



March 14, 2018

Kimberly Merchant
New York State Department of Environmental Conservation
Region 8 Office, Division of Environmental Permits
6274 East Avon-Lima Road, Avon, NY 14414

Comments submitted by email: hakesSEQRhearing@dec.ny.gov

Dear Ms. Merchant:

Earthworks, Environmental Advocates of New York, and Riverkeeper, Inc., appreciate the opportunity to comment on New York State Department of Environmental Conservation's (NYSDEC or the Department) consideration of a proposed expansion of the Hakes C&D Debris Landfill in Steuben County, New York.

Along with this comment letter, we are submitting our detailed technical comments from 2016 and 2017 on the Department's Part 360 series of regulations related to the management and disposal of oil and gas exploration, development, and production wastes (collectively known as E&P waste). In these comments, our organizations asked DEC to prohibit the disposal of all drilling, exploration, and production wastes at municipal solid waste (MSW), industrial, and construction & demolition (C&D) landfills.

At minimum, NYSDEC should not allow the Hakes C&D landfill—or any other landfill in New York State—to expand in order to accommodate additional oil and gas waste, in particular from high volume hydraulic fracturing operations in Pennsylvania. Due to the potentially hazardous and radioactive characteristics of E&P wastes, we firmly believe that this waste stream is best suited for disposal at hazardous or low-level radioactive waste facilities.

The following comments focus on two key reasons guiding this position, which we have provided to NYSDEC in writing and discussed directly with department staff.

1. There is a growing body of evidence on the potentially hazardous and radioactive nature of E&P wastes.¹ Both the US Environmental Protection Agency (USEPA) and New York regulations use four technical criteria to determine if a waste is hazardous: ignitability, toxicity, corrosivity, and reactivity.² Waste can be considered hazardous if it exhibits *any* of these characteristics.

USEPA has clearly stated that E&P wastes contain toxic substances, including benzene, phenanthrene, lead, arsenic, barium, antimony, fluoride, and uranium at “levels that exceed 100 times USEPA’s health based standards.”³ Of these, New York’s regulations include arsenic, barium, benzene, and lead among the contaminants that can give a waste the characteristic of toxicity.⁴

Drill cuttings, which can display toxic characteristics, make up a large proportion of the E&P wastes accepted at New York landfills. NYSDEC has stated that drill cuttings are simply “rock and soil residue” and that their disposal in municipal solid waste landfills is “environmentally safe.”⁵ Unfortunately, NYSDEC has based this view on very limited sampling and analysis conducted in 2010, not on more recent scientific studies on the content of cuttings and potential environmental risks.

NYSDEC also ignores the fact that because cuttings are essentially ground up bits of shale formations, they can contain radium and heavy metals.⁶ Yet New York’s waste management regulations do not distinguish between cuttings generated from different types of formations and drilling depths, which determine the concentration of metals, radioactivity, and hydrocarbons contained in resulting waste.

Unfortunately, these gaps in understanding and analysis are repeated in the Draft Supplemental Environmental Impact Statement (DSEIS) for the Hakes Landfill Expansion, which states (p. 16) that, “Drill cuttings are rock and soil residue from the boring of a well. This rock and soil residue can contain small amounts of naturally-occurring radioactive material (NORM).”

¹ See, e.g., M. Glass and K. Hatcher, Comments on Proposed Changes to the West Virginia Solid Waste Management Rule, 33CSR1, (Downstream Strategies 2014); and U.S. Occupational Safety and Health Administration, Drilling fluid, <https://www.osha.gov/SLTC/etools/oilandgas/drilling/drillingfluid.html> (last accessed Sept. 12, 2016).

² USEPA, RCRA Orientation Manual, Chapter III: RCRA Subtitle C, Managing Hazardous Waste; 40 CFR § 261.20 et seq.; NYSDEC, 6 NYCRR § 371.3.

³ USEPA, Regulatory Determination for Oil and Gas and Geothermal Exploration, Development, and Production Wastes, 53 Federal Register 25447, 25448 (Jul. 6, 1988).

⁴ 6 NYCRR § 371.3(e) tbl.1.

⁵ NYSDEC, CHEMUNG COUNTY LANDFILL EXPANSION RESPONSIVENESS SURVEY SUMMARY, at response R2 (2016).

⁶ 6 NYCRR § Part 371.3(e) tbl 1; See Tracy L. Bank, Lauren A. Fortson, et al., A GEOCHEMICAL AND GEOSPATIAL INVESTIGATION OF HEAVY METALS IN THE MARCELLUS SHALE (University of Buffalo and Chevron USA Inc. 2012).

As documented in our organizations' comments on Part 360 regulations as well as subsequent comments on Part 380 regulations, drill cuttings meet the definition of Technologically Enhanced Naturally Occurring Radioactive Material (TENORM), despite NYSDEC's inappropriate insistence that they do not.⁷

Recent scientific analysis of both vertical and horizontal drill cutting samples in West Virginia showed they contain chloride, arsenic, barium, iron, manganese, strontium, benzene, and fluoride, as well as Radium 226 and 228.⁸ A comprehensive analysis of radioactivity in E&P wastes by the Pennsylvania Department of Environmental Protection showed that samples of horizontal drill cuttings had Ra-226 levels nearly twice as high as samples of vertical cuttings.⁹

2. Recent studies and testing indicate that the leachate from landfills accepting oil and gas wastes have elevated levels of radioactive substances. For this reason, our organizations have asked DEC to prohibit disposal of leachate from landfills accepting oil and gas drilling, exploration, and production waste at Publicly Owned Treatment Works (POTWs). Unless landfills can guarantee that the leachate going to POTWs is free of toxic substances and has a radiological content no greater than drinking water standards (5pCi/g), their leachate should not be disposed of at POTWs—since this practice effectively means direct discharge of contaminants into rivers and streams.

The POTWs to which landfill leachate is sent for disposal are generally designed to remove suspended solids and organic material using biological treatment. They do not monitor for Ra-226 and Ra-228 or other contaminants associated with E&P wastes (such as benzene or barium), largely because Federal National Pollutant Discharge Elimination System (NPDES) permits don't generally require it.¹⁰ Unfortunately, New York's State Pollutant Discharge Elimination System (SPDES) is equally limited in its testing and monitoring requirements.

Without treatment methods designed for E&P wastes, New York POTWs may be discharging radionuclides or other E&P pollutants to New York's waterways. Any unregulated discharge of

⁷ Earthjustice, Environmental Advocates of NY, and Earthworks. Comments on DEC's proposed revisions to Part 380, July 2017.

⁸ MARSHALL UNIV. CTR FOR ENVTL., GEOTECHNICAL AND APPLIED SCIENCES, *EXAMINATION OF LEACHATE, DRILL CUTTINGS AND RELATED ENVIRONMENTAL, ECONOMIC AND TECHNICAL ASPECTS ASSOCIATED WITH SOLID WASTE FACILITIES IN WEST VIRGINIA; STUDY AND REPORT FOR WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION* (2015).

⁹ PERMAFIX ENVIRONMENTAL SERVICES FOR PADEP, *TECHNOLOGICALLY ENHANCED NATURALLY OCCURRING RADIOACTIVE MATERIALS (TENORM) STUDY REPORT* (2015).

¹⁰ Marc Glass, Comments on Proposed Changes to New York State Solid Waste Regulations (Downstream Strategies 2016).

these dangerous pollutants most likely would run afoul of the federal Clean Water Act's anti-degradation provision, as they could impair the receiving water's existing use, whether for drinking, recreation, or fish propagation.¹¹

The environmental consulting company Downstream Strategies has found that leachate from West Virginia landfills accepting E&P waste frequently contained concentration of Ra-226 and Ra-228 that exceeded the federal Maximum Contaminant Level (MCL).¹² Another analysis of leachate from six West Virginia landfills by researchers at Marshall University found that barium was present only in the leachate from landfills that accept drill cuttings.¹³

These findings appear to be confirmed by recent testing of samples of leachate from the Hakes landfill, according to expert affidavits in the pending legal case of Sierra Club, Concerned Citizens of Allegany County, People for Healthy Environment, Inc., John E. Culver, and Brian and Mary Alice Little vs. New York State Department of Environmental Conservation, Basil Seggos, Commissioner, and Hakes C&D Disposal, Inc. (hereinafter referred to as the Sierra Club vs. NYSDEC case).

Both Dr. Raymond C. Vaughan of SUNY Buffalo and Mr. Dustin M. May of the University of Iowa have documented that samples of leachate from the Hakes landfill contained very high levels of Lead-214 and Bismuth-214, which are by-products from the decay of radium-226 and radon-222.

These findings indicate that NYSDEC may be underestimating the amount of radium in the Hakes landfill because the method used by the Department to analyze the samples cannot account for the impact of high concentrations of dissolved solids. In addition, NYSDEC appears to have ignored high concentrations of radon in the leachate, which indicates the presence of high concentrations of radium as well.

In response to comments our organizations submitted in September 2016 regarding leachate disposal at POTWs, DEC stated it is "outside the scope of this rulemaking."¹⁴ Yet the Department did not provide any indication of when this issue would be investigated or addressed—even as it persists in considering expansions of landfills such as Hakes, and subsequently increasing the volume of radioactive and toxic leachate going to POTWs.

¹¹ See 40 CFR § 131.12(a)(1).

¹² M. Glass and K. Hatcher, Comments on Proposed Changes to the West Virginia Solid Waste Management Rule, 33CSR1 (Downstream Strategies 2014).

¹³ MARSHALL UNIV. CTR FOR ENVTL., GEOTECHNICAL AND APPLIED SCIENCES, *EXAMINATION OF LEACHATE, DRILL CUTTINGS AND RELATED ENVIRONMENTAL, ECONOMIC AND TECHNICAL ASPECTS ASSOCIATED WITH SOLID WASTE FACILITIES IN WEST VIRGINIA*; STUDY AND REPORT FOR WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (2015).

¹⁴ Response to Comments at 242.

Dr. Vaughan's affidavit in the Sierra Club vs. NYSDEC case also indicates that the current use of radiation detection devices at landfills is likely not providing a reliable measure of Radium-226. Our organizations made this same point in our 2017 comments to NYSDEC on Part 360 regulations. Specifically, fixed radiation detector units, or portal monitors, do not actually quantify specific radionuclide isotopes (such as Radium 226).¹⁵

For drilling wastes, fixed radiation detectors are not an effective method to screen whether waste loads meet municipal landfill activity limitations for Radium 226 and/or Radium 228. This is because fixed radiation detectors are designed to detect energy, primarily gamma or neutron waves—not the activity levels (i.e., as measured in pCi/g) for those radioactive isotopes.¹⁶

Radium 226 primarily emits alpha particles, which are extremely hazardous to the environment and human health but cannot be detected through a thin barrier (such as the metal or cloth side or top of a waste hauling truck). This fact casts doubt on the assertion in the DSEIS for the Hakes landfill expansion (p.17) that because outgoing loads of leachate have been screened by portal radiation detectors, they are necessarily free of radioactive substances.

In closing, our organizations reiterate the critical need for NYSDEC to take a precautionary approach and prohibit E&P wastes from entering landfills and landfill leachate from being sent to POTWs. We strongly recommend against the approval of the proposed expansion of the Hakes landfill unless and until NYSDEC conducts additional study and analysis of radioactive substances in E&P wastes, and the resulting leachate, at Hakes and other landfills in New York State.

Thank you for your time and attention. Sincerely,



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¹⁵ Marc Glass, Comments on Proposed Changes to New York State Solid Waste Regulations (Downstream Strategies 2016).

¹⁶ *Id.*

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