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Landfill Active Gas Collection System

An active gas collection system may be installed at a municipal solid waste landfill to flare landfill gas or for gas recovery and use as fuel. Installation of an active gas collection system may be required for a facility subject to the New Source Performance Standards (NSPS) of 40 CFR Part 60, Subpart WWW, or if a facility wishes to accept yard waste year-round. This guidance, however, does not specifically address the gas collection systems of a bioreactor landfill.

General Criteria

A modified permit application submitted to the NDEQ should address the following:

1. Gas Collection/End Use Overview.

- The modified permit application should provide an overview of the gas collection system and end use of the gas collected. Gas collected from the landfill may be flared or collected for energy recovery for use as a fuel. The gas character, quality, and estimated quantity should be included in the application. The application also should identify if the active gas collection system is required to comply with Nebraska Air Quality Regulations, Title 129, Chapter 18, Section 004.01 (NSPS Subpart WWW), and if not, whether the landfill anticipates future applicability of this regulatory requirement. If the active gas collection system is not being installed as a regulatory requirement and is being installed solely as an energy recovery application, a description of the fuel end use should be included as well as a detailed engineering economic analysis.

2. System Design.

- The modified permit application should address the design of the active gas collection system. System design aspects to be addressed include but are not limited to the following:
- Active gas collection system:
 - a. Gas extraction wells used to collect gas from the landfill.
 - Gas Extraction Wells:
 - i. Control valves on gas extraction wells to regulate vacuum.
 - ii. Gas extraction wells placed in waste from 50 to 90 percent of the total depth of waste.

- iii. Gas extraction wells constructed with well casing and/or slotted plastic pipe.
 - iv. The number and spacing between each gas extraction well (dependent on waste type, depth, and compaction; pressure gradients created by the vacuums; and the moisture content of the gas).
 - b. Lateral piping connecting extraction well system and sloped to direct condensate to knockouts or container systems.
 - c. Gas control equipment, including vacuums and piping, capable of handling the maximum gas production generation rate.
 - d. Design considerations that account for landfill settlement.
- Drawings:
 - a. A site plan showing the landfill areas that will have gas extraction wells, including collector pipes and lateral pipes.
 - b. Design details for the wells, vacuums, and piping.

3. Operation and Maintenance (O&M).

The permit application should address O&M concerns of an active gas collection system to include:

- a. Condensation and gas production equipment.
- b. Monitoring and adjustment of system vacuum.
- c. Monitoring and adjustment of compressed gas pressure.
- d. Measurement of gas generation.
- e. Monitoring of gas quality.
- f. Monitoring and adjustment of flow from individual extraction wells.
- g. Installation of valves, pressure transducers/gauges, condenser, sampling ports at collection wells, compressors and/or flow controllers.
- h. Landfill settlement O&M concerns.

Facility Operations.

- Address any facility operations affected with the installation of a gas collection system. Changes in facility operations may include, but are not limited to, the application of daily cover, use of alternate daily cover, leachate handling operations, acceptance of yard waste year-round, etc.

Construction Quality Assurance (CQA).

- The CQA plan must include construction activities pertaining to the active gas collection system (materials quality, installation quality, etc.). All items are critical and must have appropriate monitoring and observation. Repairs also need CQA.

Other Regulatory Considerations.

- When considering the installation of an active gas collection system, the facility should be aware that any on-site combustion of gas may trigger the need for an air quality construction permit. A source cannot begin construction of a combustion device without

an air quality permit determination and, if necessary, a construction permit. In addition, if the facility believes it will become subject to the New Source Performance Standard (NSPS) – Subpart WWW, installation should meet the requirements of the NSPS. The Air Quality Division should be contacted for further information on air quality permitting requirements, Subpart WWW, and other air quality regulatory requirements that may be applicable to your facility.

Contingency Plan.

- The contingency plan included with the permit application should address any reasonably foreseeable events to include the interruption of the fuel end use.

Closure and Post-Closure Plans.

- The facility closure plan should include all additional activities required to close the facility as a result of the installation of an active gas collection system. The facility post-closure plan should include all additional maintenance requirements to maintain/operate the active gas collection system after closure of the facility.

Financial Assurance.

- Closure and post-closure cost estimates should include any foreseeable additional costs associated with an active gas collection system. Financial assurance is established based on these cost estimates.

Public Notice Requirements

New permit applications and/or permit modifications must be submitted, approved, and processed through a 30-day public notice period (possibly followed by a public hearing) prior to beginning the installation/construction of an active gas collection system. All public notice periods begin after the NDEQ determines the application/modification is administratively complete. If substantive comments are received during the 30-day public notice period a public hearing may be granted which requires an additional 30-day public hearing notification period plus response time for the NDEQ.

RESOURCES:

- NDEQ Home Page <http://deq.ne.gov/>

Contacts:

- NDEQ Waste Management Section (402) 471-4210
- NDEQ Toll Free Number (877) 253-2603
- NDEQ Hazardous Waste Compliance Assistant (402) 471-8308
- Email questions to: NDEQ.moreinfo@nebraska.gov

NDEQ Publications:

- [Title 132 – Integrated Solid Waste Management Regulations](#)
Titles are available on the NDEQ Home Page under “Laws/Regs & EQC”, “Rules & Regulations”