Ohio Valley Environmental Coalition

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August 20, 2018

Re: Public Comments on West Virginia State Plan Revision for Municipal Solid Waste Landfills

Comments submitted by:

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August 20, 2018

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Two major topics should be added to the draft air quality regulations for all landfills which are receiving any drill waste products from horizontal shale gas wells.

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SECTION ONE New waste-stream and landfill recent modifications

Over the past few years a number of West Virginia municipal solid waste landfills started taking in large quantities of a new, not fully characterized waste material, which is removed from many of the natural gas horizontal wells in the tri-state area. In order to comply the new solid waste disposal requirements, many of these landfills modified and expanded their operations. They added special dedicated cells for drilling waste with separate leachate collection systems. These drill cuttings and related waste from horizontal wells have unique characteristics, and since this type of waste has never before been buried in Municipal Solid Waste Landfills anywhere in the state, there are unknown risks of from burying these wastes, both in the short- and long-term for environmental and public health. The health risks are much more pronounced for the landfill workers.

The two major air pollution problems with low level radioactive waste contained within the horizontal bore shale material are the real possibility of air borne dusts and the ever-present creation of Radon-222 which is derived from the presence of Radium 226 in the shale cuttings. Therefore, two additional, major topics should be added to and addressed in detail within this draft plan for revisions of the state plan: DUST and RADON.

SECTION TWO Drill cuttings, dust creation, transport, employee risks

Control and management of dust is a constant chore at any municipal solid waste (MSW) landfill. However, the routine dust from haul roads and normal landfill operations, which are receiving and disposing primarily of household trash and miscellaneous waste, do not carry the greatly increased risk from airborne dust derived from drill cuttings from deep horizontal wells.

When the drill cuttings leave the well pad whether by enclosed-roll-off trucks or covered dump truck, they usually have a high initial moisture content from the ages-old formation brine surrounding the shale and also from any drill muds and other fluids used during the drilling process. Quite often these truckloads of moist drill waste will be "bulked-up" or solidified with a variety of added material to absorb some moisture. This operation will be done at a distance away from the active working face of the dedicated cell where the waste will eventually be buried. In such work areas, there is a potential for the generation of airborne dust if appropriate dust suppression methods are not used.

At a designated "bulking-up" location the material will be unloaded, mixed, combined and blended, and then reloaded onto other larger trucks to be taken to the active cell to be again unloaded and pushed by a dozer into the final location. During every step of this multi-stage handling process, drill cutting material will be dropped, driven over, and further pulverized into dry dust which must be confined and controlled.

A significant portion of the shale oil and gas drilling wastes (drill cuttings) are fine-grained, clay or silt-sized particles. The larger-sized shale rock cuttings will quickly weather to the natural clays and silts of the parent materials. As such, when the waste materials dry out, they are easily transported by wind. However, unlike the typical wind-blown wastes and dust at a typical solid waste municipal landfill, these dusts contain heavy and radioactive metals as well as hydrocarbons and other constituents of concern that can have a negative effect on the landfill workers, the surrounding community, the environment, and the air shed.

In addition to the natural clay and silt-sized materials in the horizontal bore, which are extracted during the drilling phase, it is very likely that fine-grained silica sand and its dust (used to prop open the shale fractures during the completion process) will also be part of the shale oil and gas drilling waste stream. These silica dusts are also dangerous and can represent significant health risks to the workers at the landfills and the surrounding community and environment. The draft rules are silent on these issues. They need to be specifically addressed.

Should there not be a detailed discussion within the draft plan about the unique nature of wind-blown dust from the shale drilling wastes in the open cells, specifically on the working faces of the cells? The worker health issues are significantly different and greater for shale drilling wastes than most typical municipal solid waste (MSW) landfills receiving primarily household garbage; these issue are more on the order of asbestos wastes—asbestos wastes are double bagged to prevent the release of asbestos dust. Dust from shale drilling wastes may also have health implications. The shale drilling waste dusts are also cancer and lung disease hazards —both the natural rock itself and the resulting drill cuttings and the silica sands used to prop open the fracture sites after drilling is done. In addition, other materials introduced into the drilling and completion process may be hazardous if released as dust.

Specific questions on dust creation and control

1. How will the workers be protected from these potentially health-impacting dusts?
2. How will wind-blown dust be controlled?
3. What practices will be instituted to ensure that these wastes are not allowed to dry out and be blown around within the landfill property and also transported by wind beyond the landfill to nearby residents?

4. Where will considerations for the need to monitor the dust and the possible requirement of respirators be placed in these rules?
5. Will the WVDEP require monitoring of radiological parameters in the fugitive dust both near drilling waste solidification process and the subsequent waste placement areas?
6. Is WVDEP, DAQ considering implementing a shale drilling waste management strategy similar to the requirements of the disposal of asbestos waste to reduce the risk of wind-blown hazardous dust from the shale drilling wastes at the landfills? If not, why not?
7. What testing has the WVDEP undertaken to understand the nature of these potentially wind-blown dusts? How will they be managed?

SECTION THREE Radon-222 gas: its creation, detection and health concerns

As mentioned in SECTION ONE above, we have never knowingly buried very large quantities of known low-level radioactive waste in a generic, municipal solid waste landfill originally designed for household garbage. The prudence or danger of doing so might not be known for generations. During the past six years or so, about 850,000 tons of drill waste have been buried in just the Wetzel County Landfill alone. Besides the constant dust concerns, since that waste contains significant amounts of Radium 226 and as a mother isotope will forever be decaying into the daughter element, a noble gas, called Radon 222. Radon's half-life is only 3.8 days so it might not seem to be very consequential. However, the half-life of the parent isotope Radium 226 is 1600 years. And, Radon is known to be the second leading cause of lung cancer, behind cigarette smoking.

Many landfills already have a gas collection and control system, a GCCS. These systems are designed to capture and thermally reduce or destroy the routine methane and other forms of volatile and other organic gases and semi-volatile compounds normally found in MSW landfills. However, since shale oil and gas drilling wastes are radioactive they also produce radon gas. Radon gas moves through the cells with the other gases and into the gas collection system or leaks out of the landfill with methane but, because it is a noble gas, unlike methane and the other organic gases, radon does not burn in the flare used on a gas collection system. Radon is heavier than air and will lay in low areas around the landfill unless it is disturbed by wind.

Specific questions on Radon measuring and control

8. What studies has the WVDEP or other state agencies undertaken to determine the volumes of radon gas that are or will be emanating from the landfill areas dedicated to the disposal of shale gas drill cuttings?
9. What levels of radon already exist in the buildings surrounding the landfills that are accepting shale oil and gas drilling wastes?
10. What measures should the landfill operators take to manage the release of radon gas into the air shed?
11. What health precautions should be undertaken to insure that the workers are not exposed to injurious levels of radon gas? The draft rules are silent on this topic and it needs to be addressed.
12. How will landfill gas management efforts be modified to address the issue of radon gas?
13. Will the WVDEP require monitoring for radon gas in the landfill gas management system?