Just the Fracking Facts

Oil companies have been using dangerous technologies to extract oil from California with virtually no oversight. These technologies include injecting toxic chemicals, acids, sand and water deep into the ground to dissolve and break up rock. Today, oil companies are positioning themselves to expand these practices across wide areas of California, putting public health, the environment, and our climate goals at risk.

FRACKING & ACIDIZING: THE BASICS

Hydraulic fracturing, better known as "fracking," is a well stimulation method used to facilitate the extraction of oil and gas and involves blasting up to millions of gallons of water, mixed with sand and often toxic chemicals, deep into the earth. When fracking breaks up rock formations, it allows otherwise inaccessible oil and gas to flow to the surface. Another unconventional extraction technique called acidizing uses corrosive acids to dissolve rock and release oil and gas. The two techniques can be combined in a process called acid fracturing, or "acid fracking."

Californians Against Fracking

California League of Conservation Voters

Clean Water Action

Environment California

Earthworks

Environmental Working Group

NRDC

Planning and Conservation League

Sierra Club California

Surfrider Foundation

Using these techniques, oil companies have set their sights on the Monterey Formation, a geological formation consisting of several shales and other so-called "tight" rock types and holding an estimated 13.7 billion barrels of recoverable oil.[1] The main portion of the Monterey Formation covers over 1,700 square miles, and underlays the San Joaquin Valley, the Los Angeles basin, the Santa Barbara Channel, the Santa Maria basin, and more discontinuous areas over at least 15 California counties.

The agency responsible for regulating oil and gas drilling in California, the Division of Oil, Gas, and Geothermal Resources (DOGGR), claimed as recently as 2011 that no significant fracking was happening in California. Their public denial was quickly rebuked, as we found out that fracking and acidizing had actually been taking place in California for decades and without any regulation or tracking by DOGGR. But fracking and acidizing techniques are rapidly changing and come with new potential hazards. Technological changes have facilitated an explosion of drilling, bringing with it new chemical concoctions being injected in many new locations, posing increased threats to human health, wildlife, air, and water.

Fracking and acidizing have been documented in at least 10 California counties— Colusa, Glenn, Kern, Los Angeles, Monterey, Sacramento, Santa Barbara, Sutter, Kings and Ventura. In Kern County, Halliburton estimates that over 50 percent of new oil wells are fracked. The public recently learned that fracking has been taking place offshore and without the knowledge of state regulators. Oil companies have used fracking at least 203 times at six sites in State waters off Long Beach, Seal Beach and Huntington Beach over the past two decades according to the Associated Press. Another investigation revealed that federal agencies gave permission for an oil company to start fracking in the Santa Barbara Channel without environmental review.[2]

ENVIRONMENTAL & HEALTH CONSEQUENCES

Fracking's intensive reliance on water competes directly with the needs of 38 million Californians and the largest agricultural industry in the United States. According to the U.S. Environmental Protection Agency, fracking in shale formations could require from 2 to 13 million gallons of water per well.[3] In California, estimates for water use for a single fracking event ranges from 80,000 to one million gallons. A single well can be fracked several times, leading to a total water use running into the millions of gallons.[4] Often, that's water that never returns to the water cycle, as it's transformed into a contaminated waste product that is stored in tanks, underground or otherwise removed forever.

Information about the chemicals used in fracking fluids is limited. Fluid manufacturers and users often claim trade secret protections to avoid reporting on quantities and types of all fluid ingredients. From available information, we know fracking and acidizing typically employ toxic chemical cocktails[5] that can contaminate the water and air, including methanol, benzene, naphthalene and trimethylbenzene. Many of those chemicals are listed as hazardous to human health under the federal Clean Air Act or under California's Proposition 65. Worksite investigations conducted at fracking sites have documented unsafe levels of silica exposure, which causes a degenerative and irreversible lung disease, due to the use of silica sand in fracking operations.[6]

Fracking can expose people, crops, and wildlife to harm from the fracking chemicals, as well as naturally occurring arsenic, boron, and radioactivity that can be brought back to the surface with fracking flowback fluid. Because DOGGR never regulated fracking, water quality impacts and human health impacts have gone unmeasured in California, but fracking in other states shows that fracking is a human health hazard for both oil and gas field workers and people living near oil and gas fields. Notably, acidizing may involve the injection of large volumes of hydrofluoric and hydrochloric acids. Hydrofluoric acid is extremely toxic and exposure to it can be life threatening, according to the U.S. Centers for Disease Control and Prevention.[7] Oil and gas companies in California are already injecting tens of thousands of gallons of hydrofluoric and other acids into wells around the state.

Wastewater from oil and gas development has already resulted in contaminated groundwater through surface storage leakage. In 2008, a Kern County farmer was awarded $8.5 million in compensatory damages for groundwater contamination from oil industry wastewater stored in open pits.[8] Fracking wastewater is often stored at ground level or injected into waste wells, and is basically taken out of the available water supply for drinking or watering crops because of its high contamination. Notably, earthquakes have been linked to wastewater injection associated with oil and gas operations in other parts of the country. DOGGR has no information available to the public that discusses or tracks the influence that injection wells may have on faults and seismic activity in California.

Wildlife is also at risk from fracking. Fracking comes with intense industrial development, including multi-well pads and massive truck traffic. Producing oil and gas from shale formations can require thousands of wells, requiring multiple routes for trucks, adding habitat disturbance for wildlife and more pollution. More than 100 endangered and threatened species live in the California counties where the Monterey Formation could be exploited on a large scale.

AIR POLLUTION & CLIMATE CHANGE

Air pollution from oil and natural gas production is a serious problem of nationwide scope that currently threatens the health of communities across the country.

The processes and, equally importantly, the products of fracking and acidizing, petroleum and natural gas, contribute to conventional air pollution and greenhouse gas emissions (GHG). In other regions, emissions of volatile organic compounds (VOCs) from oil and gas facilities are causing elevated ozone levels and exposures to toxic pollutants like the carcinogen benzene. One report determined that in a single year, fracking in the U.S. produced at least 450,000 tons of air pollution.[9] Most California air districts do not monitor fracking pollutants. Communities living close to fracking operations are also exposed to diesel pollution as a result of truck traffic and diesel engines used to operate pumps and drilling equipment. Diesel pollution has been linked to cancer, respiratory and cardiovascular impacts, premature mortality and adverse birth outcomes.

Finally, the oil and gas industry is responsible for a significant amount of methane pollution—a potent greenhouse gas that is 28 times more powerful than carbon dioxide over the long-term. A recent study led by Harvard scientists suggests this industry may be responsible for significantly more methane pollution than EPA and others previously thought.[10] Fracking and acidizing of wells could

allow billions of barrels of oil and cubic feet of gas that were previously considered inaccessible to be produced. If we want to get serious about tackling climate change, we must move off fossil fuels, and turn to truly clean energy sources like wind and solar.

TIME FOR A FRACKING MORATORIUM

Californians need assurance that fracking and acidizing of wells is not going to endanger our health, our environment, or our commitment to fight climate change. The burden must be on the oil companies and regulators to prove that fracking practices in California won't harm the environment and human health. Neither the provisions of Senate Bill 4, which took effect in January 2014, nor the draft regulations released in November 2013 by the state Department of Conservation and DOGGR are adequate to ensure that Californians and their environment will be protected. That is why so many groups and individuals are calling for a moratorium on fracking–to give Californians time to fully assess the risks and how to protect against them.

Endnotes

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