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June 8, 2020

Sent by U.S. First Class Mail and Email

Pennsylvania Department of Environmental Protection
Attn: Melissa Jativa
400 Waterfront Drive
Pittsburgh, PA, 15222

Re: Proposed Plan No. 65-00767C for Air Pollution Emissions at Westmoreland Sanitary Landfill

Dear Ms. Jativa;

We are writing to you on behalf of the members of our organizations, Protect PT (Penn-Trafford) and Mountain Watershed Association. Protect PT is committed to ensuring that the safety, security, and quality of life of community members are protected from the adverse effects of unconventional gas development in the Westmoreland and Allegheny County region. Mountain Watershed Association uses grassroots efforts to defend against further pollution to the Youghiogheny Watershed, to improve water quality and to conserve the natural ecology and character of the region.

We have reviewed The Westmoreland Sanitary Landfill plan approval application 65-00767C and associated documents obtained from the PA DEP, and we are submitting the comments below in opposition of its approval. Under state law, the emission of fugitive air contaminants is impermissible if the emissions are "preventing

or interfering with the attainment or maintenance of an ambient air quality standard.”¹ In consideration of the following research, we demand that the Department deny this permit application, as the effectuation would result in the diminishing of adequate air quality for Pennsylvania residents, in direct violation of state law.

This application raises alarm for the air quality around the Westmoreland Sanitary Landfill. The landfill has been taking in significant amounts of shale drilling waste which has been known to contain ‘*radioactive elements, metals/metalloids Arsenic (As), Selenium (Se), Iron (Fe) and Strontium (Sr), and brine salts*’ (Chen, Season S., et al) as well as Volatile Organic Compounds (VOCs) such as Benzene, Toluene, and Xylene (Appendix A: Chemicals Identified.) This is a concern as these can be put into the air and cause high levels of respirable radiation. These contaminants can all contribute to particle pollution which affects visibility and respiratory functions.

Air Quality Supervisor, Melissa Jetiva, states in her memo that the landfill is “... in an area of attainment for all NAAQS.” We challenge this assumption. While the landfill is in Westmoreland County, it is adjacent to Allegheny County (less than four miles from the county line) which has been out of attainment for PM2.5 from 2009 to the present. The area of attainment is hard to define given the hilly topography of Southwestern Pennsylvania. Further, the term “area” is used in various ways by the EPA for reports like the NAAQS. The applicant has not shown how they defined “area.”

Environmental Justice Communities and Public Hearing Request

This site is surrounded on three sides by Environmental Justice (EJ) communities: Monnessen, Charleroi, and Belle Vernon. With the qualification of an EJ community being at least 20% of the community in poverty, those individuals do not have the ability to leave the area if their air quality becomes poor and/or put protective measures in their homes such as air filters. This puts some of our most vulnerable

¹ 25 Pa. Code §§123.1(ii).

residents at risk in Westmoreland, Allegheny, and Fayette Counties. This is why we are requesting a public hearing to increase communities' environmental awareness and involvement in the DEP permitting process.

Covid 19

In addition to the sensitivity of the EJ Communities affected, the Covid 19 crisis has made access for all members of the public more difficult. We request that in addition to a Public Hearing, the deadline for comments be extended to July 8, 2020 (an additional 30 days.) For community accessibility and safety, we request an on-line virtual public hearing prior to July 8. In a March 26, 2020 EPA memorandum, polluting industries were permitted to delay sending reports and be non-compliant in emissions due to COVID-19. Residents should be allowed at least more time and options to comment on proposed pollution permits. The proposal is complicated because it involves evaporation of leachate that will constantly change based on substances accepted by the landfill and the heterogeneous nature of current landfill waste. Several studies show significantly more severe illness and increased death rates from COVID-19 for people living in areas with increased air pollution. The kinds of pollution in those studies include exactly the pollutants in the evaporation permit, such as PM-10 and PM 2.5. This is the wrong time to increase emissions in a region with current air problems. Additionally, residents need to hear DEP staff explain features of the permit, as they do at the start of public hearings.

Qualification for Permitting

In the Permit application, the applicant responded "No" to Section 3.0 which asks if the project or activity has anything to do with oil or gas production. In Section 3.3, a question skipped due to the "No" response to Section 3.0, it is directly asked if this has any involvement with industrial waste treatment. As the waste produced by oil and gas development is directly responsible for the contaminated leachate produced by the landfill, the construction of an evaporite leachate system should be classified as an

industrial waste facility. This leachate is clearly an industrial waste product as it cannot be processed by a sanitary water treatment facility; when this leachate was processed by the Belle Vernon Sewage Treatment Plant (operated by Belle Vernon Municipal Authority) it devastated the biological agents responsible for processing the typical waste received. This leachate was determined to be incompatible with the life forms required to process typical sanitary wastewater due to excessive volume and toxic chemical components. Thus it is no longer accepted at the treatment plant, which is the motivation for the construction of this evaporative treatment system.

Permitting Deficiencies

The goal of the permit is unclear. The following quote is an example from the first page of the permit: *“This plan approval is for the construction of a 45,000 gallons per day (gpd) Leachate Evaporation System.”* This statement implies that the permit is only for construction, but other parts of the permit seem to apply to operation of the evaporation system.

Additionally, at least two recent proposal permits were rejected due to technical inadequacies that were substantial. Replacement proposals were submitted within days. Complete evaluation of the original draft permits, the technical inadequacies and substituted information need more time to be properly considered by DEP, other experts, and residents.

The permit application shows an excessively long period of 180 days for “shakedown” in which excess pollution emissions may occur. Then, the permit allows continued non-compliance and possible excess pollution for an unlimited number of 180-day extensions, simply requiring plans for reaching compliance.

The daily monitoring depends only on sight and smell of an operator. This is too subjective and variable. Under the proposed scenario, problems could easily go

undetected for long periods of time. Excess emissions will be inhaled by residents within minutes after a plume leaves the site and may last for hours or days. Given the huge volume of toxic leachate evaporated per day, any malfunction in operations could release large amounts of toxins before operators recognize a problem.

While a visual inspection may be conducted daily, pollution amounts are reported only once per year. Many serious air pollutants are in this permit and residents need to know actual amounts on a regular basis, at least weekly.

Daily visual and smell methods should be augmented with constant monitoring of emissions with visual and infra-red cameras and daily testing for key air pollutants with readily available tools, such as PM-2.5 monitors.

The PM-2.5 real time data should be made available to the public so they can protect their lungs and limit pollution exposure on days with high PM-2.5 amounts.

Plan Lacks Management of Significant Radiation

The leachate and waste in WSL are known to contain different forms of radioactivity, only one of which can be easily measured. Simple measures, such as Geiger counter tallies of gamma radiation from Uranium (U), greatly underestimate the total radiation hazard. Thorough tests of WSL samples show the hard-to-measure alpha radiation from Radium (Ra) in leachate and solid wastes. Radioactivity from radium is especially high in Marcellus deposits and common in gas industry waste. For over 10 years, WSL has been accepting gas industry waste where it now makes up 40% of input.

Radium changes to the well-known hazard, Radon (Rn) gas, at different rates, called decay half-lives. The rates differ for each variety, or numbered isotope, of radium. Ra-224 half-life is 3.5 days, Ra-226 decays in 1600 years and Ra-228 converts in 6.7 years.¹¹

Homeowners know radon can accumulate in homes as it is released from surrounding soils, but residents should also know radon gas emitted from an above ground source will travel downslope because radon is heavier than other gases in air. Therefore, it could accumulate in valleys around a facility. Radon gas exposure increases cancer risk, especially lung cancer. The permit does not address radiation problems as in these specifics:

- Measuring radioactive elements in the sludge left over from evaporation or proper disposal of the sludge.
- WSL underestimates the radiation hazard because it appears to rely on instantaneous radiation detectors for incoming waste.
- WSL has been accumulating radioactive elements for many years.
- WSL has been accepting industrial waste with unknown amounts of radioactive elements for decades, and, after 2010, accepting gas industry waste likely to contain radioactive elements.

Leachate Constituents

Typical leachate from sanitary landfills is fundamentally different from the leachate proposed for evaporative treatment with this permit. In particular it is contaminated by years of oil and gas waste, which is known to contain heavy metals, radioactive elements, and other harmful substances as discussed below.

Arsenic

Arsenic and any compounds formed from Arsenic are toxic. Under typical conditions (room temperature) arsenic combines with oxygen to form arsenic oxide (As_2O_3) which goes into the air. When heated, arsenic combines with oxygen at a faster rate. This causes a larger concern since the application stated in order to evaporate the 45,000 gallons of leachate the landfill will use thermal energy from burning natural gas to facilitate the evaporation (Restrictions: #017) process, which would cause more arsenic to combine with oxygen at a faster rate causing the aeration of the arsenic.⁴

Selenium

Selenium can cause problems for people who live near or work at waste-sites that contain high levels in the air. Selenium exposure can cause dizziness, fatigue, and irritations of the mucous membranes. When the exposure is extremely high, there will be collection of fluid in the lungs (pulmonary edema) and bronchitis may occur.⁸

Strontium

There is risk of Strontium in the concentrated waste from the evaporation. While strontium would not go into the air easily, after it is filtered out and evaporated from the leachate and in the residual sludge, it is inevitable that the radiation will be concentrated.

Listed Quantified Emissions

Continuing to discuss hazardous materials, the public announcement of application from the Westmoreland Sanitary Landfill listed several quantified emissions for the pollutants involved. These include, but are not limited to, nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}), and volatile organic compounds (VOC). Emissions of these various pollutants can cause discomfort and even serious negative health effects in individuals living nearby. In the following sections, each of these categories will be analyzed on the topic of safety for residents of the nearby areas and employees forced to be exposed to these compounds.

Nitrogen Oxides

Common nitrogen oxides involved in air pollution are nitrogen dioxide (NO₂) and nitric oxide (NO). NO₂ is a strong oxidizing agent, which means when it enters the human body it can oxidize tissues. When human cells are exposed to strong oxidizing agents it results in DNA damage, and can potentially lead to cancer. It can also cause pulmonary

edema as well as other respiratory-related issues as it is a strong pulmonary tract irritant. For NO, short-term exposure can lead to chest tightness, irritation of the eyes and throat, headaches, and many more. As for prolonged exposure, violent coughing and cyanosis (an abundance of deoxygenated blood), would be observed.

As for environmental implications, nitrogen oxides are also the cause of nitric acid rain and smog due to their interactions with water and oxygen in the air.⁵ For people who are at risk the Clean Air Act allows for NO to be 100ppd which has to be in the 98th percentile of 1-hour daily maximum concentrations averaged over 3 years. Furthermore for the general population and those who are at risk NO is allowed to be put into the air at 53 ppb as the annual mean of the facility.¹⁰

Sulfur Dioxide

Sulfur Dioxide (SO₂) is another culprit shown in the emissions estimate. SO₂ is a common and nasty air pollutant surrounding the coal-fire energy industry. Thus, SO₂ is heavily monitored and controlled under the Clean Air Act. This gas has been shown to cause wheezing and chronic bronchitis in numerous studies surrounding employees exposed to this gas on a daily basis. Hence employees who will be working around the leachate evaporator will be exposed in the highest quantities relative to others in the area, and will be at high risk. As for residents in the surrounding area, multiple studies were compiled and analyzed to conclude that short-term low exposure results in severe respiratory irritation, and short-term high exposure will likely result in severe airway damage. Information on long-term exposure is still scarce; however, studies surrounding short-term exposure implicate that long-term exposure would likely be even more dangerous. Additional studies show correlations between development of asthma and various other chronic respiratory diseases with as little as 10 mcg/m³ increase in ambient SO₂ concentrations. With the evidence of short-term health risks and the unknown risks of long-term exposure, employees and nearby residents should not be exposed to this gas.³ Under the Clean Air Act for vulnerable populations, a

facility can have up to 75 ppb of SO₂ given off under the circumstances of it being in the 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years. For the general public within 3 hours a facility can give off up to 0.5ppm and that cannot be exceeded more than once a year.¹⁰

Carbon Monoxide

Following the introduction of catalytic converters in automobiles, carbon monoxide (CO) emissions were reduced by approximately 76.3%. Evaporating leachate could undo some of this progress. Raising ambient concentrations of CO can be detrimental to the health of nearby residents and especially detrimental to workers at the evaporation site. Peer-reviewed studies suggest that for every 10 mcg/m³ above baseline (1.00 ppm), the overall mortality rate of those exposed increases by 10%. The most affected in this situation are clearly the employees at the evaporation site, and correlations have been found between work-related CO exposure and angina. An example of residential impact took place in Denver, Colorado, where ambient CO levels exceeded an average of 5 ppm over a 24-hour period and 11 ppm during the peak 1-hour period. During this incident, local emergency departments confirmed that there was a significant increase in admissions for cardiorespiratory complaints. Peer-reviewed studies help conclude that CO is a dangerous gas not only when individuals are exposed in their homes but also when individuals are exposed to it in ambient conditions.³ When measuring CO under the clean air act there are two levels for vulnerable populations: first within one hour there can not be more than 35 ppm of CO given off from the facility and this can not be violated more than once a year. The second part is within 8 hours the average amount of CO that can be given off cannot exceed 9 ppm and can not be passed more than once a year.¹⁰

Fine Particles

PM₁₀ and PM_{2.5} are blanket terminology for various fine particles at the respective aerodynamic diameter. Namely, these fine particles consist of heavy metals. PM₁₀ and

PM_{2.5} are closely monitored by local air quality monitoring stations for a few reasons. When levels of fine particulate matter become too high, exposed individuals will have increased risk of cardiovascular diseases, neurological effects, and cancer. Other studies also conclude that small increases as little as 10 mcg/m³ have been known to increase the number of patients suffering with eczema in the affected area. Air concentration levels of these pollutant categories fluctuate naturally, and can make it difficult or even impossible for sensitive groups to leave their homes on days in which the levels are too high. Adding another source of emission for these fine particles will affect sensitive individuals in the surrounding areas, which should not be permitted.⁵

Volatile Organic Compounds

Lastly, there are volatile organic compounds (VOC); namely, benzene, toluene, and xylene (BTX). These three compounds are grouped together since they will almost always be found together, due to molecular similarity. BTX are known human carcinogens, and the human body has a very low tolerance for each of these compounds. The most dangerous of the VOCs is benzene. This highly toxic and volatile aromatic compound is classified as a class 1 human carcinogen, making it exceptionally dangerous to be exposed to. BTX can stay in the human body for a longer period of time than most free radicals making them more dangerous to the body. The umbrella term "VOC" covers more chemicals than just BTX, and there is no way of knowing what compounds could be higher than others without proper testing. This fact alone makes the operation even more dangerous, especially to the workers.⁷

Local Winds Would Transport Particles

As particles are evaporated and released into the air, local wind carries these particles to surrounding areas. Research was done to determine the direction that the local wind would carry these particles. Since the Westmoreland Sanitary Landfill does not measure wind directions, data from two surrounding airports was taken to determine the average wind direction over the Westmoreland Sanitary Landfill as shown in Figure 1. It

must be noted that Figure 1's wind roses visualize where local winds are coming from, not where they are blowing. The first measurement was taken 25.1 miles Northeast of the Westmoreland Sanitary Landfill at the Arnold Palmer Airport. The second measurement was taken 23 miles West of the Westmoreland Sanitary Landfill at the Washington County Airport. With these measurements, it could be determined that the average wind direction at the Westmoreland Sanitary Landfill blows between the North-Northeast and East directions, however wind direction is by nature variable.⁹

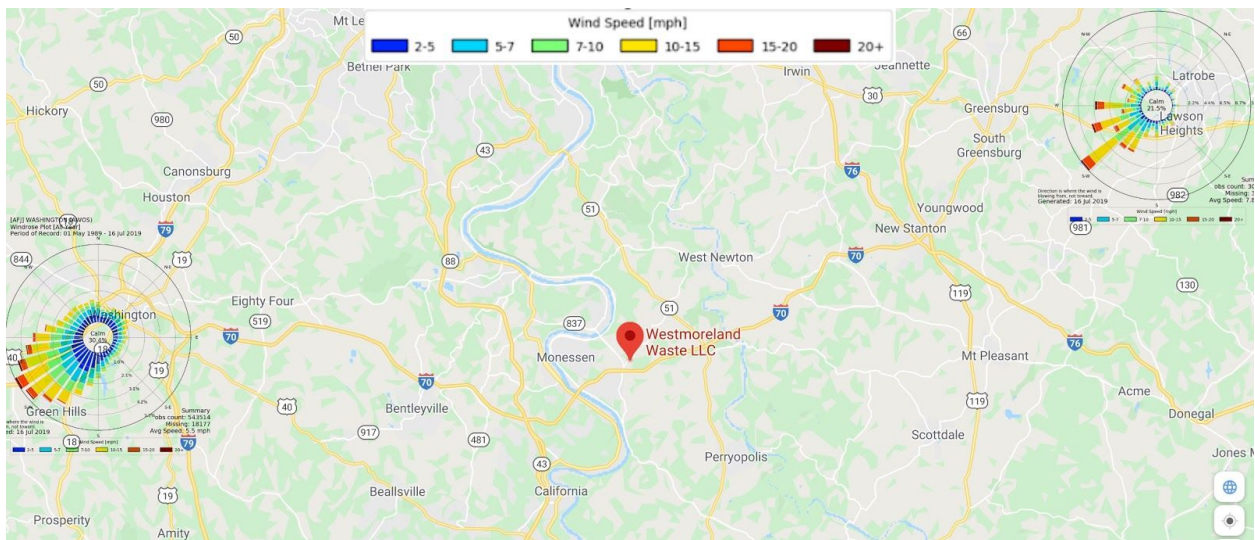


Figure 1: Westmoreland Sanitary Landfill's location in relation to wind data from two local airports showing where the average wind directions for the region are coming from.

The health of sensitive populations such as children and the elderly experience a greater risk from the harmful chemicals emitted from evaporated landfill fluids. Victoria House Personal Care Homes, Inc. and Carousel Daycare are located within a one-mile radius of the Westmoreland Sanitary Landfill and experience the greatest risk of exposure to the emitted pollutants. Since the average wind direction of the landfill is generally North-Northeast and East, facilities with high risk individuals at greater distances in those directions from the landfill, such as the Belle Vernon School District, can also be impacted by the air pollution. These community receptors are a priority to

consider, however sensitive individuals within the community cannot be located as easily and impacts to them cannot be dismissed.

Conclusion

On behalf of Protect PT and Mountain Watershed Association, extensive research has led us to the conclusion that the operation of evaporating leachate will be extremely harmful for the employees, residents of the surrounding areas (especially sensitive populations), and the environment as a whole. This leachate is inherently different from typical landfill leachate due to the landfill's past practice of acceptance of oil and gas waste. Until municipal landfills stop accepting oil and gas waste and take measures to remediate the past oil and gas waste they have accepted, there is no way to safely dispose of or treat this leachate, including evaporation. Accepting this permit would additionally set a questionable precedent statewide, allowing this dangerous process to propagate throughout the area. As we read the notice documents it appears as though this operation will include air permits, and potentially the need for waste and water permits. Without a firm understanding of all permitted aspects of this project, we believe the PA DEP should deny this permit until such a time that the public, local community members, and elected officials can understand the potential impacts. We hope that the information provided will be enough to aid in prohibiting this action to help maintain the health and safety of the surrounding community and workers.

If you have any questions, feel free to contact us at gillian@protectpt.org.

Sincerely,



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