WASTEWATER DISPOSAL: “BRINE’ SPREADING ON ROADS

Shale gas extraction produces two types of wastewater: “flowback water” (used fracking fluid), and “produced water”, which is often euphemistically referred to as “brine”.

Flowback water is chemically treated fracking fluid that returns to the surface shortly after fracking. The NYS DEC prohibits it from being spread on roads.

Produced water, also known as “formation water”, is the fluid that comes out of the target drilling formation along with the oil or gas. It is typically rich in chlorides and bromides and may also contain toxic heavy metals such as cadmium and metalloids such as arsenic. Produced water from the Marcellus also contains high levels of radioactive material including radium-226 which is soluble in water.¹

THE INDUSTRY’S WASTEWATER PROBLEM

A 2009 study by the Argonne National Laboratory estimates that onshore domestic operations produce in excess of 56 million barrels of wastewater a day², or in excess of 858 billion gallons of wastewater a year. (Because these figures are based on voluntary reporting, the actual figure could be much higher.) Disposal of all this waste fluid is one of the most vexing problems for the industry. For years, injection wells have been a favored means of disposal despite the fact that the USGS has known since 1990 that injection wells can cause earthquakes.³

New York State does not have a single facility that can safely treat drilling wastewater; consequently it is supposed to be trucked to treatment plants in Pennsylvania, or to injection wells in Ohio for disposal. In early 2012, earthquakes near Youngstown, Ohio, caused that state to temporarily shut down injection wells in the area and to require the installation of monitoring devices before permitting them to reopen.

NEW YORK’S HAZARDOUS WASTE LOOPHOLE

In New York State, drilling wastewater is exempt by law from being classified as “hazardous” no matter how toxic it may be. This exemption is prized by the industry because it is much cheaper to dispose of “industrial”
waste than “hazardous” waste. But this loophole also presents a significant threat to the public because industrial waste, unlike hazardous waste is not tracked - it is not metered at either the point of origin, or the point of disposal. Consequently it’s impossible to know where drilling wastewater actually ends up. Is it really trucked hundreds of miles to approved out-of-state disposal sites? Or is it simply, illegally, dumped on rural roadsides in upstate New York? This practice is common enough to have earned the name “midnight dumping.”

**BENEFICIAL USE DETERMINATION AND “BRINE SPREADING”**

Given the high costs associated with legal wastewater disposal, it’s no wonder that the industry welcomes the opportunity to spread their waste on roads. It can do this after being granted a Beneficial Use Determination (BUD) by the NYS DEC. Until recently the state did not bother to check the chemical content of the wastewater it approved for “brine” spreading, but now it requires

a chemical analysis of a representative sample of the brine performed by a NYSDOH approved laboratory for the following parameters: calcium, sodium, chloride, magnesium, total dissolved solids, pH, iron, barium, lead, sulfate, oil & grease, benzene, ethylbenzene, toluene, and xylene. Depending upon the analytical results, the Department may require additional analyses.  

The revised Draft SGEIS calls for a temporary prohibition on spreading produced water from the Marcellus on roads pending further study of its radioactive content. In its comments on the revised Draft SGEIS EPA Region 2 recommended that produced water from the Marcellus not be used for road spreading.

“Brine” spreading ostensibly serves two beneficial purposes; it can be used as a deicer, or it can be used to “keep down the dust”. Chlorides readily absorb moisture thereby “stabilizing” a dusty road. (Given the fact that chloride levels are so elevated in many streams in the Northeast that they could be toxic to sensitive aquatic life by the next century, it would be wise for EPA and the DEC to rethink encouraging the use of chlorides to achieve “road stabilization”.)
CONCERNS ABOUT “BRINE SPREADING”

Despite the fact that “brine” spreading is approved by both EPA and the DEC, there are several reasons for counties and municipalities to be wary:

1. As noted above, the use of chlorides to “keep down the dust” is an environmentally destructive practice. Alternative measures (such as using clay) are readily available.

2. While commercially blended deicers are presumably formulated to do the job with minimum adverse environmental impact, “brine” spreading is intended to dispose of an unwanted industrial waste. Excessive levels of chlorides and bromides, and low levels of toxic heavy metals and metalloids can introduce unwanted contaminants into the environment.

3. As a practical matter there is no way for a county or municipal highway department to know the origin or chemical content of the “brine” it receives from oil and gas industry sources. As noted above, drilling wastewater is not tracked in NYS and clients are forced to rely on the representations made by those who are selling the “brine”.

4. Similarly, clients must rely on what appears to be a one-off and limited chemical analysis of produced water performed by the DEC. In fact, the chemical composition of produced water may not be constant over time. In particular, some of the vast quantities of toxic fracking fluid that are not recovered as flowback (80% of the total volume in the Marcellus) may at some point in time commingle with the produced water.

5. It also worth noting that the DEC is severely understaffed and there is a real question as to whether or not it can adequately monitor a brine-spreading program throughout the state.

Given the fact that commercially produced deicers are relatively cheap and readily available, it’s hard to see why a county or a municipality would want to assume the risks that may be associated with spreading drilling wastewater on roads.

ULSTER COUNTY
Ulster County has moved to protect itself from the dangers associated with “brine” spreading. Earlier this month County Executive Mike Hein issued an executive order that prohibits “the purchase of any liquid waste product from hydraulic fracturing operations (fracking waste brine) or the use of such fracking brine by any part of the Ulster County government.  

Mr. Hein’s executive order is likely to be superseded by a local law that would codify this prohibition.

SULLIVAN COUNTY

While there are no known instances of drilling wastewater being used on Town roads in the county, at least one municipal official (in the Town of Mamakating) was approached by a vendor seeking to sell drilling “brine” to the town.

WHAT CAN SULLIVAN COUNTY DO?

1. The county can follow the lead of Ulster County by prohibiting the use of drilling “brine” on county roads.

2. It can also pass a resolution urging NYS to ban the use of brine on all state roads, or alternatively, on all state roads in the county.

3. The county can also advise municipal officials of the risks associated with “brine” spreading and encourage them to forgo purchasing or using drill waste products.

Footnotes:


2. *Information on the Quantity Quality and Management of Water Produced during Oil and Gas Production* by United States Government Accountability Office, January 2012.


5. Revised Draft SGEIS On The Oil, Gas and Solution Mining Regulatory Program
   5.13.3.4 Road Spreading


   All of these documents, with the exception of the Conservation Magazine article can be found at catskillcitizens.org.

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