

November 16, 2017 Report of Fracking Sub-Committee on Item 12 from the June 12, 2017 Call of the RTM, "Ordinance Prohibiting Waste Associated with Natural Gas and Oil Extraction."

Summary of Risk Issues

1. Waste Material from all steps of the fracking process can be hazardous in that it can contain minerals, chemicals and radiation that is hazardous to health and the environment. Fracking fluid additives are considered trademarked and therefore not required to be disclosed. Additionally, fracking wells go as far as a mile below the surface, where naturally occurring radiation exists at elevated levels, especially in the Marcellus shale in Pennsylvania and Western New York. Accordingly, it is difficult to know the extent of the chemicals and other substances that are used throughout the process from beginning to end. This may make it prudent to ban entirely application of substances that contain radiation and chemical compounds known exclusively by the fracking industry, putting the responsibility for consequences of moving dangerous substances away from the site of the fracking entirely on the shoulders of those who produce, transport or purchase them for reuse.
2. Wastewater is frequently reused with different chemical additives in different locations thereby concealing its original source, previous uses, and contamination. Additionally, the drilling of wells yields milling materials, soil combined with chemicals added to facilitate the digging. Also, brine is naturally occurring in the geologic formations where natural gas and oil are found; it combines with the chemicals and is brought to the surface with the gas or oil.
3. Waste material from the fracking process is exempt from the EPA's definition of hazardous material. Therefore, it is difficult if not impossible to trace the waste from the fracking process to its ultimate disposal. We sought to confirm whether or not the known components of the fracking process are regulated under applicable federal, state or local statutes and if they are, in what manner.
4. Different states that allow fracking have different definitions of the waste from the fracking process and different levels of regulation.
5. Different types of waste can have widely varying levels of contamination and radiation even from the same drilling platform.
6. Fracking does not currently take place in Connecticut, however increased pressure from the need to dispose of fracking waste from neighboring states such as Pennsylvania may lead to disposal or reuse efforts in Connecticut. It appears that other states such as Pennsylvania and Oklahoma have already experienced adverse environmental consequences including high levels of radioactivity, from the reuse or disposal of this waste and are pressuring the industry to transport it elsewhere.
7. The Connecticut State legislature has tried to mandate that DEEP draft regulations regarding beneficial reuse of fracking waste for the past three years without success as yet. DEEP has been directed to create regulations, and there is a temporary moratorium on the use of fracking waste in Connecticut until those regulations are enacted. The

current draft of the state regulation on fracking waste does not include waste from oil fracking. In addition, while the legislative history indicates the legislative intent was to regulate wastes from all phases of the fracking process, the statutory language could be clearer as applied to wastes from the gas and oil production processes, such as the drilling of the well to accomplish the fracturing and the transport, storage or transmission from the well of such waste, gas, oil or wastewater. It is important to note that the current moratorium on the use of fracking waste in Connecticut is by its terms temporary, and contemplates that such waste may eventually be authorized for reuse within the state pursuant to regulations supposedly being developed by CT DEEP. Attempts to make the ban on the introduction of fracking waste into our state have failed: HB 6329, introduced in the 2017 legislative session, would have amended the current statute, CT General Statutes Section 22a-472, to make the ban permanent, failed to pass the legislature. We sought out the status of the DEEP regulatory process in order to determine whether it will allow fracking waste to be introduced lawfully in any form.

8. There are three private companies that handle hazardous waste material in Connecticut. It is possible that they could apply for permits to treat fracking waste once the DEEP develops regulations. Unfortunately, these facilities are connected to municipal wastewater treatment facilities that are not equipped to process fracking wastewater and that ultimately discharge effluent to Connecticut waterways and Long Island Sound. Pennsylvania's wastewater treatment facilities for a time accepted fracking wastewater and were unable to adequately process it, leading to the discovery of hazardously high levels of total dissolved solids in some drinking water supplies.
9. While the State ban is in place, there may be little risk of exposure in Greenwich from waste from hydraulic fracking for gas however the State ban does not appear to include oil fracking waste in the definition.
10. Possible disposal risk in Greenwich in the future comes from recycled waste material and brine designated for "beneficial reuse" such as road coating and de-icing, asphalt and concrete additives and fill. Additionally, wastewater from fracking can be used for dust mitigation at public works projects such as road paving, and milled soil from the drilling of the well may find its way into landfills or into material used for construction. Unfortunately, there have been instances where waste products designated "beneficial" have turned out to be radioactive in Pennsylvania and the "beneficial use" subsequently banned. Naturally occurring radiation is present at hazardous levels in shale deposits fractured through deep well fracturing and thus, in the byproducts of the fracking process. While Greenwich develops its own de-icing mixture, that policy is pursuant to good practice by DPW, not mandated by Town ordinance, and could change.

Pros and Cons of a Local Ordinance

1. Due to the cross-border nature of rivers and watersheds in Greenwich, a specific Town ordinance would not fully protect the Town waters from contamination. State and Federal level law would in theory be more comprehensive in geographic coverage.
2. Contamination risk at this time appears to be very low given the State ban on fracking waste that is currently in place. However, the State ban does not appear to include waste material from oil well fracking and, as discussed above, is not permanent.
3. Enforcement is very difficult, given the lack of source and content information of fracking waste due to hazardous waste exemptions and content trademarks at the Federal level. The Greenwich Conservation Commission states that it does not have the resources to enforce this ordinance, but it could possibly publicize the ordinance so that homeowners are informed of the risks associated with this type of waste and their rights to insist contractors not use it on their property.
4. The ordinance relies on the affirmation of the associated contractor or material provider to certify that materials they provide are not from the fracking process. Therefore, any enforcement is retroactive, arising from discovery at some future date that the certification was false at which point the certifying agent may no longer be available for penalty or clean-up if needed. We would urge the Town to use the contracting process to educate contractors about their obligations to source uncontaminated materials such as brine, water and landfill, and to impose clear indemnification obligations and contract penalties upon contractors falsifying affirmations.
5. Local laws can be in conflict with State law. The current proposed ordinance is not in conflict with State law based on a review by Holland and Sage, a Hartford law firm, however conflicts could arise in the future depending on how the State regulations are ultimately crafted, (assuming they are).
6. DPW and The Greenwich Conservation Commission expressed mild concern that the broad nature of the ordinance might inhibit the “beneficial reuse” of formerly contaminated materials and that the Town should be supportive of this type of recycling that could reduce the amount of landfill. Putting aside the difficult and historical tenuous nature of previous “beneficial reuse” designations by other states, this issue may either be moot based on what regulations the State of Connecticut ultimately passes or could be addressed through a provision in the ordinance that allows the Conservation Commission together with DPW to exempt materials that are proven to be environmentally safe. In any event, at present, DEEP has confirmed it has no plan to develop regulations as contemplated by the temporary legislated ban.
7. Despite the difficulty and delayed nature of enforcement, the ordinance does put homeowners, contractors and suppliers on notice of the Town’s concern about sources of products, and long term suppliers and businesses will likely make the effort to conform, thereby reducing any contamination risk by some measure.

8. Enactment would also put State legislators and DEEP, as well as residents and contractors, on notice of the growing concern among Connecticut Towns of the potential risks of contamination. Furthermore, growing State prohibitions may at some point compel EPA to take a stronger stance in monitoring and regulating fracking waste.

DISCUSSION

Greenwich Conservation Advocates has proposed that RTM adopt legislation to address the introduction of fracking waste into the Town of Greenwich and the hazards posed thereby. In undertaking our review, we received information from them and from Food and Water Watch, an environmental advocacy group. Thirty-two Connecticut towns have passed similar local bills.

In reviewing the bill, we received the presentation of Food and Water Watch and met separately with the Town Conservation Commissioner Denise Savageau, the Department of Public Works and the Law Department. Philip Dodson provided us with the CT Office of Legislative Research's Report on the current fracking waste moratorium in place until DEEP adopts regulations to control fracking waste as a hazardous waste, in which case the moratorium would remain in force.

We independently researched the claims made by proponents of the legislation. In doing so, we sought to confirm the claims about the hazards associated with wastes generated through fracking for oil or gas and, also, about the need for this legislation.

The evidence is strong that fracking wastes – mud, contaminated water, brine and other liquids and solids generated through drilling wells, extracting gas or oil, and bringing it to the surface, are potentially dangerous to human health. Moreover, because few states require fracking companies to disclose the chemical compounds they use, it is difficult even for federal government agencies to have full information about them or the health hazards posed by fracking and its byproducts.

As described below, various governmental health and environmental agencies have studied and identified potential health risks in the fracking process and waste stream but EPA still does not regulate fracking waste products and there is no federal or state law that protects against the possible introduction of fracking waste as effectively as the proposed bill.

The Hazards associated with Fracking Components and Waste:

The EPA and fracking industry participants themselves have disclosed the use of many hazardous chemicals in the process of fracking for gas and oil, among them toluene, methanol, dioxane, pyrene, quinolone, naphthalene, acrylamide, dichloromethane, butadiene and dichloropropene. All told, EPA has identified 1,173 chemicals associated with hydraulic fracturing. These include chemicals used as fracturing fluid additives and chemicals found in flowback/produced water. EPA used ten sources to identify hydraulic fracturing chemicals including government entities (Congressional, federal or state) that obtained the data directly from industry as well as state,

non-profit, academic and industry groups. FracTrac.org is a repository for information about fracking, but industry reporting to it is voluntary.

In addition to the chemicals used and combined in fracking, drilling, extraction and processing, geologic formations containing oil and gas deposits also contain naturally occurring radioactive materials (“NORM”), including uranium, thorium, radium and their respective decay products, and potassium-40, Lead-210 and polonium-210. When fracking wells descend as far as a mile below the surface, particularly when engaged in horizontal drilling, they can produce much higher volumes of radioactive material than conventional drilling, and the sludge and water that come into contact with it create what is known as technologically enhanced naturally occurring radioactive materials (“TENORM”). <https://www.epa.gov/radiation/tenorm-oil-and-gas-production-wastes>. EPA acknowledges that the radioactivity levels are particularly high in the Marcellus shale from which most of the wastewater and other materials might be introduced in Connecticut.

EPA has acknowledged the high toxicity of the wastewater from fracking and the need to address disposal and reuse issues in its December 2016 report, “Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States”. The report documented clear evidence that activities in the hydraulic fracturing water cycle can impact drinking water resources under some circumstances. Fracturing fluids can move directly into groundwater resources.... (including) from the discharge of inadequately treated hydraulic fracturing wastewater to surface water resources and the Disposal or storage of hydraulic fracturing wastewater in unlined pits, resulting in contamination of groundwater resources. EPA confirmed that there are environmental concerns resulting from fracking, including high air and water toxicity at and near fracking drilling sites, including from seepage and accidents related to the transportation and storage of fracking-derived wastewater.

EPA created a draft Hydraulic Fracturing Drinking Water Assessment Report in June 2015, which resulted in a final report being issued in December 2016. The draft assessment states:

Radionuclides can also be found in inadequately treated hydraulic fracturing wastewater from certain shales, such as the Marcellus. A recent study by the PA DEP (2015b) found elevated radium concentrations in the tens to thousands of picocuries per liter and gross alpha and gross beta in the hundreds to thousands of picocuries per liter in effluent samples from some CWTs (centralized waste treatment facilities) receiving oil and gas wastewater. Radium, gross alpha, and gross beta were also detected in effluents from POTWs (publicly owned treatment works) receiving oil and gas wastewater (mainly as effluent from CWTs), though at lower concentrations than from the CWTs. Research in Pennsylvania also indicates the accumulation of radium in sediments and soils affected by the outfalls of some treatment plants that have handled oil and gas wastewater, including Marcellus Shale wastewater, and other wastewaters (PA DEP, 2015b; Warner et

al., 2013a). Mobilization of radium from sediments and potential impacts on downstream water quality depend upon how strongly the radium has been absorbed into sediments. Impacts may also occur if sediment is re-suspended (e.g., following storm events). While there is no evidence now of radionuclide contamination in drinking water intakes due to inadequately treated hydraulic fracturing wastewater. Hydraulic fracturing wastewaters contain other constituents such as barium, boron, and heavy metals. Barium in particular has been documented in some shale gas produced waters. Little data exist on metal and organic compound concentrations in untreated and treated wastewaters in order to evaluate whether treatment is effective, and whether there are potential downstream effects on drinking water resources when wastewater is treated and discharged. <https://www.epa.gov/hfstudy/questions-and-answers-about-epas-hydraulic-fracturing-drinking-water-assessment>. After peer review from the Agency's Science Advisory Board, the report was amended.

In its final assessment, EPA added chemicals to the list associated with hydraulic fracking, particularly for fracking waste water, for a total of 1606 chemicals used somewhere in the U.S. in the hydraulic fracturing process. Of these, several found in fracking fluid and/or fracking wastewater show significant associations with cancer (e.g., butiadene, dioxane, tetrachloroethylene, dichloropropene), and for many others there was insufficient data on which to base a conclusion about toxicity to humans.

The final report also highlights the fact that data gaps and uncertainties prevented EPA from calculating or estimating the national frequency of impacts on drinking water resources from activities in the hydraulic fracturing water cycle. (<https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=244651>). The report notes:

This assessment relies in large part upon information provided to the EPA or to other organizations. The submitters (e.g., businesses that operate wells or perform hydraulic fracturing services) may view some of the information as confidential business information (CBI) and accordingly asserted CBI claims to protect it. ...The FOIA and EPA's CBI regulations may allow for information claimed as CBI provided to the EPA to be withheld from the public, including in this document...

The EPA evaluated data from FracFocus, a national hydraulic fracturing chemical registry used and relied upon by some states, industry groups, and non-governmental organizations, as described in Text Box 5-1. A company submitting a disclosure to FracFocus may choose to not report the identity of a chemical it considers CBI. More than 70% of disclosures contained at least one chemical claimed as CBI and 11% of all chemicals were claimed as CBI. Of the disclosures containing CBI chemicals, there were an average of five CBI chemicals per disclosure (U.S. EPA, 2015a). Rates of withholding chemical information (designating a chemical as CBI) have increased from 11% in the 2011 to early 2013 time period of the EPA report, to 16.5% across the 2011 to early 2015 time period in another study using FracFocus data, with 92% of FracFocus 2.0 disclosures including at least one chemical claimed as CBI (Konschnik and Dayalu, 2016). When a chemical is

claimed as CBI, there is no public means of accessing information on these chemicals (e.g., CASRN, name). Sometimes a CBI entry will provide the chemical family (Appendix H).

As part of EPA's *Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources* (U.S. EPA, 2011d), data were submitted by nine service companies to the EPA regarding chemicals used in hydraulic fracturing from 2005 to 2009. These data were separate from the EPA FracFocus 1.0 project database. The data were submitted directly to the EPA, with the actual names and CASRNs of any chemicals the company considered CBI. This included a total of 381 CBI chemicals, with a mean of 42 CBI chemicals per company and a range of 7 to 213 (U.S. EPA, 2013a)... This resulted in 80 CASRNs/chemical names on this CBI list... The prevalence of CBI claims in the EPA FracFocus 1.0 project database limits completeness of the data set and introduces uncertainty. Ideally, all data would be available on all chemicals to do a full assessment.

As of the date of this report, environmental groups are requesting more disclosure on chemicals used in the fracking process. The absence of this information has significant effects, for instance, on first responders who, lacking information about the components a chemical fire, do not have the information needed to combat it or keep themselves safe. NPR, The Marketplace radio broadcast, 11/15/17.

Notably, EPA and the Department of Energy established a joint working Memorandum to address fracking and its consequences that is still referenced on EPA's website; however, the link to the joint agreement appears to have been removed, as it was not valid as of November 2017. The links included herein were all accessed in October 2017 and November 2017; it is possible the EPA or other government websites will similarly have been amended by the time the reader accesses them.

The Centers for Disease Prevention of the U.S. Health and Human Services Department also has confirmed that it shares concerns regarding environmental toxins involved in the fracking process. CDC's National Center for Environmental Health (NCEH) is charged with protecting people's health from environmental hazards by providing national leadership in prevention programs, global health, testing and services. The Agency for Toxic Substances and Disease Registry (ATSDR) is charged with safeguarding communities from hazardous substances. <https://www.atsdr.cdc.gov/about/index.html> They share a director and hold joint meetings. It, in turn has a Board of Scientific Counselors that assists HHS, CDC and NCEH/ATSDR to help ensure the scientific quality and usefulness of results, and to help the agencies work more effectively to fulfill their mission to protect America's health. At its meeting held January 2017, ATSDR noted that only five states have passed laws that require fracking companies to disclose the constituents of each compound used in the fracking process. BSC Meeting, January 17-18, 2017 Minutes, p. 20: https://www.atsdr.cdc.gov/science/meetings_and_agendas.html.

Like EPA, ATSDR has described significant health concerns related to fracking and its byproducts, and agrees that little is known about the chemical compounds used in fracking:

ATSDR gathered data from residents of fracking communities in Texas, Pennsylvania and Wyoming in multiple categories, including **self-reported health complaints**¹. These symptoms include breathing issues, irritation and asthma; unusual rashes, headaches and severe nosebleeds; GI upset/diarrhea; burning eyes and throat, metallic taste in mouth and sore throat; elevated arsenic urine levels; and livestock with health issues. The Pennsylvania Department of Health administered a survey to collect self-reported health concerns from 2011-2015. The top five symptoms reported by 185 community respondents were respiratory issues/sore throat, anxiety and stress, rashes, headaches and nosebleeds.

ATSDR also collected information **on environmental release pathways and public health exposures**. ATSDR's investigations of potential exposures focused on media-specific impacts (e.g., air and water quality); the life cycle of operations (e.g., active production involving the release of high levels of contamination, post-production and site closure); and oil and gas production products. ATSDR completed water quality investigations at several sites in Indiana, Pennsylvania and Wyoming.

ATSDR detected in water quality investigations contaminants at levels of health concern, including salts, metals, oil and grease, radiation and some fracking-specific compounds. The potential for explosive hazards exists due to the buildup of methane content in the water. Operations, particularly active production and the closure of wells, impact water quality. More groundwater monitoring data are needed. ATSDR acted to close contaminated water wells and educate community residents on reducing potential explosive hazards in their home and on contaminant-specific exposure issues.

ATSDR's air quality investigations found several sources of contamination, including storage ponds and pits, compressors, storage tanks, drilling machinery, flaring, diesel trucks, generators and products. [The National Institute for Occupational Safety and Health] NIOSH found that exposures to particulate matter (PM) posed a hazard to workers at fracking sites. Samples of respirable crystalline silica were collected from the breathing zones of onsite workers and specific equipment that is used in the fracking process. NIOSH also detected eight VOCs at concentrations that exceeded ATSDR's minimal risk levels and/or EPA's cancer risk levels. Benzene and formaldehyde were identified near specific equipment on sites, including compressor and pig launching stations.

Other external investigations collected residential air exposure samples from 0.04 to 3.2 miles from an active well pad. Polycyclic aromatic hydrocarbon (PAH) mixtures that were detected in areas with heavy fracking activities might have a higher than acceptable cancer risk. The investigation showed that this risk increased as the exposure moved closer to the active site. Health effects from air emissions from the fracking process were found to likely occur in residents living nearest to the well pads. Numerous chemicals in the air were found around hydraulic fracturing sites. Methane, ethane, propane and other alkanes accounted for some of the highest concentrations.

ATSDR completed air quality investigations at several sites in Colorado, Pennsylvania and Wyoming. ATSDR's ongoing air quality investigations include long-term air monitoring and the evaluation of air data for various operations requested by the Pennsylvania Department of Environmental Protection; DCS's submission of over 30 community

petitions; and an air modeling evaluation of pipeline pigging operations. The general findings of ATSDR's air quality investigations are summarized below.

Sore throats, nasal irritation and breathing issues were reported by community residents. PM_{2.5} exposures were found to be harmful to sensitive populations on average and were greater than regional National Ambient Air Quality Standards (NAAQS). Of 64 contaminants detected in the air near a compressor station, many had no or limited toxicity data. Average contaminant levels were not found to be a health hazard, but peak concentrations of carbonyls, aldehydes, sulfur compounds and PM might pose a risk to sensitive populations. Fence line data are needed to evaluate offsite exposures. Improper closure of wells can lead to imminent danger.

ATSDR took several public health actions to address air quality issues at fracking sites. Recommendations were made to reduce peak exposures to particulates, carbonyls, aldehydes and sulfur compounds. Efforts are underway to develop integrated risk analyses for multi-contaminant air exposures. Actions were initiated to close schools to protect students from exposure to dangerous air quality. Additional and more targeted air monitoring strategies were launched for air quality sites. Assistance was provided to EPA to enforce cases. Community residents were educated on contaminant-specific exposure issues. A hotline was established for residents to discuss their concerns related to fracking.

Like EPA, ATSDR acknowledged the limitations of its water and air quality investigations. Most notably, existing data sources to support these investigations are insufficient: pre-drill well data and monitoring well data, life cycle of operations data, data on the suite of contaminants monitored, and data on alternate water supplies. Multiple air emission sources on these sites have individual characteristics. A stronger focus is needed to address outside sources of emissions, such as heavy traffic. The availability of temporal datasets over multiple seasons and weather conditions is limited. Because fracking sites are private properties, access for sampling typically is limited. Additional toxicity data on contaminants are needed.

ATSDR also investigated **potential chemical exposures**. ATSDR currently is conducting product evaluations of fracking sands at two sites. In its silica investigation in Wedron, Illinois, community residents complained of exposure to natural and resin-treated crystalline silica. Sand mining, processing and offsite transportation were identified as contamination sources. Monitoring of PM_{2.5} and PM_{4.0} (different types of particulate matter) was conducted in October-December 2016. The analysis of these data is underway.

In the silica investigation in Valley, Washington, community residents have complained of the presence of crystalline silica on the ceiling of a school and offsite residential exposures. Monitoring of PM_{2.5}, PM_{4.0}, PM₁₀ and SO₂ was conducted, but more data are needed to assess risks for environmental agencies to take action. Additional monitoring is underway at this site. ATSDR also is exploring strategies to protect community residents from potential explosive hazards related to methane. ATSDR's site investigations identified methane in the water at potentially explosive levels.

The shutdown of 37 gas-linked wastewater wells in Oklahoma was initiated in December 2016 as a result of earthquakes that were measured at 5-6 on the Richter magnitude

scale. The earthquakes were linked to the underground disposal of wastewater from natural gas production. The 81% increase in the disposal of wastewater over the past six years coincided with the increase in earthquakes.... ATSDR said it planned to take several important steps to advance its evaluation of public health issues related to unconventional oil/gas extraction and fracking. Additional research will be conducted to identify exposures. More rigorous characterization data will be collected, particularly to address current gaps in pre-drill data, the life cycle of fracking operations, site closure, different site operations and products. Improved surveillance data will be gathered on fracking operations, such as health effects of community residents who live near these sites. Future investigations will be specifically targeted to address these health effects. Better toxicity data will be collected to guide analyses of detected compounds. Collaborations will be strengthened with NIOSH, NIEHS and industry to mitigate exposures. Most notably, ATSDR serves as the public health arm for HHS on the President's Task Force on Unconventional Oil and Gas to develop a fracking research plan. ATSDR has sought guidance from the BSC on shifting limited resources away from fracking to Zika, and the BSC urged the ATSDR to exercise caution in doing so, noting the importance of the work on Fracking to the states and to rural communities in particular.

We confirmed GCA's claim that New York's Riverkeeper had drafted the model legislation on which the proposed law is based in response to authorized dumping of fracking millings at New York landfills and illegal dumping of such waste in Pennsylvania. Riverkeeper's lawyer informed us that New York also has failed to ban the introduction of fracking waste statewide, though New York City and Westchester County have done so, as have many municipalities in the state. Some Western New York town accept fracking waste at landfills and at municipal wastewater treatment plants. No data is available about health risks, but New York's Dept. of Environmental Regulations has issues rules regarding radioactivity testing at municipal landfills. Riverkeeper also confirmed that fracking for oil occurs in Ohio and generates similar concerns about toxicity.

Federal Laws:

Despite all the foregoing evidence adduced by federal agencies including EPA, EPA has declined to regulate in this area. Given current trends in the EPA this is not expected to change and regulations may in fact lessen.

RCRA

Although the chemicals listed by EPA would qualify as hazardous materials under RCRA, they were exempted in the Solid Waste Disposal Act passed in 1980 by Congress through what is known as the Bentsen Amendment. EPA has thus been without a critical source of statutory authority, RCRA, on which to ban the use or reuse of wastes associated with fracking processes. As discussed above, EPA has found many reasons to believe the wastes exempted for fracking could pose a substantial threat to public health.

TSCA

EPA could, under the Toxic Substances Control Act, or TSCA, 15 U.S.C. 2601 et seq., require fracking entities to report the chemical substances they produce during the fracking process. TSCA authorizes EPA to require chemical manufacturers and processors to report production, use, and exposure-related information on listed chemical substances. Under the strict definitions, natural gas or oil fracking industry participants are “processors’ who should be required to report (40 C.F.R. 712.3), but are not, according to 40 C.F.R. 716 et seq.

On May 9, 2014, EPA issued an Advance Notice of Proposed Rulemaking (ANPR) under Section 8 of the Toxic Substances Control Act (TSCA). The notice sought the public participation process and seek public comment on:

the types of chemical information that could be reported and disclosed under TSCA, and the approaches to obtain this information on chemicals and mixtures used in hydraulic fracturing activities, including non-regulatory approaches.

This process: will help inform EPA’s efforts to facilitate transparency and public disclosure of chemicals used during hydraulic fracturing and will not duplicate existing reporting requirements.

The Federal Register published the notice on May 19, 2014. The rule has not been adopted; EPA cited the importance of fracking to our economy as reason for failing to pursue it.

Clean Water Act

Faced with evidence that POTWs were unable to adequately treat dissolved solids and other contaminants in wastewater from fracking, The Pennsylvania Department of Environmental Protection called on the Marcellus Shale industry to cease wastewater delivery to municipal sewage plants in April 2011. The industry then accelerated what was already an ongoing shift of delivering the wastes to private industrial treatment facilities that were better able to precipitate metals and filter out suspended solids. When the state had earlier imposed a more stringent discharge standard for treated wastewater of 500 mg/L of total dissolved solids, drillers had found it more cost-effective to invest in centralized and mobile wastewater treatment for recycling and reuse in fracking operations than to meet the standard needed for them to discharge into the environment. This incentivized producers to recycle more of the wastewater. But the decline in wastewater discharge was also met with a significant increase in the amount of wastewater trucked to Ohio for disposal via underground injection, from roughly 26 million gallons in 2010 to 106 million gallons in 2011. Most of Pennsylvania’s geology is not amenable to this practice. Earthquakes linked to underground wastewater disposal at facilities have constrained that disposal option in the future, and more lengthy permit review processes, make underground disposal much more expensive than it used to be. As fracking for natural gas expands, the amount of wastewater being generated is going up at the same time that opportunities for managing it are becoming more limited, and this creates more opportunities for human exposure. Schmidt, “Estimating Wastewater Impacts From Fracking,” Environmental Health Perspectives, [Http://ehp.hiehs.nih.gov](http://ehp.hiehs.nih.gov), found on Regulations.gov, Docket No. EPA-HQ-ORD-2010-0674, “General Solicitation for Data Related to Hydraulic Fracturing.

In 2016 EPA issued a Clean Water Act regulation banning municipal water treatment plants (MWTPs) from accepting fracking waste for treatment, in the face of substantial evidence that bromides in the wastes, combined with chlorine, create a new substance associated with bladder cancer. However, EPA also extended the compliance date for this rule for sources that were lawfully discharging the wastewater to POTWs between 2015 and 2016 to August 29, 2019. <https://www.federalregister.gov/documents/2016/12/07/2016-29338/effluent-limitations-guidelines-and-standards-for-the-oil-and-gas-extraction-point-source>.

The fracking industry was steadfastly opposed to the rule, saying that, while its members did not send their wastewater to MWTPs currently, it wanted the option to do so in the future.

Ironically, increases in regulation such as this present even more reason to ban fracking wastes from being introduced into our Town: the industry has expended significant funds seeking beneficial reuse and storage solutions for this waste. Technical processes to purify the wastewater such as reverse osmosis are costly and of questionable benefit. Storing it underground has caused earthquakes and the review process for new underground containment wells has, as a result, become more cumbersome. Thus, the industry may have a significant incentive to divert this waste in undisclosed ways to freight haulers who do not know the content of their cargo, delivering salt and water to purchasers, public and private, who are completely unsuspecting about the source of the product they purchase. Adoption of the proposed bill would send a signal to unscrupulous actors such as haulers or resellers of such waste that Greenwich should not be targeted for disposal of these wastes.

CT Law

CT has not passed a permanent ban, and DEEP will not anytime soon establish regulations for this purpose. CT General Statutes 22a-472 is the temporary ban on introduction of fracking waste. It contains an exception allowing the DEEP Commissioner to authorize treatment of up to 330 gallons of such waste for research purposes. More important, it is to remain in effect until the DEEP submits regulations, which is stated should occur between July 2017 and July 2018; the statute presumes the regulations will be promulgated by that deadline and is silent about what will happen should DEEP not meet the deadline (although the Office of Legislative Research Report states otherwise, we do not find statutory support for the claim that the moratorium will remain in effect indefinitely if the DEEP fails to promulgate regulations within the stated deadline). We reached out to DEEP and its Deputy Commissioner in charge of developing the regulations to ask the status thereof; she said that DEEP did not expect to deliver these regulations in any form or fashion by the July 2018 deadline for the statute due to resource deficiencies.

Thus, the State has no permanent ban and even if it did, the House Bill's definition is not as clear and effective as the language in the bill before the RTM today. The State law defines "Waste from hydraulic fracturing" as "any wastewater, wastewater solids, brine, sludge, drill cuttings or any other substance used for or generated secondarily to the purpose of hydraulic fracturing."

Hydraulic fracturing is defined to mean “the process of pumping a fluid into or under the surface of the ground in order to create fractures in rock for exploration, development, production or recovery of gas. “Hydraulic fracturing” does not include the drilling or repair of a geothermal water well or any other well drilled or repaired for drinking water purposes. The bill before RTM more precisely defines hydraulic fracturing waste to include waste generated from the digging of wells and also bans waste derived from fracking for oil, which is not covered by the existing law: the respective definitions of oil and gas extraction activities in the proposed law, by contrast, include “all geologic or geophysical activities related to the exploration for or extraction of oil [gas], including, but not limited to, core and rotary drilling and hydraulic fracturing.”

The proposed law will, therefore, not duplicate State legislation in this area, and Greenwich has the authority to enact it: Connecticut’s Home Rule law allows Greenwich to regulate waste within its jurisdiction (CGS Section 7-148 (c) grants municipalities the power to provide for and regulate, among other things, the collection and disposal of waste material, to prohibit nuisances and other things detrimental to public health, and to do all things necessary to secure and promote the public health.

Relevant Town Stakeholders

The Town Conservation Commission supports the idea and the Town PTW has no opposition provided it will not be difficult to implement. Also, the Commissioner of Public Works was concerned that we be able to simply require contractors to certify the source of their materials, a problem that this law would put squarely onto the provider of materials. We also urge the Town departments to include language in their contracts that makes clear that the contractor has a duty to actively inquire as to the source of materials being provided and understands that the contractor will be liable for failure to diligently source safe materials. The certification would merely allow the Town to sue if a false representation had been made. We would urge private citizens to include such provisions in any agreements with contractors involving the use of landfill, salting, paving or other materials in construction or maintenance of their property.

Because the statute explicitly allows for disposal of used waste oil, this would not prevent the disposal at Holly Hill of such substances as currently are permitted for disposal there. This answers another concern of DPW as expressed by Amy Siebert.

CONCLUSION AND RECOMMENDATIONS:

Having studied these issues as thoroughly as we could, we believe that this legislation is appropriate and needed in Greenwich given the risks both known and unknown that fracking waste presents. It does not duplicate state or federal regulation, and it serves to fill regulatory gaps left in the current temporary Connecticut law and regulations. We urge the Law Department, DPW, Parks and Recreation and other Departments of the Town to educate contractors about their responsibilities to make such inquiries as are necessary to enable them to make the required representation as to the source and safety of the materials used, supplied or otherwise provided to the Town.

We would similarly encourage GCA and the Conservation Commission to educate homeowners about the need for them to exercise similar diligence in their retention of contractors for paving, building, snow removal and other services that might involve potentially hazardous wastes from fracking.

- The sites assessed by ATSDR included: ⁱ Dimock, Pennsylvania - At the request of EPA, in 2011, ATSDR reviewed data and supported an EPA “Do Not Use Until Further Notice” action for private wells because of levels of bacteria, methane, and other harmful substances. ATSDR also recommended additional water sampling. Currently, ATSDR is reviewing EPA’s 2012 private well sampling from the area to assess the potability of the drinking water.
- LeRoy, Pennsylvania – At EPA’s request, in 2011, ATSDR evaluated data collected from seven private drinking water wells following a well-head blow out at a nearby gas well. ATSDR found that levels of salts and other substances in one well and levels of arsenic in another well could pose a health hazard. ATSDR Deferred to EPA and state environmental agencies to determine both the preferred sampling protocols and the sources of contamination. Water treatment systems were installed in the homes served by these wells.
- Pavillion, Wyoming – At the request of EPA, in 2011, ATSDR reviewed drinking well water data and confirmed a potential public health hazard due to high concentrations of organic and inorganic chemicals.
- Medina, Ohio - At the request of EPA, in 2011, ATSDR reviewed EPA sampling data and identified a public health hazard due to levels of methane capable of causing an explosion in private drinking water wells. While the source of the methane was unknown, ATSDR recommended that a leaking abandoned natural gas well nearby be sealed because it represented an explosive hazard. ATSDR also recommended that residents vent their water well heads and enclosed spaces where water is used and that additional air and water sampling be conducted.
- Garfield County, Colorado - In 2008 and 2010, at the request of the Garfield County Public Health Department, ATSDR and the State of Colorado examined volatile organic compounds (VOCs) and other contaminants in ambient air. Insufficient information was available to determine if these exposures posed a health risk because toxicity reference values do not exist for more than 60 of the ambient air contaminants measured. <https://www.cdc.gov/washington/testimony/2013/t20130426.htm>.