

**SOLID WASTE MANAGEMENT DIVISION
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AGENCY OF NATURAL RESOURCES
STATE OF VERMONT**

**PROCEDURE ADDRESSING EXPLOSIVE GAS CONTROL AT
MUNICIPAL SOLID WASTE LANDFILLS**

May 27, 1994

ADOPTED:

**Barbara Ripley, Secretary
Agency of Natural Resources**

Date

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I. INTRODUCTION

Methane is created in solid waste landfills by the decomposition of organic wastes in an anaerobic environment. Methane in its pure form is less dense than air, is colorless and odorous, and may cause asphyxiation in confined spaces. Methane is also extremely explosive in concentrations between five and fifteen percent. For these reasons, methane emissions from landfills must be controlled.

On October 9, 1993, the RCRA Subtitle D regulations, 40 CFR Part 258 went into effect. The effective date was delayed until April 9, 1994, for any existing municipal solid waste landfill ("MSWLF") units that disposed of 100 tons or less of waste per day. Section 258.23 requires owners and operators of any MSWLF to ensure that the concentration of methane generated by the MSWLF not exceed 25 percent of the lower explosive limit ("LEL") in on-site structures, or the LEL itself at the facility property boundary. The owner or operator must implement a routine monitoring program, with at least a quarterly monitoring frequency. If the methane concentration limits are exceeded, the owner or operator must notify the Agency, propose a remedial plan, and implement the plan.

The current Vermont Solid Waste Management Rules require that facilities be designed to minimize the possibility of an emission of contaminants from the facility, and should an emission occur, the threats to public health or the environment shall also be minimized. Section 6-606(b)(2)(H) requires disposal facilities to assure control and treatment, if necessary, of gases resulting from the decomposition of wastes to prevent hazards to public health and safety, the environment, or the creation of a nuisance. The current Rules contain no specific gas concentration thresholds, monitoring requirements, or remedial action timeframes.

This procedure addresses the requirements for the management of methane gas emissions from MSWLFs only. This procedure does not address emission rates, collection, or treatment of non-methane organic compounds (NMOCs) emissions, or landfill gas collection and treatment. In accordance with the Vermont Air Pollution Control Regulations and the proposed Federal New Source Performance Standards for MSWLFs (NSPS Subpart WWW) non-methane compound emissions are regulated by the Air Pollution Control Division.

II. Definitions

Lower Explosive Limit (LEL) means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25° C and atmospheric pressure.

III. Requirements

Specifications of the explosive gas control system shall be contained in an application for facility certification.

MSWLF units shall be designed to ensure that the concentration of methane gas does not exceed 25 percent of the LEL for methane in facility structures or other buildings on the facility property. "Facility structures" includes those structures housing gas control or collection system components, but excludes the components themselves. MSWLF units shall also be designed so that the concentration of methane gas does not exceed the LEL for methane at the facility property boundary.

Facilities shall be designed with an adequate methane monitoring system to ensure that the concentration thresholds are not exceeded. The monitoring system shall be designed based on soil characteristics, hydrogeologic and hydraulic conditions, the location of facility structures and other on-site buildings, and the location of property boundaries, and the location of off-site structures.

Monitoring frequency shall be conditioned in the facility certification but shall be no less than monthly for the detection of off-site migration of methane, and no less than weekly to detect the presence of methane in facility structures and other buildings on the facility property.

If methane levels exceeding the thresholds established above are detected, the MSWLF permittee shall:

- (1) Immediately take all steps necessary to ensure protection of human health and safety;
- (2) Within 24 hours of detection notify the Solid Waste Management Division (802-241-3444, 8 am - 4:30 pm, M - F), or the Hazardous Materials Emergency Hotline (1-800-641-5005), and in the instance of off-site migration, the affected property owner as well;
- (3) Within 30 days of detection, submit a remedial action plan for the gas releases to the Agency for approval; and
- (4) Implement the approved plan in accordance with a compliance schedule established by the Agency.