
Higher Operating Value Demonstrations

What is the Purpose of this Guidance Document?

Standards of Performance for New Stationary Sources (NSPS) 40 C.F.R. §60.753(c) states in part,

“Each owner or operator of a municipal solid waste (MSW) landfill with a gas collection and control system (GCCS) used to comply with 40 CFR, Part 60, Subpart WWW, shall operate each interior wellhead in the collection system with a landfill gas temperature less than 55°C (131°F) and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value (HOV) demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.”

This guidance document is intended to describe information Ohio EPA may consider in evaluating whether an owner or operator of an MSW landfill experiencing higher operating values (HOV) for temperature, nitrogen, or oxygen at any given interior well head has adequately demonstrated that the elevated parameter does not cause fires, contribute to fires, or significantly inhibit anaerobic decomposition by killing methanogens.

When would an owner or operator need to establish a higher operating temperature, nitrogen, or oxygen value?

In accordance with §60.755(a)(5), the owner or operator shall monitor each well monthly for temperature and oxygen or nitrogen as provided in §60.753(c). If, according to §60.753(c), a wellhead is monitored to equal or exceed a temperature of 55^o C (131^o F) or is measured with a nitrogen level of 20% or higher or an oxygen level of 5% or higher, and the owner or operator cannot correct the exceedance then an HOV may be appropriate.

Please note that all efforts to correct the exceedance should be made. These efforts may include, but are not limited to, adjusting the vacuum on the well field, making repairs or improvements to cover soils, adding pumps to remove leachate from extraction wells, etc.

What information should the landfill owner or operator include in an HOV demonstration?

Temperature HOVs

As the landfill gas temperature at a wellhead increases above 55°C/131°F, concern rises over the possibility that a subsurface fire may be the cause of the higher temperature. Higher temperatures may also inhibit anaerobic decomposition by killing methanogens. Before an owner or operator submits an HOV demonstration, all possible corrections to eliminate the exceedance should be explored. After all feasible attempts have been made to correct the exceedance and the temperature remains elevated, then establishment of an HOV may be appropriate. In order to support the position that the elevated temperature is not an indication of an existing subsurface fire, will not cause a landfill fire, or will not kill methanogens to the extent that anaerobic decomposition will be significantly inhibited, the following information should be submitted in the demonstration (this list is not intended to be all-inclusive):

- The date that the exceedance was initially detected.
- A summary of the historical data for the well in question. The summary should include a minimum of six months of past data, construction specifications for the well, description of the cover in the area, the age and type of waste, leachate level in the well, and any other information pertinent to the well. If a well does not have six months of data history, then the data that is available should be submitted.
- A narrative discussion of the steps taken to correct the exceedance.
- A narrative discussion of a physical or visual evaluation performed to determine evidence of fire. This could include, but may not be limited to, flames, embers, smoke, steam, smoldering odors, rapid settlement of waste, char or ash in the gas collection system, etc.

¹ Note: This document was originally published on the date noted above. DMWM re-issued the document to make it consistent with current formatting and publication standards after evaluating the content and determining it is still relevant and appropriate. No substantive changes were made to the document.

Higher Operating Value Demonstrations

- The following data, collected at the well head, should be submitted for the well in question and the immediately surrounding wells:
 - the temperature of the landfill gas;
 - the percentage of the landfill gas that is methane;
 - the percentage of the landfill gas that is oxygen; • the percentage of the landfill gas that is carbon dioxide;
 - the gauge pressure.
- The concentration (in parts per million by volume [ppmv]) of carbon monoxide in the landfill gas for each well for which an HOV is being demonstrated using appropriate techniques suitable for the constituent concentration expected (ASTM D 1945-03, ASTM D1946-90, USEPA methods 3C and 10B, or USEPA method 25C, or other methods accepted by Ohio EPA).
- A summary of all the data collected and a discussion supporting the position that the elevated parameter does not cause a fire, is not the result of a fire, and does not significantly inhibit anaerobic decomposition by killing methanogens.
- The Higher Operating Value included in the demonstration should not exceed the actual measured maximum temperature for each well for which an HOV is being demonstrated.

Oxygen or Nitrogen HOVs

An increase in the concentration of oxygen or nitrogen in the landfill gas is likely due to excess air infiltration into the landfill. Whether through loose connections in the gas collection and control system, poor or damaged cover, the over application of vacuum to the system, etc., an elevated nitrogen or oxygen concentration should be correctible through operational adjustments or facility maintenance. Once all potential corrections have been exhausted, if the parameter remains elevated, as a last resort the establishment of an HOV may be appropriate. The same information that is submitted for a temperature HOV demonstration should also be submitted for an oxygen or nitrogen HOV.

How will these HOV demonstrations be evaluated

HOV demonstrations should be sent to Ohio EPA, Division of Air Pollution Control (DAPC), Central Office (CO) and District Office or Local Air Agency (DO/LAA) and the Division of Materials and Waste Management District Office (DMWM DO) within 75 days of the date that the exceedance was initially detected. An alternative timeline request should precede the HOV request and is required to be submitted within 15 days of the initial exceedance.

All demonstrations received will be evaluated based on the data submitted. All demonstrations will need to show that the owner or operator has made appropriate efforts to correct the exceedance prior to submitting the demonstration. All demonstrations will need to show a proper evaluation for any evidence of fire and evidence that there is no significant inhibition of anaerobic decomposition by killing methanogens. In general, Ohio EPA DAPC will be able to concur with demonstrations for temperature HOVs for wells with all of the following parameter levels measured at the well head:

- landfill gas temperature at 150°F or below;
- landfill gas composed of no less than 45% methane;
- landfill gas composed of no more than 1.5% oxygen;
- landfill gas with no more than 100 ppmv carbon monoxide;
- landfill gas with balance gas less than or equal to 8.5%;
- landfill gas with the ratio of the percent methane to the percent carbon dioxide in the landfill gas no less than 1.0.

Any wells experiencing elevated temperatures that do not conform to the above parameters and any HOV demonstrations submitted for elevated oxygen or nitrogen will be subject to a more comprehensive evaluation.

What will be required once DAPC has concurred with an HOV demonstration?

Because landfill conditions may change, as a condition of its concurrence, Ohio EPA will likely require the owner or operator to monitor the landfill gas at the wellhead monthly for the percentage of methane and the percentage of carbon dioxide; and quarterly for the concentration of carbon monoxide (in ppmv) using appropriate techniques suitable for the constituent concentration expected (ASTM D 1945-03, ASTM D 1946-90, USEPA methods 3C and 10B, or USEPA method

Higher Operating Value Demonstrations

25C, or other methods acceptable to Ohio EPA). This monitoring data should be submitted to DAPC/DMWM in semiannual reports.

As long as the parameters that were met when concurrence was given remain in the acceptable range, Ohio EPA's concurrence should continue without a new demonstration. Should any of the parameters fall outside of the acceptable range as described in the concurrence letter, the owner or operator should notify DAPC/DMWM within 15 days and submit a new demonstration as described above if the exceedance cannot be corrected.

If a well returns to the operating range allowed by §60.753(c) of the NSPS, the owner or operator may notify Ohio EPA DAPC/DMWM by letter that they wish to abandon the higher operating value for that well. Upon doing this, the owner or operator would no longer need to perform the additional monitoring for the well. However, if the wells begin to experience higher operating levels again, a new HOV demonstration would need to be submitted as described above.

For additional information regarding this document, please contact Cheryl Suttman at (614) 644-3617.

Disclaimer

This guidance is based on the NSPS, 40 CFR Subpart WWW as exists on October 4, 2010. The procedures set out in this document are intended solely for guidance of government personnel. The procedures are not intended and cannot be relied upon to create rights, substantive or procedural, enforceable by any party against Ohio EPA. While this guidance document is not legally binding, all statutes and rules referenced herein are binding and enforceable. Ohio EPA reserves the right to vary this guidance or to change it at any time without public notice and also reserves the right to deviate from this guidance on a case-by-case basis.