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Landfill Methane Production Using Yard Waste

As the cost of traditional fuels have increased over time, there has been an increased interest in using methane generated in municipal solid waste disposal facilities to fuel industrial processes. The Douglas County Recycling and Disposal facility operates a facility where methane from landfill gas is used to fuel internal combustion engines which in turn run generators to produce electricity. The electricity is fed into the local power grid for residential use.

Methane is produced in landfills by the anaerobic decomposition of organic waste. One of the ways to enhance the production of methane in landfills is to add yard waste to the municipal solid waste being disposed.

Disposal of yard waste in a municipal solid waste landfill is restricted in Nebraska. State statutes prohibit disposal of yard waste in landfills from April 1 through November 30. Yard waste can be used for soil conditioning or composting all year long. One exception to this restriction is when the yard waste is placed in a permitted landfill and used as part of a system to produce methane as a fuel source. The system must include an active landfill gas collection system and a legitimate user of the methane fuel. Nebraska statutes at Section 13-2039 require approval by the Nebraska Department of Environmental Quality (NDEQ) before a landfill starts to use yard waste in a system to produce methane fuel. Separate guidance, "Landfill Active Gas Collection System", has been developed on the design, construction and operation of active landfill gas collection systems. The methane collection system design should address all of the concepts and concerns in that guidance, which can be found on the NDEQ web site <http://deq.ne.gov/>. Guidance documents related to solid waste management are found by clicking "Publications & Forms", then "Integrated Waste Management".

General Criteria

Obtaining NDEQ approval to operate a methane fuel recovery system using yard waste involves a major modification of the landfill's operating permit. A request for a permit modification must be submitted by the landfill permittee. The modification request will be evaluated by the Department, a tentative determination to approve or deny the modification will be made, and a public notice of the Department's intention will be issued. The request should include, at a minimum, the following items:

1. A permit modification fee of \$7,500.
2. The quantity of yard waste expected to be placed in the landfill per year.
3. The method of yard waste placement.
4. The area of the landfill where the yard waste will be incorporated.
5. The design and operating plan of the active gas collection system.
6. A description of the system used for conditioning the landfill gas.
7. A construction quality assurance plan.
8. A copy of the end user's agreement to use the methane as fuel.

9. A plan for discontinuing use of yard waste if the methane end user stops using the fuel.

The landfill owner and operator have a plan to manage yard waste if the user of the methane fuel no longer uses the fuel. If the methane is not used for fuel by a legitimate facility, yard waste cannot be placed into the landfill between April 1 and November 30. An alternate disposal method for the yard waste will have to be planned for and homeowners may need to be educated in other ways to manage their yard waste.

Disposal of yard waste in a landfill to enhance methane generation does not exempt the landfill from the disposal fee requirement. NDEQ Title 132, Chapter 11 requires every municipal solid waste landfill to pay the Department a disposal fee of \$1.25 for each ton or each volume of six cubic yards of waste disposed.

Nebraska statutes require Integrated Solid Waste Management Plans to be in place on behalf of each county and municipality. Changing the management of yard waste in any given area may necessitate modification of these plans. The requirements for these plans can be found in the Integrated Solid Waste Management Act, Nebraska Revised Statutes 13-2031 and 13-2032. The statutes require that the plans address the reduction and recycling of yard waste, along with the reduction and recycling of unregulated hazardous waste, discarded tires, waste oil, lead-acid batteries, and discarded household appliances.

RESOURCES:

- NDEQ Home Page <http://deg.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:

- NDEQ Guidance Document – Landfill Active Gas Collection System
Guidance is available on the NDEQ Home Page under “Publications & Forms”
- [Title 132 – Integrated Solid Waste Management Regulations](#)
Titles are available on the NDEQ Home Page under “Laws/Regs & EQC”, “Rules & Regulations”