



Environmental  
Protection Agency

John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
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## Advisory

### ***Solidification and Disposal Activities Associated with Drilling-Related Wastes at Solid Waste Landfills***

As oil and gas drilling activity in the Utica and Marcellus shale formations increases, licensed municipal solid waste landfills in Ohio and surrounding states should expect to see increased volumes of incoming solid wastes generated from the drilling process, including drill cuttings, drilling muds, and frac sands. Other wastes associated with shale development, including oilfield fluids and brine, will also be generated in large volumes, and there is an increasing interest from drilling companies in exploring options to manage these liquid wastes. Because solid waste landfills are prohibited from accepting bulk liquids and waste streams not passing the paint-filter test, these waste streams would require solidification or other processing in order to be received for disposal.

Given the anticipated increase in disposal of drilling wastes and interest of onsite solidification by landfill operators, the Division of Materials and Waste Management (DMWM) is providing this advisory to share regulatory guidance to support compliance at licensed landfills. In an effort to assist landfill operators to obtain necessary authorizations, this advisory also summarizes regulatory programs administered by the Ohio Department of Natural Resources (ODNR) Division of Oil and Gas Resources Management (DOGRM) and Ohio Department of Health (ODH) Bureau of Radiation Protection (BRP).

#### Drill Cuttings

Rock and soil carried to the surface during the drilling process are defined as drill cuttings. Drill cuttings coming into contact with drilling muds, oils, or other sources of contaminants are classified as a solid waste and, provided such cuttings pass the paint-filter test, must be sent to a licensed solid waste landfill or managed onsite (when approved by the ODNR DOGRM).

More information on drill cuttings is available on Ohio EPA's fact sheet titled Drill Cuttings from Oil and Gas Exploration in the Marcellus and Utica Shale (<http://epa.ohio.gov/shale.aspx>).

#### Drilling Mud and Frac Sands

Drilling an oil and natural gas well involves the use of fluid (called drilling mud) or compressed air to aid in the process of drilling a borehole into the subsurface. After the drilling process is completed and the well is cased and cemented, frac sands are used when stimulating the geologic formation to release natural gas. Oil-based drilling muds are valuable to the drilling operator and are recovered so that they can be used again; however, at end-of-life, all waste streams must be managed in accordance with applicable regulations.

Due to their liquid content, drilling muds and frac sands may not pass the paint-filter test and would require solidification or other processing in order to be accepted for disposal at a licensed municipal solid waste landfill. **Landfill operators interested in accepting these waste streams are required to obtain prior authorization from Ohio EPA DMWM.** Due to

the nature of the Utica and Marcellus shale formations, as well as the steps used in the drilling and stimulation process, drilling muds and frac sands may contain elevated TDS or elevated concentrations of technologically enhanced naturally occurring radioactive materials (TENORM). **In order to receive drilling wastes containing TENORM, landfill operators must ensure sample analysis of the waste received meets the exemption requirement of less than five picocuries per gram above background for combined radium 226 and 228.** If combined radium 226 and 228 levels of drilling wastes are determined to be more than 5 picocuries per gram above background, facility operators must obtain authorization from ODH BRP in order to process the drilling wastes for the purpose of dilution. Regulatory requirements for TENORM can be found in Ohio Administrative Code (OAC) 3701:1-43.

Landfill owners and operators accepting drilling muds and frac sands that pass the paint-filter test must ensure these waste streams do not exceed five picocuries per gram above background for combined radium 226 and 228. This assurance may be demonstrated through the review of analytical results obtained from the drilling operator and implementation of a radiation detection program. Please contact the Ohio Department of Health Bureau of Radiation Protection for more information on the appropriate methods for detection monitoring.

Because of the presence of radiation and potentially high levels of TDS, the landfill may need to perform monitoring of landfill systems, such as those related to leachate collection, to determine potential impacts to human health or the environment associated with these waste streams.

### Oilfield Fluids

Brine disposal in Ohio is regulated by ODNR DOGRM, pursuant to Ohio Revised Code (ORC) Section 1509.22. Disposal is primarily limited to Class II underground injection; however, pursuant to ORC Section 1509.22(C)(1), the Chief of ODNR's DOGRM may approve other methods of disposal. **Prior to accepting any oilfield fluids, including brine for solidification, the landfill must submit a proposal to the Chief, ODNR DOGRM, for approval.** In addition, the landfill is required to obtain authorization from Ohio EPA to receive and solidify liquids. Prior to requesting authorization from Ohio EPA, landfill operators should obtain either written correspondence from ODNR DOGRM that proposed drilling-related wastes do not meet the definition of brine or written authorization from the Chief, ODNR DOGRM to accept brine for solidification and disposal.

### Compliance Support

Although some waste streams resulting from the drilling process may pose certain risks, with the proper management and controls at both drilling pads and landfills, these waste streams can be handled and disposed of in a manner protective of human health and safety and the environment. Prior to accepting waste streams requiring solidification or further processing, landfill owners and operators are advised to contact the following agencies to determine and, if necessary, obtain required authorizations:

Ohio EPA Division of Materials and Waste Management – (614) 644-2621

ODNR Division of Oil and Gas Resources Management – (614) 265-6922

ODH Bureau of Radiation Protection – (614) 644-2727

If you currently have authorization from Ohio EPA for solidification activities and desire to accept drilling-related wastes, please contact each of the above mentioned agencies. At this time, currently authorized solidification activities may accept drilling-related wastes; however, facility operators are expected to follow the guidance provided in this advisory to ensure compliance with ODNR DOGRM and ODH BRP regulations. While solidification activities not located at a landfill facility are not subject to the solid waste laws and regulations, those entities are advised to contact Ohio EPA's Division of Surface Water, ODNR DOGRM, and ODH BRP for required authorizations.

I appreciate your attention to this matter. Ohio EPA will continue to share information with the solid waste industry relevant to drilling-related wastes, as it becomes available. If you have any questions or concerns regarding this letter, please feel free to contact your appropriate Ohio EPA district office or DMWM's Solid Waste Compliance & Inspection Support Unit at (614) 644-2621.

Sincerely,

A handwritten signature in cursive script that reads "Pamela S. Allen".

Pamela S. Allen, Chief  
Division of Materials and Waste Management

cc: Rick Simmers, ODNR  
Mike Snee, ODH  
George Elmaraghy, DSW