



GRASSROOTS Environmental Education

Main Office: 52 Main Street • Port Washington • New York 11050 • T (516) 883-0887 • www.grassrootsinfo.org
Wainwright House, 260 Stuyvesant Ave Rye, NY 10580 • 25 Sylvan Road, Westport, CT. 06880

Connecticut State Legislature
Committee on Environment
Public Hearing
Friday, March 22, 2013

Re: Legislation to Ban the Possession and Storage of Fracking By-Products in the State of Connecticut

Thank you to the Connecticut State Legislators for the opportunity to address this hearing regarding proposed legislation H.B. 5335 to ban the possession and storage in the State of Connecticut of radioactive waste from gas drilling operations.

We commend the Connecticut legislators for addressing this critically important issue and strongly support the passage of H.B. 5335. Protecting the health and safety of constituents is the primary responsibility of government officials.

My name is Ellen Weininger and I am the Educational Outreach Director for Grassroots Environmental Education, a science-based environmental health non-profit which works with a network of leading medical and scientific experts to bring peer-reviewed scientific research to local and state governments, school systems, environmental and health organizations across the tri-state area and nationwide.

Toxic, radioactive gas drilling waste from shale gas drilling operations can potentially cause irreparable damage to water, air, land, food sheds and public health. There is no safe disposal plan in place for the billions of gallons of radioactive waste that is generated from gas extraction activities. This highly toxic mixture contains heavy metals, volatile organic compounds (VOCs), endocrine disruptors, brine (approximately eight times saltier than sea water), and high levels of naturally occurring radioactive materials (NORMs), including radium-226 and radium-228 which are known carcinogens. Radium-226 has a half-life of 1600 years and is linked to anemia, cataracts, bone, liver and breast cancers and death. (<http://www.atsdr.cdc.gov/toxprofiles/tb144.pdf>) Radon, a decay product of radium is an extremely dangerous gas and is considered the second leading cause of lung cancer in the United States and is the leading cause of lung cancer in non-smokers nationwide (<http://www.epa.gov/radon/healthrisks.html>)

Levels of Naturally Occurring Radioactive Material (NORM) including radium and its decay product, radon, are known to be generally higher in the Marcellus Shale than in

other shale formations where hydrofracking activities are being conducted. (Radium content of oil and gas field produced waters in the northern Appalachian Basin – Summary and discussion of data: U.S. Geological Survey Scientific Investigations Report 2011-5135, Rowan, E.L., Engle, M.A., Kirby, C.S. and Kraemer, T.F., 2011 <http://pubs.usgs.gov/sir/2011/5135/>)

Although this radioactive waste is hazardous and in fact exceeds the legal criteria for hazardous waste classification, it is categorized as “industrial waste” under federal and state laws as a result of special exemptions given to the oil and gas industry. These exemptions eliminate tracking requirements for the handling, storage, treatment and disposal of the waste. These special exemptions are part of the Energy Policy Act of 2005 which exempts the oil and gas industry from the Safe Drinking Water Act, the Clean Drinking Water Act, the Clean Air Act, the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Environmental Policy Act (NEPA) and the Toxic Release Inventory of the Emergency Planning and Community Right-to-Know Act (http://www.catskillcitizens.org/learnmore/FS_OilGasExemptions.pdf)

Levels of total radium tested in the wastewater from eleven active New York vertical gas wells averaged over 8,400 pCi/l exceeding the EPA’s maximum contaminant level for drinking water by more than 1,000 fold (5 pCi/l for combined radium-226 and radium-228 (Radium content of oil and gas field produced waters in the northern Appalachian Basin – Summary and discussion of data: U.S. Geological Survey Scientific Investigations Report 2011-5135, Rowan, E.L., Engle, M.A., Kirby, C.S. and Kraemer, T.F., 2011 <http://pubs.usgs.gov/sir/2011/5135/>)

Radium-226 emits gamma radiation, which can travel fairly long distances through air, raising risks for cancer in communities. (<http://www.atsdr.cdc.gov/toxprofiles/tb144.pdf>)

Ivan White, a staff scientist for the National Council on Radiation Protection, a Congressionally-chartered agency with authority and responsibility to coordinate public information on radiation protection and radiation measurements, stated, “Neither New York State nor the Nuclear Regulatory Commission would permit a nuclear power plant to handle radioactive material in this manner.” Mr. White also states that radioactivity should never be released in an uncontrolled manner because of the potential for exposure from the many potential pathways that exist. (<http://www.grassrootsinfo.org/pdf/whitereport.pdf>)

Radioactive wastewater from gas drilling operations could contaminate drinking water and enter the food supply through fish and farmland. Vehicles that transport radioactive waste increase the risk of human exposure and contamination of water, air and soil when accidents and spills occur. Gas industry trucks hauling fracking waste have no special hazardous warning signs or emergency instructions. In the event of a spill or an accident, emergency responders and nearby citizens will be unaware of any danger.

According to numerous leading scientific experts (http://www.psehealthyenergy.org/data/Cuomo_ScientistsLetter_15Sep20112.pdf) wastewater treatment plants are not designed to treat chemicals, contaminants and highly radioactive materials produced from hydrofracking operations.

Processing toxic, radioactive waste by-products from hydrofracking activities through wastewater treatment facilities will increase contaminant loads of downstream surface waters. If wastewater treatment plants accept this waste, the resulting discharge into rivers and lakes of large amounts of effluent will increase contaminant levels impacting aquatic life and eventually the food chain. High bromide levels in hydrofracking waste are especially problematic since they are highly corrosive to equipment and can react during water treatment to form brominated trihalomethanes, linked to bladder and colon cancers and are associated with birth defects. Once added to drinking water supplies, trihalomethanes are difficult to eliminate (Boorman, GZ, Drinking water disinfection byproducts review and approach to toxicity evaluation, Environmental Health Perspectives 1999 Feb; 107 Suppl 1: 207-17 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1566350/>)

In some states, hydrofracking brine from gas drilling operations is used for dust control and de-icing on roads (NYS DEC “An investigation of Naturally Occurring Radioactive Materials (NORM) in Oil and Gas Wells in New York State,” page 32 <http://www.dec.ny.gov/chemical/23473.html>) Spreading radioactive fracking brine on roads will expose drivers, passengers and pedestrians to dangerous pollutants while contaminating nearby surface waters, residential areas, school properties and farmland. Radioactive particles may become airborne as trucks and passenger vehicles travel along roads. Radioactive particles can be tracked into driveways, garages and ultimately into homes. Rain and snowmelt carrying radioactive materials can runoff road surfaces where it can migrate onto nearby property and into streams, ponds and irrigation systems or seep into groundwater creating dangerous exposure pathways for human and livestock inhalation and ingestion of highly radioactive materials, and carcinogenic and endocrine disrupting chemicals. Radioactive materials do not disappear. They continue to spread further. (<http://www.grassrootsinfo.org/pdf/whitereport.pdf>)

Disposal of radioactive sludge from gas drilling operations will contaminate landfills for thousands of years. All landfill membranes fail eventually (U.S. EPA Solid Waste Disposal Criteria, August 30, 1988) and leaching or flooding could result in contamination of nearby ponds, streams, or groundwater. Leachate from landfills is a frequent cause of groundwater contamination. (<http://www.epa.gov/osw/nonhaz/municipal/landfill.htm>)

Storage of radioactive, chemicalized waste from gas extraction activities in closed containment tanks can result in groundwater and surface water contamination. Closed containment tanks often used for storage of gas drilling waste could corrode over time, resulting in leaks, and may overflow or rupture if capacity is exceeded (<http://www.epa.gov/oust/fsprevnt.htm>)

There are also many known instances of “midnight dumping” by gas contractors of dangerous hydrofracking waste on roads, in ditches and wetlands and other properties.

It should also be noted that the radon that is continuously emitted from the shale gas formations continues to mix and travel with the gas as it is extracted and transported by gas pipelines from wellhead to consumer. Radon and its decay products are released into indoor air and could be inhaled when gas is burned using stoves, and other gas appliances (U.S. Centers for Disease Control, ATSDR, Case Studies in Environmental Medicine, Radon Toxicity, June 1, 2012). According to the U.S. Geological Survey, Gas samples from the Marcellus Shale region in Pennsylvania revealed radon-222 levels

ranging from 1 – 79 pCi/L with a median level of 32 pCi/L. This is eight times higher than the EPA action level of 4 pCi/L for remediation of radon in indoor air (Rowan, E.L., and Kraemer, T.F., 2012, Radon-222 Content of natural gas samples from Upper and Middle Devonian sandstone and shale reservoirs in Pennsylvania: Preliminary data: U.S.G.S. Open-File Report 2012-1159, p. 4) Lead, a breakdown product of radon, could settle onto indoor furnishings and other interior surfaces. There is no safe level of exposure to lead. Lead exposure at low levels are linked with increased blood pressure in adults and cognitive difficulties in children and is a probable human carcinogen (<http://www.atsdr.cdc.gov/toxprofiles/tp13.pdf>)

Taxpayers are already burdened with spiraling rates of disease and the associated costs. In 2002, an analysis of health costs revealed that the price tag for environmentally mediated disease in children nationwide is over 54 billion dollars per year. These diseases include asthma, neurological disease and childhood cancers. A recent update of the analysis was published in 2011 and revealed that the national costs increased to an estimated 76.6 billion dollars per year for childhood disease associated with environmental triggers (The hidden costs of environmental contamination, Landrigan, P.J., European Respiratory Journal, August 2012, vol 40, number 2, 286-288 <http://erj.ersjournals.com/content/40/2/286.full>)

Other state and local governments are also expressing concerns and are taking urgent steps to enact gas drilling waste ban legislation to protect their infrastructure, economy, water and foodsheds and the public health of their residents. On the state level, neighboring New York does not yet provide protective legislation regarding the handling, transport, storage and disposal of toxic, radioactive, gas drilling waste. In fact, the New York State Department of Environmental Conservation permits the application of hydrofracking brine from active vertical and low-volume gas wells in New York on roads as a de-icer and dust suppressant through the use of Beneficial Use Determinations (BUDs) and permits the acceptance of drill cuttings from shale gas operations in Pennsylvania at local landfills in upstate New York . Fracking wastewater is also accepted at several New York wastewater treatment plants. The lack of protective measures by New York State and mounting evidence concerning the immediate public health threat from highly contaminated radioactive waste has triggered many local governments into action. Ulster and Westchester Counties passed hydrofracking waste ban legislation last year. Dutchess, Orange and Rockland Counties have recently begun the process. Many other New York municipalities have enacted legislation. Two weeks ago, the Putnam County Board of Legislators unanimously passed a gas drilling waste ban. Their County Executive plans to sign it into law following a local hearing next week.

Even though Connecticut is a distance from shale gas drilling operations in the Utica and Marcellus Shales, without proper safeguards in place, highly contaminated, radioactive waste by-products from gas drilling operations pose an immediate public health threat to the people of Connecticut. Hazardous waste by-products from gas drilling operations could be brought into the State without knowledge or consent. The enactment of the proposed legislation would prohibit the possession and storage of gas drilling by-products. With lax oversight and absence of federal and state regulations, it is imperative that local and state governments fill the void and act to protect their residents from these dangerous exposures.

In closing, we strongly urge the Connecticut State Legislature to protect the State's infrastructure, economy, air, water and foodsheds and the public health of Connecticut

residents from highly radioactive, toxic waste by enacting the proposed hydrofracking waste ban legislation without further delay.

Submitted by,

Ellen Weininger
Educational Outreach Director
Grassroots Environmental Education
914-422-3141
ellen@grassrootsinfo.org

Resources:

Fracking waste bans enacted by Westchester, Ulster, and Putnam Counties in New York (Others available): See attachments.

Ivan White report: Consideration of Radioactive Hazardous Waste Produced From Horizontal Hydrofracking:

<http://www.grassrootsinfo.org/pdf/whitereport.pdf>

Summary Report: Human Health Risks and Exposure Pathways of Proposed Horizontal Hydrofracking in New York State:

<http://www.grassrootsinfo.org/summaryreport.pdf> (includes several key points regarding fracking waste # 1, 2, 3, 4 , 5, 6)

Oil and gas industry exemptions from environmental laws:

http://www.catskillcitizens.org/learnmore/FS_OilGasExemptions.pdf

Letter from 59 international scientists to Cuomo regarding wastewater treatment plants not equipped to handle chemicals, radioactive and other contaminants from fracking operations:

http://www.psehealthyenergy.com/data/Cuomo_ScientistsLetter_15Sep20112.pdf

Drinking water disinfection byproducts review and approach to toxicity evaluation, Boorman, G.Z., Environmental Health Perspectives 1999 Feb; 107 Suppl 1: 207-17

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1566350/>

The hidden costs of environmental contamination,

Landrigan, P.J., European Respiratory Journal, August 2012, vol 40, number 2, 286-288

<http://erj.ersjournals.com/content/40/2/286.full>

Out of Sight, Out of Mind, New York's Failure to Track or Treat Fracking Waste Endangers Public Health and the Environment,

by Katherine Nadeau, Environmental Advocates of New York:

http://www.eany.org/images/Reports/outofsight_finalweb.pdf

NYS DEC “An investigation of Naturally Occurring Radioactive Materials (NORM) in Oil and Gas Wells in New York State,” p. 32

<http://www.dec.ny.gov/chemical/23473.html>

Colborn, T. Kwiatkowski, C, Schultz, K and Bachran, M (2011) Natural Gas Operations from a Public Health Perspective, Human and Ecological Risk Assessment, 17(5); 1039-

<http://www.endocrinedisruption.com/files/Oct2011HERA10-48forweb3-3-11.pdf>

EPA Comments to NY DEC re: draft SGEIS:

<http://www.epa.gov/region2/newsevents/pdf/EPA%20R2%20Comments%20Revised%20dSGEIS%20Enclosure.pdf>

Safety Report, International Atomic Energy Agency (IAEA) Radiation Protection and the Management of Radioactive Waste in the Oil and Gas Industry: See Appendix 1 beginning on page 89:

http://www.pub.iaea.org/MTCD/publications/PDF/Pub1171_web.pdf

Radium content of oil and gas field produced waters in the northern Appalachian Basin – Summary and discussion of data: U.S. Geological Survey Scientific Investigations Report 2011-5135, Rowan, E.L., Engle, M.A., Kirby, C.S. and Kraemer, T.F., 2011

<http://pubs.usgs.gov/sir/2011/5135/>

Stony Brook Study: Rozell, D. J. and Reaven, S. J. (2012), Water Pollution Risk Associated with Natural Gas Extraction from the Marcellus Shale. Risk Analysis, 32: 1382–1393. doi: 10.1111/j.1539-

6924.2011.01757.x <http://www.eesolutions.net/health-and-safety/new-study-finds-significant-water-pollution-risks-from-fracking/>

“D&L faced violations in its past” Published: Mon, January 2, 2012

<http://www.vindy.com/news/2012/jan/02/by-karl-henkel/>

“Toxic Wastewater Dumped in Streets and Rivers at Night: Gas Profiteers Getting Away With Shocking Environmental Crimes”, by Aaron Skirboll, August 15,

2012, *Alternet* <http://www.alternet.org/fracking/toxic-wastewater-dumpedstreets-and-rivers-night-gas-profiteers->

