

Comments to: hydraulic.fracturing@epa.gov
Subject line: "Diesel Fuels Guidance Comments"

June 27th, 2011

These comments are being submitted by the Croton Watershed Clean Water Coalition, Inc. (CWCWC), a 501(c)(3) organization comprising over 50 groups - housing, community, environmental and religious - throughout NYC, Westchester and Putnam Counties. Since its formation, in 1998, CWCWC has been concerned with protecting and enhancing water resources in the East of Hudson (EOH) Watershed. More recently, because of the impact to the water quality of the many towns and villages, EOH, that receive their water from the West of Hudson (WOH) watersheds that are threatened by hydraulic fracturing, we have also extended our concerns to those watersheds.

CWCWC's concerns about hydraulic fracturing may be found at our website:
www.newyorkwater.org

Our comments consist of five parts.

1. The potential health risks of the underground injection of diesel fuels to facilitate hydraulic fracturing;
2. The need to fully restore EPA's authority to regulate hydraulic fracturing under the Safe Drinking Water Act (SDWA);
3. The need to classify hydrofracturing wastes as "hazardous" rather than "industrial" wastes;
4. The need to test all wells for hazardous materials;
5. Conclusions.

1. The potential health risks of the underground injection of diesel fuels to facilitate hydraulic fracturing

There are many variations of "Diesel Fuel", each with its own list of components. However, many are shared in common, and many are toxic.

For example, in its January 31st, 2011 letter to Lisa Jackson, US EPA Administrator, regarding the continued use of diesel fuel in hydraulic fracturing fluids, despite a 2005 agreement with US EPA to stop their use, The House of Representatives Committee on Energy and Commerce states that "Diesel fuel contains toxic constituents, including benzene, toluene, ethylbenzene, and xylenes (collectively known as BTEX compounds)". The Committee references the general toxicity of these substances at <http://water.epa.gov/drink/contaminants/basicinformation/index.cfm>.

More specifically, Off-Road Diesel Fuel that contains only xylenes and naphthalene [MSDS (Material Safety Data Sheet) No. LO0308, CAS (Chemical Abstracts Service) Number: 68476-34-6], carries the following warnings:

Acute Effects

Eye: May cause irritation of the eye

Skin: Excessive skin contact may cause irritation and dermatitis

Inhalation: Irritation, dizziness, headaches, and nausea. Excessive breathing may cause central nervous system effects.

Ingestion: Causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. Aspiration into Lungs, causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression.

Chronic Effects: Prolonged or repeated contact with this material can cause cancer. IARC (International Agency for Research on Cancer) has classified diesel fuel as a group 2B (possibly carcinogenic to humans) carcinogen, sufficient evidence in animals, possibly carcinogenic to humans. Contains Polynuclear Aromatics, which has been designated as a carcinogen by IARC (group 1) ¹

As is usual in estimating the probability of acquiring cancer, these acute effects refer to the adult population only. The most vulnerable members of the population - infants, children, teenagers and expectant mothers are, for the most part, not included. If they were, the effects that we have listed would be even more acute.

Also overlooked are the effects on aquatic life. "Diesel products possess moderate to high acute toxicity to biota with product-specific toxicity related to the type and concentration of aromatic compounds. Diesel spills could result in potential acute toxicity to some forms of aquatic life....Long-term potential hazards of the (*sic*) some of the lighter, more volatile and water soluble compounds (such as toluene and xylenes) in diesel fuels include contamination of groundwater. Long-term water uses threatened by spills include potable (ground) water supply. Chronic effects associated with middle distillates are mainly due to exposure to aromatic compounds." ⁱⁱⁱ

2. The need to fully restore EPA's authority to regulate hydraulic fracturing under the Safe Drinking Water Act (SDWA)

The SDWA, passed by Congress in 1974, has undergone several amendments that reinforce the powers of the US EPA to set and enforce drinking water standards that protect all US residents from unsafe water. ⁱⁱⁱ "Each standard also includes requirements for water systems to test for contaminants in the water to make sure standards are achieved... SDWA also sets a framework for the Underground Injection Control (UIC) program to control the injection of wastes into ground water. US EPA and states implement the UIC program, which sets standards for safe waste injection practices and bans certain types of injection altogether."

Although Congress, in 2005, exempted hydraulic fracturing from the SDWA, this exemption did not apply to fracturing fluids containing diesel components. In those cases, permits had to be obtained from the US EPA. Yet, despite the toxicity and carcinogenicity of diesel being well proven, many oil and gas companies continued to use it, without bothering to obtain permits. Between 2005 and 2009, a total of 32,202,075 million gallons of hydraulic fracturing fluids containing diesel fuel were injected in wells in 19 states. The top three users were BJ Services - 11,555,538 gallons, Halliburton - 7,207,216 gallons, RPC - 4,314,110 gallons.^{iv}

In the same letter, the Congressional Committee noted that they contacted "state agencies and regional EPA offices responsible for overseeing underground injection wells...Each state and regional EPA office contacted stated that no such permit had ever been sought or granted."

Confronted with this answer, the Congressional Committee "asked each of the oil and gas service companies to provide data on whether it has performed hydraulic fracturing in or near underground sources of drinking water. None of the hydraulic fracturing companies could provide this data..." These service companies maintained that it was the responsibility of the well operator to drill in compliance with the existing regulations.

In turn, when asked about their drilling practices, the well operators claimed that they operated wells "only in formations where natural gas deposits lie deep below the water table."

The service companies' shameful disregard for public safety, together with EPA's weakness and inability to insure that the service companies were complying with the ban on diesel fuel in hydraulic fracturing, reinforce the need to reinstate the SDWA as it applies to hydraulic fracturing. Until the SDWA is fully reinstated and the US EPA is prepared to enforce its regulations, there should be a ban on hydraulic fracturing in NYS.

3. The need to classify hydrofracturing wastes as "hazardous" rather than "industrial" wastes

Following the underground injection of fluids possibly containing diesel components, the flowback/produced fluid will contain not only some of the injected fluids (flowback fluid) but, in addition, will contain ingredients picked up deep below the surface of the earth (produced fluid).

NY Environmental Law §27-0901 defines "hazardous waste" as follows:

"Hazardous waste" means a waste or combination of wastes, which because of its quantity, concentration, or physical, chemical or infectious characteristics may:

- a. Cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or
- b. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed, or otherwise managed.

On the other hand, from the NYS DEC definition for industrial waste:

Industrial waste means solid waste generated by manufacturing or industrial processes. Such processes may include, but are not limited to the following: electric power generation; fertilizer/agricultural chemicals; inorganic chemicals; iron and steel manufacturing; leather and leather products; nonferrous metals manufacturing/foundries; organic chemicals; plastics and resins manufacturing; pulp and paper industry; rubber and miscellaneous plastic products; stone, glass, clay and concrete products; textile manufacturing; transportation equipment; and water treatment. The forms of such wastes are exemplified by but not limited to: liquids such as acids, alkalis, caustics, leachate, petroleum (and its derivatives), and processes or treatment wastewaters; sludges which are semi-solid substances resulting from process or treatment operations or residues from storage or use of liquids; solidified chemicals, paints or pigments; and dredge spoil generated by manufacturing or industrial processes, foundry sand, and the end or by-products of incineration or other forms of combustion. *This term does not include oil or gas drilling, production, and treatment wastes (such as brines, oil, and frac fluids); overburden, spoil, or tailings resulting from mining; or solution mining brine and insoluble component wastes (emphasis added).*

Although the NYS DEC specifically excludes wastes produced during the hydrofracturing process from its list of industrial wastes, in fact, NYS does accept such wastes from Pennsylvania, and treats them as industrial wastes.

The resulting pollution of NYS waters due to insufficiently and inadequately treated hydrofracturing wastes is unacceptable. NYS should not accept any further wastes from Pennsylvania, or anywhere else, unless, at the very least, such wastes are classified as "hazardous" and treated as such.

Furthermore, NYS DEC should be consistent with its own definitions of "industrial" and "hazardous" wastes, and classify hydrofracturing fluids as "hazardous" under NYS's Environmental Conservation Law.

Of special concern are the high levels of radioactive materials, such as radium-226, found in hydrofracturing wastes. In the NYS section of the Marcellus Shale, these concentrations can be at least one thousand higher than what is considered the safe limit in drinking water. The alpha particles emitted by radium-226 can be fatal if ingested.^v

Radium-226, with a half-life of 1,159 years^{vi}, roughly 50 generations, will be a cumulative problem for many generations.

Even though NYS DEC might succeed in classifying hydrofracturing waste as "hazardous", such waste is still not classified as "hazardous" under federal law. If it were classified as hazardous under federal law, then the drilling companies " [m]ight also have to do what most other industries do: ship any sludge or salts that are high in radioactivity to Idaho or Washington State, where there are some of the only landfills in the country permitted to accept such waste."^{vii} This is an expensive and time-consuming mandate.

4. The need to test all wells for hazardous materials

There have been countless examples of local drinking water wells being contaminated with methane gas, and also with components used in hydrofracturing fluids. The burden of proof that a well has been contaminated lies invariably with the owner of the well because, incredibly, there are no regulations mandating that wells have to be tested prior hydrofracturing. Plain common sense would dictate that you know what's there, as a base-line, prior to the commencement of any action that could affect that base-line. But such prior measurements have been entirely missing - to the advantage of the drilling companies.

We strongly recommend that all wells within a mile of the tip of the well-casing, whether horizontal or vertical, be tested for methane, and for all compounds proposed to be used during the drilling process. In addition, a time-chart should be set up so that the wells that are further away from the drill are tested at a later time than those that are closer. Each well should be tested, at least three times, over a period of two years.

The cost of testing the wells should be shared by the applicant drilling company, the NYS DEC, and by the US EPA.

5. Conclusions

We have outlined only what we consider to be some of the main risks of Underground Injection Control (UIC) of hydrofracturing. There are many more, if above-ground impacts to land-use (farmlands and forests) were considered.

Our conclusion is that there is an overwhelming need for strict rule-making that, unfortunately, does not now exist. And, as important, is the need for the state and federal governments to strictly enforce those rules.

So far, even the few rules that exist such as the ban on the injection of diesel fuels during hydrofracturing, have been shamefully neglected. The oil/gas drilling companies have been free of almost all constraints and the few that do exist have not been properly enforced.

Until such time that rules are promulgated and properly enforced, there should be a ban on all hydrofracturing, including UIC, in NYS.

ⁱ The designation of group 1 by the IARC means that a substance is carcinogenic to humans.

ⁱⁱ See <http://www.globalsecurity.org/military/systems/ship/systems/diesel-fuel.htm>

ⁱⁱⁱ See www.epa.gov/safewater

^{iv} January 31, 2011 Letter to Lisa Jackson, US EPA Administrator, from the US Congressional Committee on Energy and Commerce.

^v See "Comments on the Scoping Materials for Initial Design of EPA Research Study on Potential Relationships Between Hydraulic Fracturing and Drinking Water Resources", CWCWC newsletter, Sept/Oct 2010

^{vi} Handbook of Chemistry

^{vii} Wastewater Recycling No Cure-All in Gas Process, by Ian Urbina, The New York Times, March 1, 2011.