



TOWN OF PERINTON

MEMO

TO: Michael G. Barker, Town Supervisor & the Perinton Town Board

FROM: Perinton Conservation Board

CC: E. Williams, R. Kozarits, R. Place, L. Stid

DATE: 5/8/18

Re: **MEH Consulting: High Acres Landfill – Air Monitoring Summary**

Pursuant to recommendations #2 & #7 made by the Perinton Conservation Board on 1/24/18, the Perinton Town Board has requested that the NYSDEC compel Waste Management (WM) to conduct hydrogen sulfide (H₂S) monitoring and to use this monitoring as a “surrogate” to predicting the presence of other hazardous conditions (e.g. the presence of volatile organic compounds or VOC’s) that could impact area residents that surround the High Acres Landfill facility. Additionally, the Conservation Board suggested that specific H₂S monitoring be conducted at the Northside Dudley Elementary school.

The Town has since retained MEH Consulting, LLC to review the first 5-weeks of monitoring data and render a health-risk assessment. The H₂S monitoring data summary and analysis is attached.



14-216

May 8, 2018

Mr. Michael Barker
Town Supervisor
Town of Perinton
1350 Turk Hill Road
Fairport, New York 14450
Email: mbarker@perinton.org

Re: High Acres Landfill – Air Monitoring Summary
Waste Management Monitoring Stations – Hydrogen Sulfide Data Evaluation
Fairport, New York

Dear Mr. Barker:

ME Holvey Consulting, LLC (“MEHC”) was retained by the Town of Perinton to review and provide support regarding the air monitoring being conducted for ambient hydrogen sulfide levels by Waste Management (“WM”).

The objective of the summary is to evaluate the hydrogen sulfide levels at the five (5) monitoring locations around the perimeter of the High Acres Landfill.

Background

The High Acres Landfill operated by WM has been the source of foul-smelling odors since the Summer of 2017. The odors had been frequent and lasting extended periods of time. The odors have been identified as a “rotten egg” smell and “garbage”.

WM has identified the issues with the landfill gas collection systems and have engineered and installed controls to mitigate the odors. This information can be found on the WM High Acres Landfill website.

As part of the assessment of the on-going mitigation implementation, WM has installed ambient air monitoring devices to assess the hydrogen sulfide concentration around the community surrounding the landfill, including the Dudley Elementary School.

Data provided by WM for the High Acres landfill show the gas generated at this site is composed of approximately:

- 47% methane;
- 33% carbon dioxide;
- 13% nitrogen;
- 1.4% oxygen; and,
- 6% a combination of other gases, including non-methane organic compounds (“NMOCs”) and reduced sulfur compounds such a hydrogen sulfide (“H₂S”).

NMOCs include compounds such as trichloroethylene, benzene, and vinyl chloride. A large fraction of the NMOCs found in landfill gas are volatile organic compounds (“VOCs”). When VOCs combine with nitrogen oxide in the atmosphere they will form ozone. A much smaller fraction of the NMOCs are hazardous air pollutants (HAPs).

NMOCs and hydrogen sulfide typically represent 0.01% – 0.6% and 0% - 1%, respectively, of the total volume of landfill gas.

Hydrogen sulfide levels may also be considered as an indicator of the potential level of individual VOCs. In most cases, landfills do not emit enough VOCs to increase their concentrations above the background levels found in the community.

MEHC evaluated the 2010 WM High Acres Landfill Gas sampling data. The samples were collected from the gas wells for the purpose of the emissions modeling. The samples were measured for VOCs and Sulfur Compounds, including hydrogen sulfide. The data was reviewed and noted the following correlation:

<i>Sample ID</i>	<i>Individual VOC Concentration</i>	<i>H₂S Concentration</i>
LFG-001/005	160 ppb - 22,000 ppb	120,000 ppb
LFG-002/006	150 ppb - 20,000 ppb	150,000 ppb
LFG-003/007	160 ppb - 19,000 ppb	51,000 ppb
LFG-004/008	160 ppb - 19,000 ppb	73,000 ppb

The above data was used for emissions modeling by WM. The concentration of hydrogen sulfide is significantly higher than the individual VOC levels. This supports the concept that low or non-detected hydrogen sulfide levels would also signify much lower VOC concentrations.

Acrulog PPB – Ambient Hydrogen Sulfide Monitor

The Acrulog PPB Hydrogen Sulfide monitors measures low levels of hydrogen sulfide in real time. The Acrulog PPB monitor uses a customized H₂S Electrochemical sensor. The monitor auto zeros before each sample (this adjusts for any temperature change or sensor shift) and the sample stream is humidity conditioned to a constant Relative Humidity. The monitor was factory calibrated prior to installation. Re-calibration is required every six (6) months. A monitor “bump” check is scheduled to be performed monthly.

The resolution of the H₂S PPB monitor is 1 ppb to 2000 ppb. A measurement is taken every 10 minutes with the following cycle:

1. One (1) minute purge
2. Six (6) minute thermal equilibration
3. Three (3) minute sample collection

The air is monitored every 10 minutes in a 24-hour day. To calculate the one-hour average – six (6) data points collected in an hour are averaged. The Acrulog PPB is currently scheduled to continuously monitor the air for 90 days.

Monitoring Station Locations

Five (5) Acrulog air monitors were installed around the North, South, West, and East perimeters of the High Acres Landfill. The monitors are located at the far edges of the landfill in near proximity to communities of concern. One (1) air monitor was also installed on the Dudley Elementary School rooftop.

Hydrogen Sulfide Results – Week 1 through Week 5

Week 1 Monitoring Results (March 6 – March 13, 2018):

The first week of the Air Sampling did not find detectable levels of hydrogen sulfide at the East, West, or Dudley Monitoring Stations.

The North Monitoring Station had one (1) detectable hydrogen sulfide reading of:

- March 8, 2018 at 3:23 pm – 3 ppb.

The South Monitoring Station had three (3) detectable hydrogen sulfide readings of:

- March 7, 2018 at 11:28 am – 5 ppb
- March 7, 2018 at 12:28 pm – 3 ppb
- March 11, 2018 at 6:28 pm – 3 ppb

The levels were below the NYSDEC 10 ppb 1-hour threshold.

Week 2 Monitoring Results (March 13 – March 20, 2018):

The second week of the Air Sampling did not find detectable levels of hydrogen sulfide at any of the air monitoring stations.

Week 3 Monitoring Results (March 21 – March 27, 2018):

The third week of the Air Sampling did not find detectable levels of hydrogen sulfide at the East, West, or Dudley Monitoring Stations.

The North Monitoring Station had one (1) detectable hydrogen sulfide reading of:

- March 21, 2018 at 12:31 pm – 5 ppb.

The South Monitoring Station had three (3) detectable hydrogen sulfide readings of:

- March 21, 2018 at 2:33 pm – 4 ppb
- March 23, 2018 at 8:53 pm – 3 ppb
- March 23, 2018 at 9:03 pm – 6 ppb

The levels were below the NYSDEC 10 ppb 1-hour threshold.

Week 4 Monitoring Results (March 28 – April 3, 2018):

The fourth week of the Air Sampling did not find detectable levels of hydrogen sulfide at any of the air monitoring stations.

Week 5 Monitoring Results (April 4 – April 10, 2018):

The fifth week of the Air Sampling did not find detectable levels of hydrogen sulfide at any of the air monitoring stations.

Action Thresholds

The NYSDEC (6 NYCRR-NY 257-10.3) has a one-hour standard of 10 parts per billion (ppb) or $14.0 \mu\text{g}/\text{m}^3$. The standard is based on the fact that odors can unreasonably interfere with the comfortable enjoyment of life and property. Results below the 10-ppb averaged over one (1) hour are not considered to meet this threshold.

The current air sampling data shows that the hydrogen sulfide readings are not at a level of concern.

Hydrogen Sulfide Information

Hydrogen Sulfide level information provided by the Agency for Toxic Substances & Disease Registry (ATSDR) include the following Minimal Risk Levels (MRLs). MRLs are derived when reliable and sufficient data exist to identify the target organ(s) of effect or the most sensitive health effect(s) for a specific duration for a given route of exposure. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure.

MRLs include ample safety factors to ensure protection of sensitive human populations., including children.

The following are the ATSDR MRLs for hydrogen sulfide:

- ATSDR MRL Acute Duration (1 to 14 days) Inhalation - 70 PPB
- ATSDR MRL Intermediate Duration (>14 to 364 days) Inhalation – 20 PPB

Again, the air testing results at each of the air monitoring stations are below these established thresholds. At this time, odors have become sporadic and transient. The ATSDR thresholds are based on an extended duration and daily exposure.

There have been community concerns regarding the Lyndon Road Baseball fields and the landfill odors. The West Air Monitoring Station has shown no detectable levels of hydrogen sulfide since the installation on March 6, 2018. The Lyndon Road Baseball Fields are beyond this monitoring station which identifies the hydrogen sulfide is not at a level of concern.

The identified hydrogen sulfide levels and therefore, the associated individual VOCs show the concentrations below the potential for health risks.

Please call me at (585) 690-3361 if you have any questions or comments.

Respectfully Submitted,



ME Holvey Consulting, LLC by Mary Ellen Holvey, CIH
Senior Industrial Hygienist

References:

Toxicological Profile for Hydrogen Sulfide and Carbonyl Sulfide
(<https://www.atsdr.cdc.gov/toxprofiles/tp114.pdf>)

Health Consultation - Evaluation of Community Exposures and Concerns Related to
Fenimore Landfill
(https://www.atsdr.cdc.gov/hac/fenimorelandfill_hc_final_may112016_508.pdf)

<https://www.atsdr.cdc.gov/HAC/landfill/html/appe/ctmwlg.pdf>