

**WAC 173-408-080 Gas collection and control systems.** (1) General requirements: Except as provided by (a) of this subsection, any owner or operator of a MSW landfill that exceeds the HIC threshold specified in WAC 173-408-070(4) must install a gas collection and control system that meets the requirements of this section.

(a) This section does not apply if, in accordance with WAC 173-408-070 (4)(b), the owner or operator has demonstrated to the satisfaction of the department or local authority that after four consecutive quarterly monitoring periods there is no measured concentration of 200 parts per million by volume or greater of methane, using the instantaneous surface monitoring procedures specified in WAC 173-408-120 (3)(b).

(b) If a MSW landfill partners with a "third-party owner or operator," as defined in WAC 173-408-020, to operate all or a portion of the gas collection and control system or energy recovery device, the owner or operator of the relevant portion of the gas collection and control system or energy recovery device is the responsible party obligated to comply with the requirements of this chapter.

(2) Design plan and installation: If a gas collection and control system that meets the requirements of either subsection (3), (4), or (5) of this section has not been installed, the owner or operator of a MSW landfill must submit a design plan to the department or local authority within one year after the effective date of this chapter, or within one year of detecting any leak on the landfill surface exceeding a methane concentration of 200 ppmv, in accordance with WAC 173-408-070 (3)(b). The department or local authority must review and either approve or disapprove the design plan within 120 days of receipt. The department or local authority may request that the owner or operator submit additional information as part of the review of the design plan.

(a) The design plan must meet the following requirements:

(i) The design plan must be prepared and certified by a "professional engineer," as defined in WAC 173-408-020;

(ii) The following issues must be addressed in the design plan: Depths of solid waste; solid waste gas generation rates and flow characteristics; cover properties; gas system expandability; leachate and condensate management; accessibility; compatibility with filling operations; integration with closure end use; air intrusion control; corrosion resistance; fill settlement; resistance to the solid waste decomposition heat; and ability to isolate individual components or sections for repair or troubleshooting without shutting down the entire collection system;

(iii) A description of the density of wells, horizontal collectors, surface collectors, or other gas extraction devices necessary to achieve compliance with the concentration limits set forth in WAC 173-408-100(2);

(iv) The design plan must include approved equipment maintenance, calibrations, and schedules according to 40 C.F.R. Part 60, Appendix A (in effect on the date in WAC 173-400-025), as well as vendor specifications;

(v) The design plan must provide for the control of the collected gas through the use of a gas collection and control system meeting the requirements of either subsection (3), (4), or (5) of this section;

(vi) The design plan must include any proposed alternatives to the applicable test methods, procedures, compliance measures, or monitoring requirements, under WAC 173-408-130;

(vii) The design plan must include a description of potential mitigation measures to be used to prevent the release of methane or other air pollutants into the ambient air from the working face; during the installation or preparation of wells, piping, or other equipment; during repairs or the temporary shutdown of gas collection system components; when solid waste is to be excavated and moved; during active mining activities; to prevent or extinguish landfill fires; or, during law enforcement activities requiring excavation;

(viii) For active MSW landfills, the design plan must identify areas of the landfill that are closed;

(ix) The design plan must demonstrate how the gas collection and control system will handle the expected gas generation flow rate from the entire area of the MSW landfill and collect gas at an extraction rate to comply with the surface methane emission limits in WAC 173-408-100(2) and the component leak standard in subsection (3)(b) of this section. The expected gas generation flow rate from the MSW landfill must be calculated in accordance with WAC 173-408-120(5).

Any areas of the landfill that contain only "inert waste or non-decomposable waste(s)," as defined in WAC 173-408-020, may be excluded from gas collection provided that the owner or operator submits documentation to the department or local authority containing the nature, date of deposition, location and amount of inert waste or nondecomposable waste(s) deposited in the area. This documentation may be included as part of the design plan;

(x) The owner or operator must develop acceptable pressure limits for the wellheads and include them in the design plan;

(xi) The owner or operator must place each well or design component as specified in the approved design plan. Following initial construction, each new component must be installed no later than 60 days after the date on which the area controlled by the well is required to be controlled pursuant to this chapter;

(xii) Any owner or operator of an active MSW landfill must install and operate a gas collection and control system not later than 18 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan;

(xiii) Any owner or operator of a closed MSW landfill must install and operate a gas collection and control system not later than 30 months after the date that the landfill is required to comply with this rule, and in accordance with the approved design plan;

(xiv) If an owner or operator is modifying an existing gas collection and control system to meet the requirements of this chapter, the existing design plan must be amended to include any necessary updates or addenda and must be certified by a professional engineer;

(xv) An amended design plan must be submitted to the department or local authority within 90 days of any event that warrants a change to the design plan; and

(xvi) The gas collection and control system must be operated, maintained, and expanded in accordance with the procedures and schedules in the approved design plan.

(3) Gas collection and control system requirements: The owner or operator must satisfy the following requirements when operating a gas collection and control system:

(a) Route the collected gas to a gas control device or devices and operate the gas collection and control system continuously except as provided in subsections (7), (8), and (9) of this section, and WAC 173-408-090.

(b) Operate the gas collection and control system so that there is no landfill gas leak that exceeds 500 ppmv, measured as methane, at any component under positive pressure.

(c) The gas collection system must be designed and operated to draw all the gas toward the gas control device or devices.

(d) The landfill gas extraction components must be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: Convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system must extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors must be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations must be situated with regard to the need to prevent excessive air infiltration.

(e) Vertical wells must be placed so as not to endanger underlying liners and must address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors must be of sufficient cross-section to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices must be designed so as not to allow indirect short circuiting of air into the cover, into the solid waste, into the collection system, or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

(f) Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly must include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices must be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

(4) Requirements for flares: An MSW landfill owner or operator who operates a flare must ensure the gas collection and control system achieves a methane destruction efficiency of at least 99 percent by weight. The owner or operator must satisfy the following requirements:

(a) Route the collected gas to an enclosed flare that meets the following requirements:

(i) Is equipped with automatic dampers, an automatic shutdown device, a flame arrester, and continuous recording temperature sensors.

(ii) During restart or startup there must be sufficient flow of propane or commercial natural gas to the burners to prevent unburned collected methane from being emitted to the ambient air.

(iii) The gas control device must be operated within the parameter ranges established during the initial or most recent source test.

(b) Route the collected gas to an open flare that meets the following requirements:

(i) The open flare must meet the requirements of 40 C.F.R. 60.18 (in effect on the date in WAC 173-400-025);

(ii) An open flare installed and operating prior to December 31, 2022, may operate until January 1, 2032, unless the owner or operator demonstrates to the satisfaction of the department or local authority that the landfill gas HIC is less than 3,000,000 British thermal units per hour in accordance with WAC 173-408-120(2), and is insufficient to support the continuous operation of an enclosed flare or other gas control device; and

(iii) The owner or operator may temporarily operate an open flare during the repair or maintenance of the gas control system, or while awaiting the installation of an enclosed flare, or to address offsite gas migration issues. Any owner or operator seeking to temporarily operate an open flare must submit a written request to the department or local authority in accordance with WAC 173-408-130.

(5) Requirements of gas control devices other than flares: An MSW landfill owner or operator who operates a gas control device other than a flare must satisfy one of the following requirements:

(a) If a gas collection and control system routes the collected gas to an energy recovery device or devices, the owner or operator of the energy recovery device or devices must comply with the following requirements:

(i) The device or devices must achieve a methane destruction efficiency of at least 97 percent by weight, except for lean-burn internal combustion engines that were installed and operating prior to January 1, 2022, which must reduce the outlet methane concentration to less than 3,000 parts per million by volume, dry basis corrected to 15 percent oxygen; and

(ii) If a boiler or a process heater is used as the gas control device, the landfill gas stream must be introduced into the flame zone, except that where the landfill gas is not the primary fuel for the boiler or process heater, introduction of the landfill gas stream into the flame zone is not required.

(iii) The gas control device must be operated within the parameter ranges established during the initial or most recent source test.

(b) If a gas collection and control system routes the collected gas to a treatment system that processes the collected gas for subsequent sale or use, the owner or operator of the treatment system must ensure the system achieves a methane leak rate of three percent or less by weight. Venting of processed landfill gas to the ambient air is not allowed. If the processed landfill gas cannot be routed for subsequent sale or use, then the treated landfill gas must be controlled according to this subsection (5).

(6) Source test requirements: The owner or operator of a MSW landfill must conduct a source test for any gas control device or devices subject to subsection (4)(a) or (5)(a) of this section using the test methods identified in WAC 173-408-120(6). The gas control device or devices must meet the following requirements:

(a) An initial source test must be conducted within 180 days of initial start-up of the gas collection and control system;

(b) If a gas control device was in compliance with source testing requirements as of June 9, 2022, the owner or operator must conduct the source test no less frequently than once every five years; and

(c) If a gas control device was not in compliance with source testing requirements as of June 9, 2022, or if a subsequent source test shows the gas control device is out of compliance, the owner or operator must conduct the source test no less frequently than once per year until two subsequent consecutive tests both show compliance. Upon two subsequent consecutive compliant tests, the owner or operator may return to conducting the source test no less frequently than once every five years.

(7) Wellhead gauge pressure requirement: Each wellhead must be operated under a vacuum (negative pressure), except as provided in subsections (8) and (9) of this section, WAC 173-408-090, or under any of the following conditions:

(a) Use of a geomembrane or synthetic cover; or

(b) A decommissioned well.

(8) Gas collection well casing extension: The requirements of subsections (3)(a) and (b) and (7) of this section do not apply to individual wells involved in well raising, provided the following requirements are met:

(a) New fill is being added or compacted in the immediate vicinity around the well; and

(b) Once installed, a gas collection well extension is sealed and capped until the raised well is reconnected to a vacuum source.

(9) Repairs and temporary shutdown of gas collection system components: The requirements of subsections (3)(a) and (b) and (7) of this section do not apply to individual landfill gas collection system components that must be temporarily shut down to repair or modify components of the gas collection system, to connect new landfill gas collection system components to the existing system, to prevent or extinguish landfill fires, or if the MSW landfill engages in construction, active mining, or law enforcement activities, provided the following requirements are met:

(a) Methane emissions are minimized during shutdown under subsection (2)(a)(vii) of this section;

(b) In the event the collection or control system is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within one hour of the collection or control system not operating.

Efforts to repair the collection or control system must be initiated and completed to minimize downtime, and the collection and control system must be returned to operation no more than five calendar days following initial shutdown. In the event the collection and control system cannot be returned to operation in five calendar days following initial shutdown, the owner or operator must submit a notification to the department or local authority in accordance with WAC 173-408-140; and

(c) Records are kept on the actions being taken, in accordance with WAC 173-408-160 (1)(a)(xiv), (xv), and (xvi).

[Statutory Authority: Chapter 70A.540 RCW. WSR 24-11-052 (Order 22-15), § 173-408-080, filed 5/13/24, effective 6/13/24.]