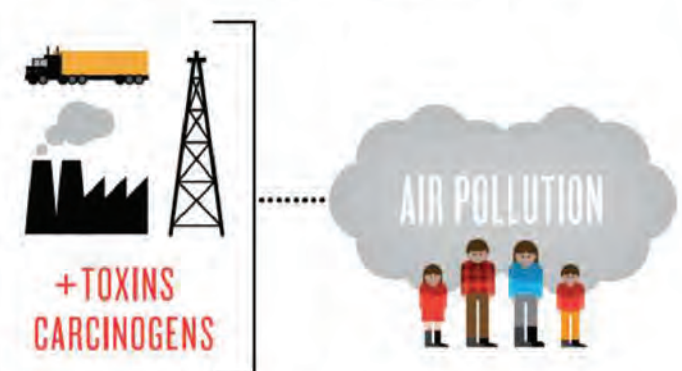


Some waste goes to municipal sewage treatment plants, which don't have the equipment to handle this hazardous waste, so it's diluted and dumped into local streams—often someone's drinking water.

Some waste is trucked away, but nobody tracks where it is going. Some goes to injection wells, and some is dumped illegally, spread on roads, or "accidentally" spilled.

Air Pollution

Gas drilling machinery, processors, compressors, and pipelines pollute the atmosphere with dust, diesel fumes, fine particulate matter, and methane, as well as carcinogenic volatile organic compounds (VOCs) like benzene, toluene, ethylene, and xylene. VOC's also combine with nitrogen oxide (and sunlight) to form ozone and smog. In parts of rural Wyoming where there has been widespread drilling, the air quality is as bad as in Los Angeles.



NOT CHEAP

Economic Impact

Gas production at fracking sites drops quickly—by up to 85% in 2 years—along with any claimed economic benefits.

Most gas-industry jobs only last for the first year after a well is drilled, and most jobs go to experienced out-of-state workers. In Ohio, economic forecasting exaggerated the number of jobs that would be created by 1,667%. The initiation of drilling was followed by 8% decreased local employment over a six-year period.

Climate Change

Methane is a leading contributor to climate change. Billions of cubic feet of greenhouse gases (mainly methane) escape or are released during drilling, processing, transport by pipeline, and delivery to users—adding emissions equivalent to more than 146 million additional automobiles each year. Also, the rocks cracked during hydraulic fracturing can leak greenhouse gases directly from the ground into the atmosphere.

Water Depletion

From 2005-2015, 7.8 billion gallons of water was used to fracture 1,594 wells in Ohio. That water is permanently removed from the water cycle because it is irretrievably poisoned, depleting the aquifers and surface water supplying our water.

What Happens Next?

If your water is contaminated, what will replace it? Bainbridge, Ohio residents had to sue to get water piped in after one fracked well contaminated the water in their community. Four years later they got replacement water with monthly bills. Many times no replacement is possible.



Deforestation

The Nature Conservancy has estimated that two-thirds of fracking well pads will be constructed in forested areas, clearing up to 83,000 acres in Pennsylvania alone.



What can you do?



The processes in "fracking" for gas and oil are the same wherever fracking is done. Impacts depend on the local geology. In karst geology (highly permeable limestone and often caves with aquifer involvement) widespread contamination can happen when fracking drives both introduced chemicals and those released from the gas- and oil-bearing layers into aquifers and even to the surface. The USGS has mapped large areas of karst in the Ohio basin, including the Great Valley aquifer, an important water resource for many cities.

STATES CAN ACT!

Federal environmental law is a floor, not a ceiling. States can make more rigorous environmental laws. As a citizen of your state, you can push for stronger rules to protect your health and your community.



Each state's drilling regulations and the amount of local control differ. With little multi-state oversight in the Ohio Basin, local groups must push their states for the changes they need. The Ohio River Foundation now calls "the Ohio River...the worst toxic water dump in the U.S." Gas and oil drilling add to the number of places that do not meet water quality standards for bacteria, pathogens, PCBs, lead, mercury, metals, VOCs, and other pollutants.

CLOSE THE DANGEROUS LOOPHOLES

Many people think federal environmental regulations will protect human and environmental health from the impacts of fracking. But because of the infamous "Halliburton Loopholes," laws protecting air, water, and drinking water, among other things, don't apply to fracking.

In 1980, Congress exempted oil and gas wastes from the Resource Conservation and Recovery Act, declaring these wastes "special." The exemption leaves drilling fluids, hydraulic fracturing fluids, and produced water from oil and gas production unregulated. The EPA, rather than prove the wastes were a danger to human health and the environment, eventually ceded authority to regulate them to the states. The states have rarely acted, allowing unsafe handling and disposal of toxic substances, including risky transportation and inadequate treatment.

In 2005, Vice President Dick Cheney, former CEO of Halliburton - the company that introduced new technology that made hydraulic fracturing viable - got federal exemptions for oil and gas drilling from [the Clean Air Act](#), [the Clean Water Act](#), [the Safe Drinking Water Act](#), [the Resource Conservation and Recovery Act](#), and [the Community Right-to-Know Act](#), among other laws.

Large federal subsidies to the oil and gas industry make hydraulic fracturing possible. Ask your congressional representative to cut back on the money flowing to oil and gas companies. Without these subsidies, much of drilling and hydraulic fracturing would not be economically viable.

JOIN THE MOVEMENT

Your local anti-fracking organization is a political force that is working to change public policy to protect your drinking water and health. People are joining in and getting the attention of elected leaders. Local groups educate their communities, meet with public officials, fight for better conditions and more protection from the impacts of drilling. They need your help—join them today!

Damascus Citizens for Sustainability
P.O. Box 147, Milanville, PA 18443
www.DamascusCitizens.org
DCS@DamascusCitizens.org
Ph: 845-252-6677

Add your group and find other local anti-fracking groups here:
www.DamascusCitizens.org/partnerships

Let Congress and your governor know that shale gas is not the answer to our nation's energy future and that fracking for shale gas is polluting our air and water and increasing global warming.

www.house.gov/representatives
www.senate.gov
www.whitehouse.gov/contact

Ohio
www.governor.ohio.gov
614-644-4357

Pennsylvania
www.governor.pa.gov/contact
717-787-2500

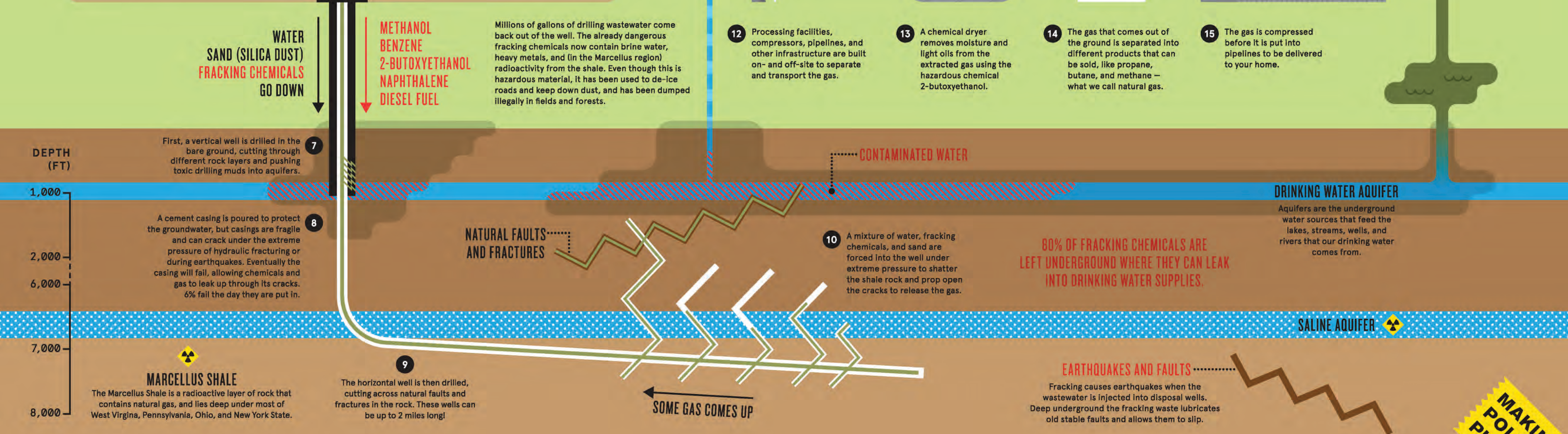
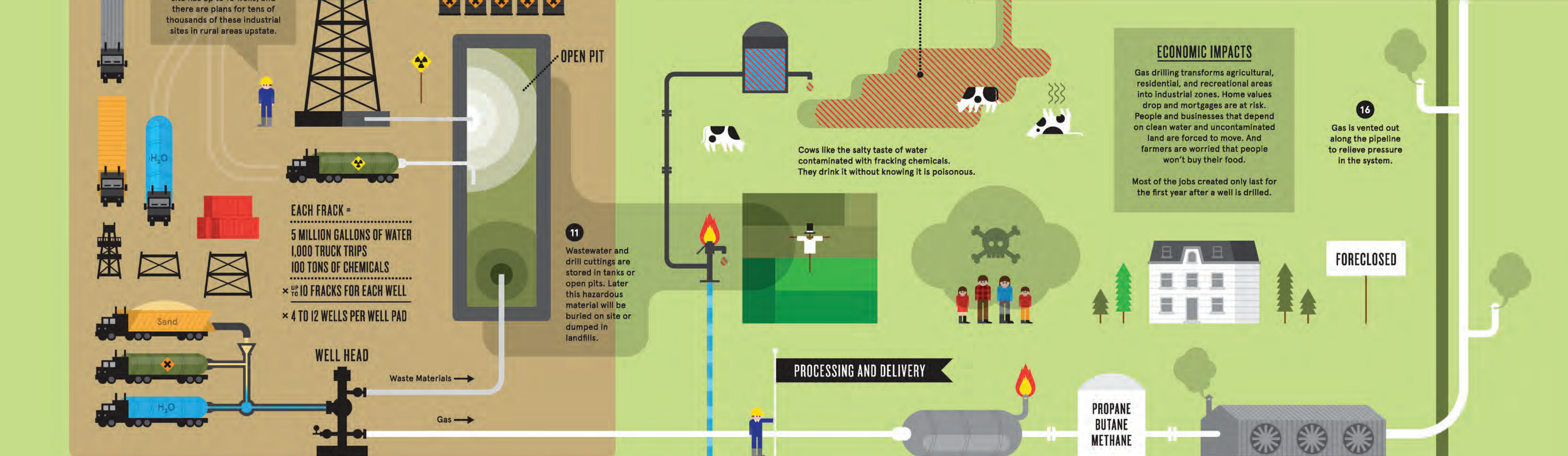
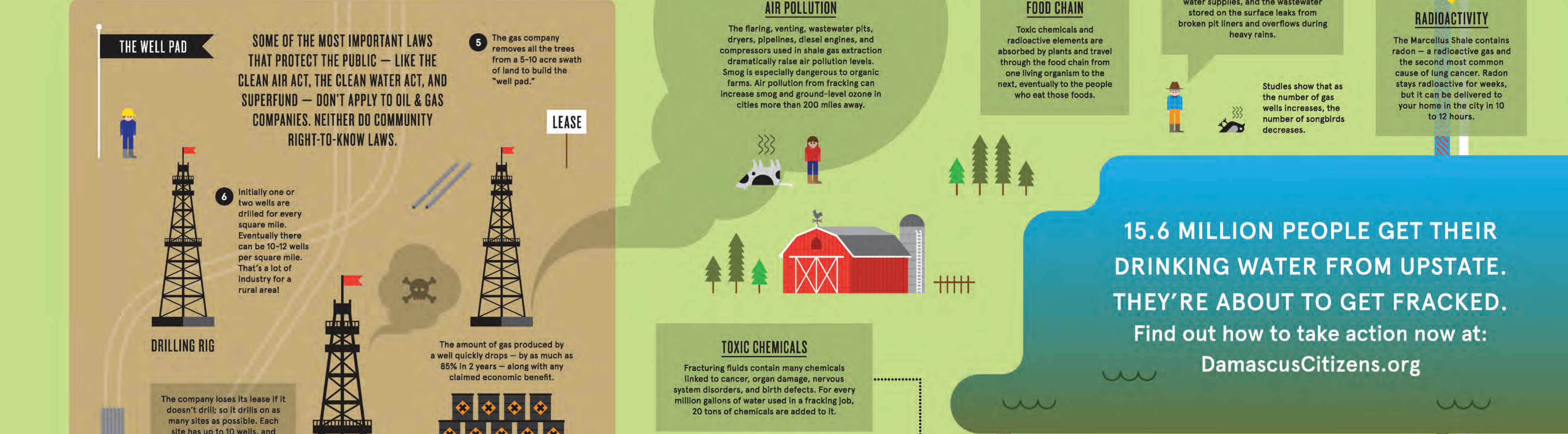
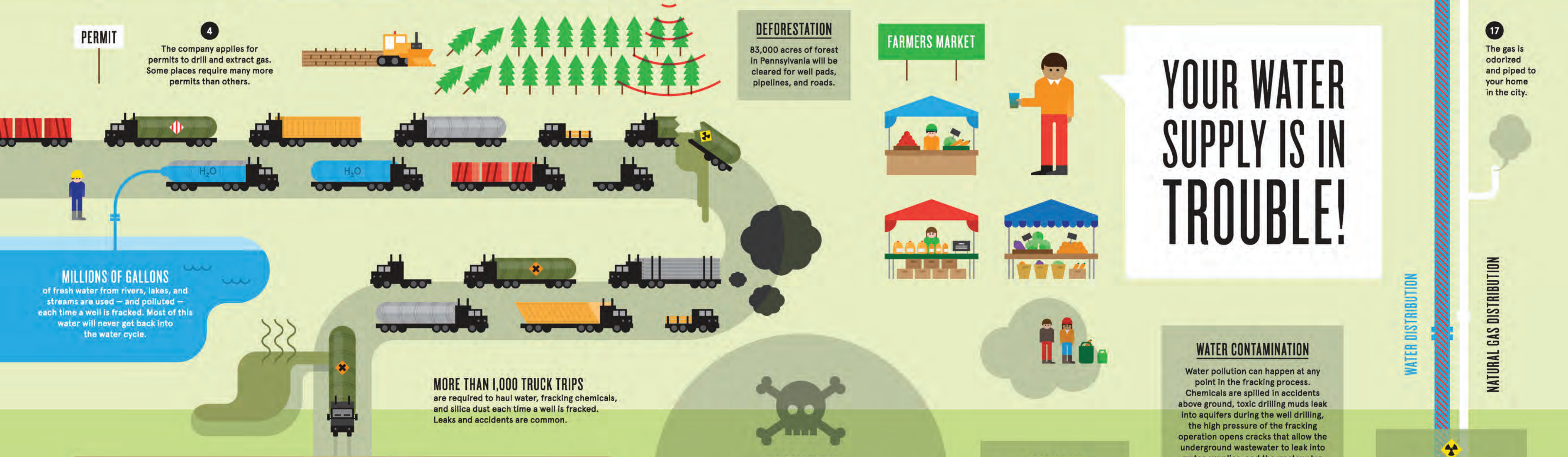
West Virginia
www.governor.wv.gov
304-558-2000 or 1-888-438-2731



FRACKING IS COMING TO A DRINKING WATER SUPPLY NEAR YOU. HERE'S HOW IT WORKS AND WHY YOU SHOULD CARE!

DON'T DRINK AND DRILL!

BETWEEN 4,800 AND 60,000 WELLS COULD BE DRILLED IN THE MARCELLUS SHALE.



15.6 MILLION PEOPLE GET THEIR DRINKING WATER FROM UPSTATE. THEY'RE ABOUT TO GET FRACKED. Find out how to take action now at: DamascusCitizens.org

MAKING PUBLIC POLICY

More than 25 million people in Pennsylvania, West Virginia, and Ohio get their drinking water from the Ohio River Basin.

That water is at risk. Hydraulic fracturing is a process that forces water, sand, and chemicals into underground cracks, under high pressure, in order to release natural gas. It causes air and water pollution, contaminates drinking water supplies, kills animals and plants, and poses serious risks to humans.

And it's threatening your drinking water.

Find out how hydraulic fracturing works, what can go wrong, and what you can do to protect your drinking water today.



For more information and documentation on these fracking facts, visit:
DamascusCitizens.org/Ohio-references



DAMASCUS CITIZENS FOR SUSTAINABILITY

In February of 2008, alarmed by the threat posed by the shale gas extraction industry, local residents of the Delaware River Valley, many from Damascus Township in Pennsylvania, formed Damascus Citizens for Sustainability (DCS).

Through grassroots organizing, rigorous science-based education, and litigation, DCS has sought to protect the Delaware River Watershed, an irreplaceable source of drinking water for over 15.6 million people. As the threat to people's health has grown, DCS has increasingly extended its efforts across the states of Pennsylvania and New York to the entire Marcellus region and beyond, leading to the drilling bans in New York State (2014) and the Delaware River Basin (2021)!

This poster is the second of a series. The original "What's in the Water" poster was created in the Center for Urban Pedagogy's (CUP) program, "Making Policy Public." DCS partnered with PAPER CUT, a creative studio founded by Victor Schuff and Minh-Anh Vo based in New York City.

SPECIAL THANKS TO

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Add your local organization information here!
