

(f) Monitoring Requirements

- (1) *Instantaneous Landfill Methane Surface Monitoring Requirements:* Any owner or operator of a MSW landfill with a gas collection and control system shall conduct monitoring of the landfill surface on a monthly basis using the procedure specified in subsection (h)(3).
- (A) Any reading exceeding the limit specified in subsection (e)(3) shall be recorded as an exceedance and the following actions shall be taken:
1. The owner or operator shall record the date, location, and value of each exceedance. The location of each exceedance shall be clearly marked or identified by using a global positioning system and recorded on a topographic map of the landfill, drawn to scale with the location of the gas collection system clearly marked and identified.
 2. The owner or operator shall initiate corrective action, such as cover maintenance or well vacuum adjustments, to correct the exceedance within 5 calendar days of discovery.
 3. The location of the exceedance shall be re-monitored within 10 calendar days of the date that the exceedance was first discovered.
 - a. If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be re-monitored again no later than 10 days after the second exceedance.
 - b. If the re-monitoring shows a third exceedance, it shall be a violation unless the owner or owner or operator determines that a new or replacement gas collection well is needed. The owner or owner or operator must install and operate the new or replacement well no later than 45 days after detecting the third exceedance.
- (B) Any active MSW landfill that has no monitored exceedances of the limit specified in subsection (e)(3) after 12 consecutive monthly monitoring periods may monitor quarterly. Any reading of 200 ppmv or more of methane detected during quarterly monitoring or compliance inspections shall result in a return to monthly monitoring of the landfill surface.

- (C) Any closed or inactive MSW landfill that has no monitored exceedances of the limit specified in subsection (e)(3) after 12 consecutive monthly monitoring periods may monitor quarterly. Any reading of 200 ppmv or more of methane detected during quarterly monitoring or compliance inspections shall result in a return to monthly monitoring of the landfill surface.
 - 1. If there has been no monitored exceedances of the limit specified in subsection (e)(3) after 4 consecutive quarterly monitoring periods, the owner or operator may monitor annually.
 - 2. Any reading of 200 ppmv or more of methane detected during annual monitoring or compliance inspections shall result in a return to monthly monitoring of the landfill surface.
- (2) *Gas Control System Equipment Monitoring:* The owner or operator shall monitor the gas control system using the following procedures:
 - (A) For an enclosed combustor the following equipment shall be installed, calibrated, maintained, and operated according to the manufacturer's specifications:
 - 1. A temperature monitoring device equipped with a continuous recorder which has an accuracy of plus or minus (\pm) one percent of the temperature being measured expressed in degrees Celsius or Fahrenheit. A temperature monitoring device is not required for boilers or process heaters with design heat input capacity greater than 44 megawatts.
 - 2. At least one gas flow rate measuring device which shall record the flow to the control device(s) at least every 15 minutes.
 - (B) For a gas control device other than an enclosed combustor, demonstrate compliance by providing information satisfactory to the Enforcement Agency describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures. Alternatives to this rule shall be submitted as specified in subsection (e)(1)(A)(5). The Enforcement Agency may specify additional appropriate monitoring procedures.
 - (C) The gas control system shall be monitored monthly for component leaks. Any exceedances of the limit specified in subsection (e)(2)(A)2 shall be recorded pursuant to subsection (g)(1)(E).

- (3) *Well Head Monitoring:* The owner or operator shall monitor each individual wellhead on a monthly basis for gauge pressure, landfill gas temperature, and oxygen. If any exceedance of a limit specified in subsections (f)(3)(A), (f)(3)(B), or (f)(3)(C) is detected, the following actions shall be taken:
- (A) The owner or operator shall record the date, exceedance value, well identification number, and corrective actions taken.
 - (B) The owner or operator shall initiate action to correct the exceedance within 5 calendar days of discovering the problem.
 - (C) If the exceedance cannot be corrected within 15 days of the date that the problem was first discovered, the owner or operator shall initiate further action, including, but not limited to, any necessary expansion of the gas collection system, to correct the exceedance.
 - (D) Any expansion of the gas collection system shall be completed and all new wells shall be operating within 120 days of the date that the problem was first discovered.

(g) Recordkeeping and Reporting Requirements.

- (1) *Recordkeeping Requirements.*
- (A) The owner or operator shall maintain the following records for at least five years:
 - 1. All gas collection system downtime, including individual well shutdown times, and the reason for the downtime.
 - 2. All emission control system downtime and the reason for the downtime.
 - 3. Continuous gas flow rate records and temperature for all operating flares and enclosed combustors.
 - 4. Maximum expected gas generation flow rate as calculated in subsection (h)(6).
 - 5. Monthly landfill gas flow rates and well concentration readings for landfills which have been approved by the Enforcement Agency to operate the gas collection and control system less than continuously.

6. Records of all component leak testing and landfill surface monitoring dates, tagged leaks in exceedance of the limits in subsections (e)(2)(A)2 or (e)(3), including the location of the leak, leak concentration in ppmv, date of discovery, the action taken to repair the leak, date of repair, well construction date, date of any required re-monitoring, and the re-monitored concentration in ppmv.
7. Records of all wellhead monitoring dates, any exceedances of the limits stated in subsection (e)(4), including: well identification number, the measured exceedance, the action taken to repair the exceedance, and the date of repair.
8. Annual waste acceptance rate and the current amount of waste-in-place.
9. Records of the nature, location, amount, and date of deposition of non-degradable wastes for any landfill areas excluded from the collection system requirement as documented in the Gas Collection and Control System Design Plan.
10. Records for periods of operation during which the parameter boundaries established during the most recent source test are exceeded. The following constitute exceedances that shall be recorded:
 - a. For enclosed combustors except for boilers and process heaters with design heat input capacity of 44 megawatts (150 MMBTU/hr) or greater, all 3-hour periods of operation during which the average combustion temperature was more than 28 degrees Celsius (82 degrees Fahrenheit) below the average combustion temperature during the most recent source test at which compliance with subsections (e)(2)(B) or (e)(2)(C) was determined.
 - b. For boilers or process heaters, whenever there is a change in the location at which the vent stream is introduced into the flame zone as required under subsection (e)(2)(C)1.a.
 - c. Any owner or operator who uses a boiler or process heater with a design heat input capacity of 44 megawatts or greater to comply with subsection (e)(2)(C) shall keep records of all periods of operation

of the boiler or process heater (e.g., steam use, fuel use, or monitoring data collected pursuant to other State, local, Tribal, or Federal regulatory requirements).

- (B) The owner or operator shall maintain the following records for the life of the gas control device:
1. The control device vendor specifications.
 2. The maximum expected gas generation flow rate as calculated in subsection (h)(6).
 3. For an enclosed combustor (except boiler and process heater greater than 44 megawatts), the average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.
 4. Results of the source test conducted pursuant to subsection (e)(2)(D).
 5. The percent reduction of methane.
 6. For a boiler or process heater of any size, the description of the location at which the collected gas vent stream is introduced into the boiler or process heater over the same time period of the performance test.

(2) *Reporting Requirements.*

- (A) *Closure Report:* Any owner or operator of a MSW landfill which has ceased accepting waste shall submit a Closure Report to the Enforcement Agency within 30 days of waste acceptance cessation. The Enforcement Agency may request additional information as necessary to verify that permanent closure has taken place in accordance with the requirements of any applicable State, Federal, or local statutes, regulations, and ordinances in effect at the time of closure.
- (B) *Equipment Removal Report:* A gas collection and control system Equipment Removal Report shall be submitted to the Enforcement Agency 30 days prior to well capping, removal or cessation of operation of the gas collection, treatment, or control system equipment. The report shall contain all of the following information:

1. A copy of the Closure Report submitted pursuant to subsection (g)(2)(A).
2. A copy of the initial Source Test Report or other documentation demonstrating that the gas collection and control system has been installed and operated for a minimum of 15 years.
3. All records needed to verify that landfill methane surface concentration measurements do not exceed 200 ppmv at any point of the landfill surface pursuant to subsection (e)(3).

(C) *Annual Report:* Any operator or owner subject to the requirements of subsection (e)(2) shall prepare an annual report for the period of January 1 through December 31 of each year. The annual report shall be submitted to the Enforcement Agency by March 15 of the following year. The annual report shall contain the following information:

1. Landfill name, owner and operator, address, and solid waste information system (SWIS) identification number.
2. Total volume of landfill gas collected (reported in standard cubic feet).
3. Composition of the landfill gas collected (reported in percent methane and percent carbon dioxide by volume).
4. Gas control device type, year of installation, rating, fuel type, and total amount of landfill gas combusted in each control device.
5. The date gas collection and control system was installed and in full operation.
6. The percent methane destruction efficiency of each gas control device(s).
7. Type and amount of supplemental fuels burned with the landfill gas in each device.
8. Total volume of landfill gas shipped off-site for combustion, the composition of the landfill gas collected (reported in percent methane and percent carbon dioxide by volume), and the recipient of the gas.

9. The landfill's estimated waste-in-place, in tons.
10. Percentage of area with final cover and a geomembrane.
11. Percentage of area with final cover but without a geomembrane.
12. The information required by subsections (g)(1)(A)1, (g)(1)(A)2, (g)(1)(A)6, (g)(1)(A)7, (g)(1)(A)8, and (g)(1)(B)4.

(D) *Reporting Requirements for Landfills Exempted Pursuant to Subsections (c)(1) and (c)(2):* Any owner or operator seeking an exemption under subsections (c)(1) and (c)(2) shall report the following information:

1. Landfill name, owner and operator, address, and solid waste information system (SWIS) identification number.
2. The landfill's estimated waste-in-place, in tons.
3. Percentage of area with final cover and a geomembrane.
4. Percentage of area with final cover but without a geomembrane.

(h) Test Methods and Procedures

- (1) **Hydrocarbon Detector Specifications:** Any instrument used for the measurement of methane shall be a gas detector that meets the calibration, specifications, and performance criteria of EPA Reference Method 21 (40 CFR 60, Appendix A) *[insert effective date]*, except for the following:
 - (A) "Methane" shall replace all references to volatile organic compounds (VOC).
 - (B) The calibration gas shall be methane.
- (2) **Determination of Rated Heat Capacity:** The heat input capacity shall be calculated using good engineering practices and site-specific data when available. The methane generation potential for a landfill shall be calculated using the methods provided in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 3 *[insert effective date]* and using a potential recovery rate of 75 percent. The calculation along with relevant parameters shall be provided as part of the report. The

Enforcement Agency may request other reasonable information as may be necessary to verify the heat input capacity from the landfill.

- (3) *Instantaneous Landfill Methane Surface Monitoring Procedures:* The owner or operator shall measure the landfill surface concentration of methane using a hydrocarbon detector meeting the requirements of subsection (h)(1). The landfill surface shall be inspected using the following procedures:
- (A) Testing shall be performed by holding the probe within 0 to 3 inches above the ground along a walking pattern that traverses the landfill in 25-foot intervals.
 - 1. If owner or operator has detected no exceedances of the limit specified in subsection (e)(3) after 12 consecutive monthly monitoring periods, the spacing may be increased to 100-foot intervals. The owner or operator shall return to a 25-foot spacing interval upon any exceedance of the limit specified in subsection (e)(3).
 - (B) Any landfill surface areas with cover penetrations, distressed vegetation, cracks or seeps shall also be inspected.
 - (C) Steep slopes and other dangerous areas may be excluded from landfill surface inspection. To exclude an area from monitoring, the landfill owner or operator shall file a written request with the Enforcement Agency. Such a request shall include an explanation of the requested exclusion and photographs of the area.
 - (D) Surface testing shall be terminated when the average wind speed exceeds 5 miles per hour or the instantaneous wind speed exceeds 10 miles per hour. The Enforcement Agency may approve exceptions to the wind speed requirement for MSW landfills consistently having measured winds in excess of these specified limits. Average wind speed shall be determined on a 10-minute average using an on-site anemometer with a continuous recorder.
 - (E) Surface testing shall be conducted when there has been no measurable precipitation in the preceding 72 hours prior to sampling.
- (4) *Gas Collection and Control System Leak Inspection Procedures.* Leaks shall be measured using a portable gas detector as prescribed in EPA Reference Method 21 (40 CFR 60, Appendix A) [*insert effective date*].

- (5) *Determination of Concentration.* The percentage concentration of methane and oxygen in the landfill gas shall be determined as prescribed in EPA Reference Method 3C (40 CFR 60, Appendix A) [insert effective date].
 - (6) *Determination of Maximum Expected Gas Generation Rate.* The maximum expected gas generation rate shall be determined as prescribed in 40 CFR 60.755 (a)(1) [insert effective date].
 - (7) *Determination of Gauge Pressure.* The gauge pressure shall be determined using a hand-held manometer, magnahelic gauge, or other pressure measuring device approved by the Enforcement Agency. The device shall be calibrated and operated in accordance with manufacture's specifications.
 - (8) *Control System Efficiency Determination.* Either EPA Reference Methods [to be inserted] shall be used to determine the efficiency of the control system in reducing methane by at least 99 percent or in reducing the outlet methane concentration to less than [to be inserted] ppmv, dry basis, corrected to 15 percent oxygen.
- (i) **Penalties** [to be inserted]
 - (j) **Severability.**

Each part of this section shall be deemed severable, and in the event that any part of this section is held to be invalid, the remainder of this section shall continue in full force and effect.

NOTE: Authority cited: sections [to be inserted]