



Frac Sand Mining

Updated:
June 2014

A Threat to the Land, People & Communities

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What is Frac Sand?

Frac sand, also called silica sand, is a hard, round mineral found throughout the Driftless region of southeastern Minnesota, western Wisconsin and northeastern Iowa, among other areas. It is valued by the energy industry because it can be combined with chemicals and water and injected into the earth to extract oil and gas from shale deposits. This process, called hydraulic fracturing, or fracking, has revolutionized fossil fuel production in the U.S. in recent years, making it possible to extract energy from deposits once considered inaccessible.

How is it Mined?

Frac sand is generally extracted through a strip-mining process that involves the removal of topsoil, trees and any other natural features on the surface. Entire hillsides are commonly destroyed through this process, which often involves blasting. There is little evidence that land that has been mined for sand can ever be returned to its former state. For example, soil that took thousands of years to form cannot be reclaimed in our lifetimes.

Once the sand is excavated, it is generally transported by truck to a processing facility where clay and silt are washed from the sand grains using water and chemicals. It is then transported by rail or barge to oil and gas fields across North America. It typically takes two to five million pounds of frac sand—enough to fill approximately 25 railcars—to fracture, or “frack,” a single well. Recently, multiple industry and other news sources have reported a rise in the demand for frac sand, as fracking corporations begin using even more sand per well in order to increase oil and gas output.

Air Quality Impacts

Dust-sized silica particles, invisible to the naked eye, are generated during the frac sand mining and transportation process. Because their small size makes it possible for them to get lodged deep in the lungs, these particles pose a significant risk to human health. Diseases associated with crystalline silica exposure include silicosis, emphysema, chronic obstructive pulmonary disease, tuberculosis, lung cancer and immune system disorders. There are sev-

eral well-documented cases of workers exposed to silica sand suffering serious health problems, and health experts are investigating impacts on farms and in communities that are near these facilities.

Monitoring in western Wisconsin has shown elevated levels of silica particles near mining, processing and transportation facilities. As frac sand activity increases, so does the level of silica particles in the air, including those with a diameter of 2.5 micrometers or less. Also known as PM_{2.5}, these smaller particles are considered the greatest threat to human health.

There are no federal or, in the Upper Midwest, state standards for crystalline silica sand levels in ambient air. This is of major concern to neighbors of these facilities. The Minnesota Department of Health has developed a “health-based value” for crystalline silica, but it is not currently enforceable.



Water Quality Impacts

Frac sand mining removes the soil, sand and other material that is critical for purifying water as it percolates below ground. This poses a major threat to groundwater supplies, particularly in the karst region of the Driftless area, where the limestone-based geology is extremely vulnerable to chemical contamination. Karst geology is characterized by a high degree of fracturing, porosity and permeability in the rocks.

Many frac sand facilities use chemicals called flocculants to remove silt and clay in the sand washing process. Two widely-used flocculants, polyacrylamide (which contains small amounts of the neurotoxin acrylamide) and polydadmec, have been identified by the Minnesota Department of Health as “chemicals of emerging concern” with potential human health risks. The use of heavy equipment, along with leaks and spills of fuel and chemicals, can pose a major risk to surface and groundwater, particularly in areas dominated by karst geology.

In some cases, water contamination is gradual. In others, it can be quick and devastating. For

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example, a frac sand mine and processing facility located near Grantsburg, Wis., experienced a major spill just 100 feet outside the Saint Croix National Scenic Riverway. For five days, massive amounts of silica sand and water flowed from a holding pond through a failed berm and into an environmentally sensitive area that included a wetland, creek and the Saint Croix River. Such incidents increase water turbidity to the point where plant and animal ecosystems are severely disrupted.

Frac sand processing also requires massive amounts of water, placing a heavy burden on already overtaxed aquifers. As water tables are lowered, it increases the impacts of pollution as contaminants become more concentrated in the remaining water.

A Threat to Roads and Safety

Hauling frac sand from mining sites requires a major increase in truck traffic on rural roadways (loaded frac sand semi-trucks weigh up to 40 tons). Two mines proposed near St. Charles, Minn., would generate an estimated 1,200 truck trips per day, and they are among a cluster of other mines proposed in the immediate area by the same company. In the city of Wabasha, Minn., a major frac sand transfer facility is being proposed that would mean hundreds of frac sand trucks coming from Wisconsin and travelling through residential areas and past a nearby hospital.

Besides crowding roadways, risking public safety, and producing massive amounts of diesel fume exhaust (considered a major human health risk), this increased truck traffic places an economic burden on already over-extended local units of government that are responsible for maintaining roadways.

Threats to Agriculture

Frac sand mining poses a threat to farmland in a couple of different ways. For one, it strips away the valuable topsoil needed to raise crops and forage. Although remediation may make it possible to return land to a strip-mined area, it is next to impossible to fully reclaim the biologically rich soil profile that took thousands of years to develop.

In addition, when frac sand mining companies pay inflated prices for farmland, it pushes beginning farmers out of the market.

Impacts on Communities

The industry has established over 90 mines and processing facilities in western Wisconsin, up from a mere handful just five years ago, and is now pushing hard to get established in southeastern Minnesota. In just a short time, the industry has developed a long track record of bullying/coercion when it comes to its dealings with local townships and counties. These firms play citizens against each other and in some

cases have hired former local government officials to help push through proposed facilities.

Frac Sand Mining's Role in Extreme Energy Extraction

Frac sand mining is part of a corporate push for "extreme energy extraction" as high quality oil, gas and coal get harder to come by. It is estimated that as many as 4,000 new oil and gas wells, on average, are launched each month, and at least 90 percent of those rely on fracturing shale deposits. Like mining facilities, fracked wells have been shown to be a threat to surface and groundwater while producing significant greenhouse gas emissions. And yet, they are exempt from the federal Clean Air Act and the Safe Drinking Water Act.

More Information

The Land Stewardship Project is working to organize citizens who want to protect their communities from the frac sand mining industry, with a concentrated focus on local organizing in southeastern Minnesota and development of good public policy on a statewide basis in Minnesota. For more information, see <http://landstewardshipproject.org/organizingforchange/fracsandorganizing>.

You can also contact LSP organizers Johanna Rupprecht (507-523-3366, jrupprecht@landstewardshipproject.org) or Bobby King (612-722-6377, bking@landstewardshipproject.org).

Sources

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This fact sheet is brought to you by the members and staff of the Land Stewardship Project, a nonprofit organization devoted to fostering an ethic of stewardship for farmland and to seeing more successful farmers on the land raising crops and livestock. For more information, call 612-722-6377 or visit www.landstewardshipproject.org.