Fracking's Human Health Impacts

Fracking for oil and gas is pumping and dumping contaminated water, mud, toxic chemicals and air pollution into our communities and environment. While human health impacts have gone largely unmeasured in California, active 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.

Overview

Hydraulic fracturing, or fracking, is the process of injecting large quantities of water, toxic chemicals, sand and other materials ("proppant") under high pressure into the ground to break up and dissolve rock and soil to extract oil and gas. Increasingly, dangerous concentrations of acids, including hydrofluoric acid, are used in a process called "acid well stimulation" that is essentially a variation on fracking.

Both processes—fracking and well stimulation—have been largely unregulated in California until very recently. Moreover, the health and environmental impacts here have not been routinely catalogued and reported. However, enough reporting exists from California and other states where fracking is also occurring to indicate that fracking's health impacts can be and have been disturbing and profound.

Water and Fracking Fluids

Oil companies in North Dakota reported more than 1,000 accidental releases of oil, drilling wastewater or other fluids in 2011, according to data obtained by ProPublica. Many more illicit releases went unreported, state regulators acknowledge. In several cases, spills turned out to be far larger than initially thought, totaling millions of gallons. Releases of brine, which is often laced with carcinogenic chemicals and heavy metals, have wiped out aquatic life in streams and wetlands and sterilized farmland. The effects on land can last for years, or even decades[i]

Fracking routinely employs numerous toxic chemicals, including methanol, benzene, naphthalene and trimethylbenzene. It can also expose people to harm from lead, arsenic and radioactivity that are brought back to the surface with fracking flowback fluid.[ii]

Cathy Behr, an emergency room nurse at a Colorado medical center spent ten minutes with gas field worker Clinton Marshall, who arrived complaining of nausea and headaches after a "fracturing fluid" spill. The fumes were so overpowering the emergency room was evacuated. A few days later Behr was diagnosed with multiple organ failure, including liver failure, respiratory distress and erratic blood counts. She was admitted to the ICU with the presumptive diagnosis of poisoning from an unknown chemical. The chemical was and is still considered to be a proprietary formula by the producer, Halliburton, a gas industry leader. It was later revealed to be a product with the trade name, Zetaflow. [iii]

Over five decades of oil drilling in Poplar Montana have contaminated Poplar's drinking water to the point that, "Between 1999 and 2010, the Environmental Protection Agency issued five emergency orders to three oil companies, forcing them to, among other things, build a drinking

water pipeline to certain residences and deliver bottled water to others." [iv]

In California, 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.[v]

Toxics and Air Quality

Air sampling near fracking sites in Texas and California has detected concentrations of hazardous air pollutants high enough to make people sick. Smog and soot pollution from heavy-duty trucks and other equipment also contribute to local and regional air pollution problems.[vi]

Vintage Production, a subsidiary of oil giant Occidental, revealed that the company fracked 36 wells around Shafter, CA, from the beginning of 2011 to April of 2013, and a total of 85 wells in Kern County. The company's arrays of pipes and tanks and trucks are punctuated with a tower that has been flaring gas since 2011, sometimes 24 hours a day. A study of gas flaring by the Ventura County Air Pollution Control District shows that gas flaring can emit numerous pollutants such as benzene, formaldehyde, polycyclic aromatic hydrocarbons (PAHs, including naphthalene), acetaldehyde, acrolein, propylene, toluene, xylenes, ethyl benzene and hexane.

"Gas field ozone has created a previously unrecognized air pollution problem in rural areas, similar to that found in large urban areas," according to a 2011 study published in the journal *Human and Ecological Risk Assessment*[vii]. In 2012, documents submitted to the San Joaquin Valley Unified Air Pollution Control District show that Vintage's gas flare in 2012 emitted 68 pounds of nitrogen oxides and 88 pounds of volatile organic compounds.[viii]

The 12 most commonly used air toxics in unconventional oil development in the Los Angeles basin are (1) Crystalline Silica, (2) Methanol, (3) Hydrochloric Acid, (4) Hydrofluoric Acid, (5) 2-Butoxy Ethanol (6) Ethyl Glycol (Monobutyl Ether) (7) Xylene (8) Amorphous Silica Fume (9) Aluminum Oxide (10) Acrylic Polymer(Acid) (11) Acetophenone (12) Ethylbenzene These disclosures demonstrate that air toxics — chemicals considered among the most dangerous air pollutants because they can cause illness and death — are being used routinely in extreme energy-recovery techniques in Southern California.[ix]

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[i] http://www.propublica.org/article/the-other-fracking-north-dakotas-oil-boom-brings-damage-along-with-prosperi

[ii] http://www.biologicaldiversity.org/campaigns/california_fracking/faq.html

[iii] http://www.psr.org/environment-and-health/environmental-health-policy-institute/responses/the-big-secret-fracking-fluids.html

[iv] *http://indiancountrytodaymedianetwork.com/2013/05/26/beckoning-bakken-will-oil-boom-reach-montanas-impoverished-fort-peck-tribes-149535*

[v] Wheeler Institute for Water Law & Policy Center for Law, Energy and the Environment

[vi] http://www.environmentcalifornia.org/programs/cae/no-fracking-california

[vii] Theo Colburn, Carol Kwiatkowski, Kim Schultz & Mary Bachran (2011) natural gas operations from public health perspective, Human and Ecological Risk Assessment: An International Journal, 17:5, 1039-1056

[viii] http://www.alternet.org/fracking/are-we-trading-our-health-oil-new-fracking-induced-california-gold-rush-slideshow?paging=off

[ix] http://www.biologicaldiversity.org/campaigns/california_fracking/pdfs/LA_Air_Toxics_Report.pdf