

PA DEP Revises Air Quality BAT Standards for MSW Landfills

The Pennsylvania Department of Environmental Protection (PADEP) revised the Best Available Control Technology standards (BAT) for Municipal Solid Waste (MSW) Landfills on June 27, 2009. The new BAT requirements apply to new and/or proposed expansion of MSW landfills and will not be applied retroactively.

A Plan Approval is required for new MSW landfills, associated gas collection systems and air cleaning devices if the estimate VOC emissions are greater than 2.7 TPY. A Plan Approval is also required for the expansion of an existing MSW landfill if the estimated VOC emissions from the expansion are greater than 2.7 TPY.

A Plan Approval may also be necessary for the expansion if the increase in VOC emissions is greater than 1 TPY. A Request for Determination (RFD) should be submitted when the estimated increase in VOC emissions is between 1 TPY and 2.7 TPY.

Gas Collection Systems at Active Landfills

If proposed emissions of VOCs are less than 2.7 TPY but greater than 1 TPY: the BAT for the MSW landfill will be determined on a case-by-case basis.

If the proposed emissions of VOCs are greater than 2.7 TPY and the capacity is less than or equal to 1 million tons of solid waste the following BAT applies:

- (1) The owner should install an active gas collection system that collects gas from the entire MSW landfill that warrants control over the intended use period of the gas control and treatment system and accommodate the maximum proposed gas flow rate.
- (2) The collected landfill gas should be treated for subsequent use or sale or controlled by one of the following: (a) horizontal incinerator, (b) boiler, (c) enclosed flare (d) internal combustion engine (e) combustion turbine, (f) carbon adsorption system or (g) other approved technology. Open or Candlestick flares may be installed and operated in accordance with the BAT.
- (3) The control system must be designed to achieve the less stringent of the following: (a) DRE of at least 98% of NMOC **OR** (b) an outlet NMOC concentration less than 20 ppm (by volume, dry basis, as hexane corrected at 3% oxygen). The previous BAT required a DRE of 98%.
- (4) For combustion devices fueled by untreated landfill gas, source tests should be conducted for (a) DRE or outlet concentration of NMOC corrected to 3% oxygen (b) NO_x measured as NO₂ (c) CO (d) VOCs as hexane and (e) Formaldehyde for internal combustion engines or combustion turbines.
- (5) Source tests may be performed at different temperatures. DEP will not accept a source test temperature less than 1500°F unless it is explicitly approved in a Plan Approval and in the stack test protocol.
- (6) The operating temperature should be continuously measured and recorded for the combustion zone of the horizontal incinerator or enclosed flare. Records must be maintained
- (7) An enclosed combustor should maintain for a 3 hr period an average combustion temperature no more than 28°C below the average combustion temperature during the most recent performance test, if no performance test was conducted than a minimum temperature of 1500°F. This is a new requirement for the BAT standard and is in line with the New Source Performance (NSPS) requirements.
- (8) BAT for combustion turbines may be determined the requirements of 40 CFR 60 Subpart WWW and Subparts GG or KKKK and emission limits in the General Permit for Landfill Gas Fires Simple Cycle Turbines.
- (9) BAT for reduction of NO_x from a boiler may be: (a) Low NO_x or Ultra-low NO_x burners, (b) selective non-catalytic reduction system or (c) other approved technology.
- (10) The BAT for reduction of NO_x from an internal combustion engine is lean burn or other approved technology.
- (11) Air cleaning devices should be installed, operated and maintained in accordance with manufacturer specifications.
- (12) Landfill gas leaks which result in concentrations of 500 ppmv or more at a distance of 0.5 inches from any equipment. The standard identifies what constitutes routine maintenance, unlike the previous BAT.
- (13) The comparison of theoretical and actual landfill gas collection rates should be included in the annual emission statement.

PA DEP Revises Air Quality BAT Standards for MSW Landfills

- (14) If landfill gas that is routed to a treatment system that processes the collected landfill gas for subsequent sale or beneficial reuse it meets the BAT standard if it is processed in accordance with 40 CFR §60.752 (b)(2) (iii)(C).
- (15) An emission limit for VOC will be established in the Plan Approval.

Special Requirements for Enclosed Flares

The BAT adds requirements for enclosed flares. Additional requirements include the following:

- (1) Flares should maintain, for each 3-hr period, an average combustion temperature of no more than 28°C below the average combustion temperature of the most recent performance test or a minimum of 1500°F.
- (2) Enclosed flares may be operated at a lower temperature provided that they have demonstrated that they will achieve a DRE of 98% or 20 ppm_{dv}. A Plan Approval must be submitted to make the lower temperature enforceable. DEP will not approve an operating temperature less than 1200°F.
- (3) The flue gas temperature should be measured and recorded per the manufacturer's specifications. The temperature in the combustion zone should be used to determine compliance with the minimum temperature requirements.

Open Flares

BAT standards have been added for Open Flares.

Standards for Beneficial Use:

- (1) Flare limited to 500 dscfm at 50% methane.
- (2) Total Landfill Gas (LFG) combusted must not exceed either 500 dscfm at 50% methane or 20% of total LFG flow at 50% methane.
- (3) Higher flow rates may be approved if the company provides a detailed technical and economic analysis.
- (4) LFG combusted in an open flare should not exceed the minimum flow necessary to support combustion in the facility's enclosed flare.
- (5) The open flare must be designed in accordance with requirements in 40 CFR 60.18.

- (6) Daily monitoring of the flow or temperature and flow rate of the LFG combusted in the open flare. (at minimum)
- (7) Daily recording of the amount of LFG combusted in the flare. All flares should be equipped with an automatic pilot ignition source.
- (8) The open flare should be operated with a flame present at all times.
- (9) It should be equipped with an automatic shutoff mechanism.
- (10) Open flares should be located to mitigate visual impacts.
- (11) Passive control devices such as vent or wellhead flares may be considered in a case-by case basis.

Control of LFG Other Than Beneficial Use

Open flares may be proposed for MSW landfills that have a design capacity less than or equal to 1 million tons. Open flares may be used in specific prescribed situations without beneficial use projects, including:

- (1) For temporary control of landfill gas from areas that have not yet been connected to primary gas collection systems for an initial period not to exceed 180 days with flow not to exceed 500 dscfm.
- (2) For temporary control of LFG from areas where an enclosed flare is unsafe or infeasible for an initial period not to exceed 180 days. Flow cannot exceed 500 dscfm.
- (3) An open flare can be used as a backup control device only when the primary control is not operational. Maintenance and repair records should be kept.
- (4) Operation of the open flare can be extended for 180 days by submitting an RFD.
- (5) Daily monitoring is required for the flow or temperature and flow rate.
- (6) Daily recording is required of the amount of LFG combusted.
- (7) Open flares should be equipped with an automatic ignition source.
- (8) The flare should be operated with a flame present at all times.
- (9) The open flare should be equipped with an automatic shut-off mechanism
- (10) The flare should be designed and operated in accordance with 40 CFR 60.18.
- (11) The flare(s) should be located to mitigate visual impacts.

PA DEP Revises Air Quality BAT Standards for MSW Landfills

- (12) Passive control devices may be considered on a case-by-case basis.

Leachate Storage

The Leachate storage standards have been completely replaced. For new landfills, expected VOC emissions from Leachate storage will be quantified in a Plan Approval application. Where VOC emissions are expected to be greater than 1 TPY, BAT will be determined on a case-by-case basis. For existing landfills, an RFD should be submitted for the addition of Leachate storage when VOC emissions increase is expected to be between 1 TPY and 2.7 TPY. When VOC emissions increase from a new or expanded Leachate storage system is greater than 2.7 TPY a Plan Approval and case-by-case BAT determination will be required.

The standard no longer specifies that open storage or uncontrolled stripping of VOCs is prohibited. The new standard also no longer specifies that enclosed Leachate or condensate storage systems may be exempt from permitting requirements.

Leachate Recirculation

The leachate recirculation section is a new section to the BAT standard. A Plan Approval application must clearly state the intent to begin leachate recirculation and the LFG collection system and air cleaning device must be sized for the expected maximum amount of LFG.

For an existing MSW landfill, the proposal to imitate recirculation will constitute a change in the method of operation of the source and the increase in maximum VOC emissions must be quantified and submitted to DEP prior to implementation. Precontrol maximum VOC emission increases of 2.7 TPY or more will be subject to Plan Approval requirements. Pre-control VOC emission increases less than 2.7 TPY may not be subject to Plan Approval requirements but an RFD must be submitted.

Landfill Fugitives

The BAT standards for landfill fugitives have been revised and requirements have been added. The revised BAT has been clarified to allow landfill owners and operators determine their site specific Best Management Practices (BMP), which would include **one or more** of the requirements listed in the revised BAT.

A summary of the revised BAT standards follows.

- (1) The BMPs for paved and unpaved internal roadways include but are not limited to sweeping and/or use of a tire washing system. Whether tire washing or sweeping is necessary, is a function of actual daily site conditions. This revision makes the standard dependent on daily site conditions, unlike the previous BAT standard.
- (2) The revised BAT clarifies that water or other chemical dust suppressants **could** be applied to unpaved road surface to reduce fugitive dust if necessary based on daily site conditions. This revision makes the standard dependent on daily site conditions, unlike the previous BAT standard.
- (3) An appropriate speed limit will be established within 120 days of the issuance of the Plan Approval. This differs from the previous BAT that required a speed limit of 15 mph on paved roads and 10 mph on unpaved roads.
- (4) Parking lots/areas and landfill access roads and other roads inside landfill: shall be paved, maintained and cleaned by vacuum sweeping or other approved means. Vacuum sweeping shall be performed **when necessary**. This provision differs from the previous BAT standard which required weekly cleaning of the parking lots/areas and daily cleaning of the access roads.
- (5) The use of water or chemical dust suppressants on access roadways should be applied as needed as opposed to at least once a month as in the previous BAT.
- (6) Landfills must take all reasonable steps necessary to prevent earth or other material from being deposited on public roadways.
- (7) The BAT no longer specifies that trucks must be covered when entering the landfill.
- (8) Recordkeeping and reporting – A written manual documenting the BMPs that are utilized and sufficient records demonstrating implementation of the BMPs should be maintained onsite for 5 years. This differs from the specific requirements for daily logs of roadway treatment and quarterly reports required by the previous BAT. The previous BAT had a retention time of 2 years. 