

Justin Nobel testimony for Waste Loophole Policy Hearing - Sept 28 2021

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Good Day, My name is Justin Nobel. I have a dual master's degree in earth and environmental science and journalism, write regularly on issues of science and the environment for US magazines and investigative sites, and I am presently writing a book on the issue of the radioactivity brought to the surface in oil and gas production and the many different pathways of contamination posed to the industry's workers, the public and communities, and the environment to be published with Simon & Schuster. I have spent the last four years speaking to oil and gas industry workers across Pennsylvania, Ohio, West Virginia, North Dakota, Michigan, Montana, Colorado, Oklahoma, New Mexico, and Texas as well as residents, regulators, scientists, and I have extensively researched over 115 years of records and academic research on this topic. A two-year investigation I published in 2020 in Rolling Stone magazine, "America's Radioactive Secret," was recently awarded best long-form narrative with the National Association of Science Writers.

I quote, "Almost all materials of interest and use to the petroleum industry contain measurable quantities of radionuclides that reside finally in process equipment, product streams, or waste. In addition...brine solutions from operating wells contain biologically significant quantities of Radium 226 and Radon 222." These lines do not come from a research scientist at some elite university far removed from the oil patch, they do not come the newsletter of an environmental action group which may have a vested interest in halting oil and gas production. These lines, in fact, come from a 1982 report of the Department of Medicine and Biology, of the American Petroleum Institute. The report goes on to describe the radioactivity risks of the industry's waste, quote, "Radium 226 is a potent source of radiation exposure, both internal and external...Radon 222 and its daughters cause the most severe impact to the public health."

The 1982 American Petroleum Institute report also invalidates the popular idea, in this state and others, of encouraging the recycling or re-use of produced water and other oil and gas industry waste products. Again, I quote from the American Petroleum Institute report, "Any control methodology proposed for radioactive materials must recognize the fact that radioactivity can not be modified or made inert by chemical means. It also must recognize that radioactivity dissipates at fixed rates through fixed sequences or series. Decay to daughter products cannot be guaranteed to reduce the hazard..." And just a few lines later the American Petroleum Institute report points out that any attempt to remove radioactivity is merely transforming, quote, "a very dilute source of radioactive materials into a very concentrated source of radioactivity."

And this is the conundrum we end up in when we take something that is clearly hazardous and label it non-hazardous, thus allowing human beings to intimately interact with it. Those human beings are at risk. Those human beings will get sick. Those human beings are not being protected or paid appropriately given the materials they are handling. Those human beings are the oil and gas workers whose jobs many in this chamber like to boast about.

First, a quick recap. What is oil and gas waste? We are talking about an extremely salty stream of liquid waste that the industry innocently refers to as "brine" or "produced water"—it is loaded

with human carcinogens such as benzene, toxic heavy metals such as arsenic and lead, and it can be loaded with extraordinarily high levels of the radioactive element radium. We are talking about massive amounts of drill cuttings brought to the surface in the process of drilling through the uranium and thorium-rich Marcellus shale. We are talking about various scales and sludges that form in wellhead pipes, pumps, valves and tanks and can have radioactivity levels 100,000 times limits EPA has set for soil at even the nation's most toxic cleanup sites, such as Superfund sites and uranium mills. The 1976 Resource Conservation and Recovery Act, or RCRA, was an attempt to appropriately define and characterize the nation's hazardous waste in an effort to keep workers and communities safe. And yet under the 1980 Solid Waste Disposal Act amendments, all of this epic amount of oil and gas waste, despite containing clear hazardous properties, received a stunning exemption known as the Bentsen and Beville Amendments, enabling it to be labeled as non-hazardous.

EPA was charged to determine the appropriateness of the exemption and concluded in 1988 that although oil and gas waste contained concerning levels of lead, arsenic, barium, and uranium, and although the agency admittedly did not assess many of the major potential risks, formally labeling the oil and gas industry's "billions of barrels of waste" as hazardous would "cause a severe economic impact on the industry." At the time, the American Petroleum Institute calculated the nationwide cost of compliance with such a program to be over \$40 billion. So, science was ignored, industry worker health was ignored, public health was ignored, in favor of saving this industry money.

That means when oil and gas waste goes into a truck to go off to an injection well, there is absolutely no labeling or wording on that truck to convey to the driver, communities the driver drives through, other road-users, or first responders such as EMT and firefighters, what is in that truck. This is the untold problem of this industry's *regulatory relief*. We can run trucks filled with hazardous waste through Pennsylvania communities and not tell people what is in the trucks and we can take those trucks to places called injection wells, often located in Ohio, such as this one, which is literally on the edge of a shopping plaza in Cambridge Ohio. You can eat at Taco Bello, or Starbucks, or get your iPhone fixed at Verizon, and you can watch trucks unload hazardous waste right in front of your eyes, as you finish your taco or Frappuccino. Oil and gas's hazardous waste exemption makes this shameful public health disaster possible.

But oil and gas's hazardous waste exemption makes something even more concerning possible. This is a photo of an oil and gas worker in Ohio, but I know from talking to workers in Pennsylvania that this type of job is performed in this state as well.

These workers wear regular work uniform (FRs), hard hat with a face shield, typically no respirator, no dosimeter, no mask. They crawl inside the truck's "clamshell" or manhole, with a shovel and pressure washer and shovel everything out the bottom, then use a steam cleaner to clean the sides and the bottom. "They just keep chasing the waste to the back, just like you would with your dad's garage floor. These guys will challenge each other to spend a lot of time in there, trying to be tough, if you complain to your boss they'll say, 'Shut up, don't like it go home, you are lucky to have a job.'"

Just because you do not believe the science or know the science or care to read a few research papers to understand the science does not mean the science doesn't exist, and does not mean the science won't eventually lead to lethal cancers in the Pennsylvania workers you are charged with protecting. I sincerely hope the state of Pennsylvania will close the oil and gas waste loophole.

But either way, your paltry regulations have already enabled an easily traceable trail of contamination to be spilled across the great state of Pennsylvania, and quite literally, deposited in the bones and bodies of its people. Unbeknown to most people there have been legal cases in Louisiana, one settled as recently as 2016, showing that various cancers received by oil and gas workers, including chronic lymphocytic leukemia, lymphoblastic leukemia, prostate cancer, lung cancer, liver cancer, colon cancer, have been linked to radioactivity exposure received on the job. These workers, 33 of them in this one case, over a number of years were exposed to various types of radioactive oil and gas waste—waste that our US laws say is “non-hazardous.”

And yet, a program developed by the CDC for nuclear weapons workers called the Interactive RadioEpidemiological Program or IREP was used to determine the likelihood that these worker's cancers came from their occupational exposures—many of the numbers returned by the IREP program are in the range of 95 to 99 percent. As the nuclear physicist who served on this case told me, these numbers are undeniable. All of these workers cases were settled by the oil and gas industry, and this is an industry that does not like to settle. But the workers still suffer, of course. They still die of cancer.

Why have we not seen a cluster of oil and gas worker cancers in the Marcellus? The answer is actually tragic—no one is really looking for them, and many of these cancers take on the order of 15 to 20 years to develop, so there has not been ample time for them to emerge. Well, we are now 15 years on. And we are now looking. And I want folks voting on this legislation to remember that. And this problem goes far beyond oil and gas workers, it seeps into the communities that contain landfills which were largely intended for household and light commercial trash and in the almost two decades of Marcellus and Utica development have taken hundreds of thousands of tons of drill cuttings and other oil and gas waste products including used frac sand. The sewage treatment plants processing leachate from these landfills have no ability to remove various oil and gas contaminants including the radioactivity and thus oilfield waste has been, and continues to be, discharged right back into Pennsylvania waterways that Pennsylvanians rely on for fishing, boating, and yes drinking and bathing water too. A 2018 EPA report on the topic the agency has done little to advertise states that, “Documented and potential impacts to both aquatic life and human health related to discharges from CWT facilities treating oil and gas extraction wastewater exist.”

Again, I go back to the 1982 American Petroleum Institute report, “Any control methodology proposed for radioactive materials must recognize the fact that radioactivity can not be modified or made inert by chemical means.” You cannot make this problem disappear with magic. But you do have an opportunity now to address what is a clear public health emergency, you have an opportunity now to keep communities safe, and keep the oil and gas workers you claim to care so much about safe. Thank you very much.

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