

Fracking, Benzene, and Public Health -- A California Nightmare

Char Miller, KCET (Los Angeles public television), 2-25-15

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Benzene is back -- and scarily so.

Drawing on analyses that the Center for Biological Diversity conducted, Julie Cart, an investigative journalist for the Los Angeles Times, has reported that "significant concentrations" of benzene, a cancer-causing petroleum derivative, are in fracking waste liquid in California.

How significant? Cart notes that "benzene levels thousands of times greater than state and federal agencies consider safe" have been identified. This should give us serious pause, for since the late 19th-Century benzene has been directly linked to aplastic anemia and leukemia; it is a killer.

It is not the only toxin injected into the state's waste-disposal wells. Disturbingly high levels of Chromium-6 were detected (upwards of 2,700 times the recommended level that the state's Office of Environmental Health Hazard Assessment has established). Toluene, which is known to compromise the central nervous system and harm developing fetuses, also registered at abnormally high levels.

These findings only came to light because of the passage of SB 4 in 2013, which requires energy companies to test and report the chemical composition of the fluids injected into waste wells. The data has led the Environmental Protection Administration as well as state agencies to argue that this situation constitutes a serious violation of clean water regulations and poses a distinct threat to public health.

They are right to be worried. With upwards of 700,000 waste injection wells nationwide, and with their number multiplying as fracking accelerates across the land, questions are mounting as to whether the science that once supported this form of waste removal remains accurate. Notes ProPublica, which investigated this issue in 2012:

The boom in oil and natural gas drilling is deepening the uncertainties, geologists acknowledge. Drilling produces copious amounts of waste, burdening regulators and demanding hundreds of additional disposal wells. Those wells -- more holes punched in the ground -- are changing the earth's geology, adding man-made fractures that allow water and waste to flow more freely.

Hydrogeologist Stefan Finsterle of the Lawrence Berkeley National Laboratory put it bluntly: "There is no certainty at all in any of this, and whoever tells you the opposite is not telling you the truth. You have changed the system with pressure and temperature and fracturing, so you don't know how it will behave."

None of this shocking information shocks long-time anti-fracking activists. They pushed hard for legislation to stop hydraulic fracturing in the Golden State because they were deeply concerned about its impact on groundwater supplies -- including essential aquifers. Now we know just how right they were to demand a ban, and how much more we need to know about the extent of this troubling situation.

Arguing that the data reveals a statewide "disaster," what really concerns Hollin Kretzmann, an attorney for the Center for Biological Diversity, is how incomplete the data is. "They are trying to piece it all together -- in some cases decades after these injections started." The "they" in his sentence is the Division

of Oil, Gas and Geothermal Resources, or DOGGR, the state agency charged with overseeing energy production in California.

It has done a lousy job of its appointed task: the center and L.A. Times observe that DOGGR failed to post on its website required test results from at least 100 wells, among other lapses. "Central Valley water officials also recently revealed that at least 383 oil industry wastewater pits are operating without permits or oversight," the center confirmed. "Most wastewater pits are unlined and don't have covers" -- all violations of state law. So egregious are DOGGR's failures that even the EPA, not known for its willingness to rein in Big Oil & Gas, has chastised its lax approach to regulation.

That a regulatory agency could be so negligent ought to be unimaginable. But it is not: there is a long history of federal and state agencies being captured by the very industries that they are supposed to regulate. Historian Gabriel Kolko exposed this process in his 1963 book, "The Triumph of Conservatism," decrying a corporatist nation-state in which big business and big government formed a powerful, mutually self-interested coalition. During the Progressive Era, Kolko asserted, efforts to control the meatpacking, steel, and copper industries came not from grassroots activists but from major corporations who wrote the relevant statutes so that they could control legal oversight and crush their competition.

The enduring power of Kolko's insights into how "political capitalism" operates is reflected in subsequent analyses of the old Atomic Energy Commission (now the Nuclear Regulatory Commission) and state public utility commissions, many of whose personnel also come from the industries that they are charged with overseeing. Californians know all about the impact that such revolving doors can have. Michael Peevey, the former president of Southern California Edison, and the now-disgraced head of the state's PUC, was forced out of office in 2014 after evidence piled up that he was in cahoots with his former employer and Pacific Gas & Electric.

As yet, there is no indication that DOGGR failed to protect public health due to its complicit relations with energy companies. Let's hope that remains true. For if there is ever a distillate that must be scrupulously -- nay, zealously -- managed it is benzene.

Synthesized from coal in the 19th Century, and now a petroleum byproduct, benzene has been used extensively as an industrial solvent.

No sooner was its production ramped up than its health consequences emerged. "In those countries where benzene came to be made and used on a more industrial scale," writes SUNY-Stony Brook historian Chris Sellers in a recent issue of *Global Environment*, "acute poisoning began turning up, as well as a more chronic form of poisoning. Yet only after World War I would a common pattern of chronic effect earn its own name ('aplastic anemia') and the first cases of benzene-associated leukemia show up in medical journals."

Strikingly, European health officials immediately drew a direct connection between benzene and a variety of fatal or degenerative maladies. French and Germans in particular called it as they saw it, dubbing one particularly prevalent blood disease "benzene leukemia"; they deliberately named "a disease with its presumed occupational cause."

Although U.S. researchers had access to European medical studies that demonstrated this ineluctable connection, and were reproducing the same results in their stateside laboratories, it took decades before they were willing to acknowledge what their continental colleagues took as a given. Their reluctance, Sellers observes, was a result of this nation's failure systematically to collect and analyze public medical records across the wider population and American scientists' faith in "lab-inspired epidemiology,"

research that required outside funding and which often came from corporations; this dependency "made any claims about occupational causes -- and the claimants -- more vulnerable to attack by industrial interests."

German chemist Wilhelm Hueper found this out the hard way. While working for chemical giant DuPont, he studied workers who fabricated aniline; industries used the volatile compound, which smells like rotten fish, in rubber processing, herbicide production, and dye manufacture. Hueper was one of the first to identify the chemical as a toxic substance, a carcinogen. DuPont promptly fired him.

Muzzling in-house critics has been industry standard ever since. This has had a chilling effect externally, too. Even when President Richard Nixon signed 1970 legislation creating the EPA and OSHA, the Occupational Safety and Health Administration, these new agencies watchdog status did not free from them, or their analysts, from outside pressure. Witness the inability, perhaps even unwillingness, of the EPA to effectively challenge the fracking industry. Lacking congressional and White House support to regulate its actions, given the putative need to secure "energy independence," the EPA has stood on the sidelines.

States have proven just as ineffective. Pennsylvania, Texas, and North Dakota, where fracking is a massive presence, have refused to enact controls that would protect local water supplies. Why bite the rich hand that feeds you?

Sure, these are Republican, intensely business-friendly states. Yet even progressive California has been unwilling to take an aggressive action against the energy industry. It took a furious fight to secure SB 4, which is the state's first attempt at regulating fracking. But many activists, in response to industry lobbyists' ability to water down its final draft, refused to support the legislation. The L.A. Times concurred, editorializing in September 2013: "at this point SB 4 is so flawed that it would be better to kill it and press for more serious legislation next year."

That we still need more serious legislation is evident from DOGGR's scandalous inaction. Yet let's also admit that without SB 4's reporting requirements we would not know that benzene, chromium-6, and toluene have been injected into hundreds of wastewater injection wells. We would not know the level of threat that these toxins pose to our groundwater supplies, and thus could not demand that DOGGR do its job.

At least the agency is complying with SB 4's requirement that it "prepare an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) in order to provide the public with detailed information regarding any potential environmental impacts associated with well stimulation treatments in California." Part of that process is providing for public comment on its EIR. The deadline for review and comment is fast approaching: it ends on March 16, 2015. Will Californians once again speak up?