**Section 220.220 Gas Collection System Requirements**

a) Each owner or operator of an MSW landfill having a design capacity equal to or greater than 2.5 million Mg and 2.5 million m3, and a calculated NMOC emission rate equal to or greater than 50 Mg/yr, must install and operate a gas collection system that meets the requirements of either subsection (b), (c), (d), or (e) of this Section and:

1) Handles maximum expected gas flow rate from the entire area of the MSW landfill that warrants control pursuant to subsection (b)(1)(D) of this Section for the period required in Section 220.250(h) of this Subpart, as calculated pursuant to Section 220.240(a) of this Subpart;

2) Collects gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of:

A) 5 years or more, if active; or

B) 2 years or more if closed or at final grade;

3) Is designed to minimize off-site migration of subsurface gas;

4) Routes all the collected gas to a control system that complies with the requirements in Section 220.230 of this Subpart; and

5) Collects and treats gas in accordance with the applicable requirements of 35 Ill. Adm. Code.Subtitle G.

b) Active Collection Systems:

1) Active collection wells, horizontal collectors, surface collectors, or other extraction devices shall be sited at a sufficient density throughout all gas producing areas using the following procedures:

A) The collection devices within the interior and along the perimeter areas shall be designed to achieve comprehensive control of surface gas emissions.

B) The sites for gas collection devices, as determined in subsection (b)(1)(A) of this Section, shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

C) Collect gas at a sufficient extraction rate, as defined at Section 220.110 of this Part.

D) The placement of gas collection devices determined in subsection (b)(1)(A) of this Section shall control all gas producing areas, except as provided by this subsection (b)(1)(D).

i) Any segregated area of asbestos or nondegradable material may be excluded from collection, if documented as provided under Section 220.280(f)(3) of this Subpart. The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Agency upon request.

ii) Any nonproductive area of the landfill may be excluded from control provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the Agency upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill, as calculated pursuant to Section 220.260 of this Subpart. Emissions from each section shall be computed using the following equation:

|  |  |  |
| --- | --- | --- |
| Qi | = | 2kLoMi(e-kti)(CNMOC)(3.6 x 10-9)  |

 where:

|  |  |  |
| --- | --- | --- |
| Qi | = | NMOC emission rate from the ith section, Mg/yr  |
| k | = | methane generation rate constant, yr-1 |
| Lo | = | methane generation potential, m3 per Mg solid waste |
| Mi | = | mass of degradable solid waste in the ith section, years |
| ti | = | age of the solid waste in the ith section, years |
| CNMOC | = | concentration of NMOC, ppmv |
|  3.6x10-9 | = | Conversion factor |

 The values for k and CNMOC determined in field testing shall be used, if field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, Lo, and CNMOC provided in Section 220.260(a)(1) of this Subpart shall be used. The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions, provided the nature, location, age and amount of the nondegradable material is documented.

2) The gas collection devices shall be constructed using the following equipment or procedures:

A) The landfill gas extraction components shall 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 shall extend as necessary to comply with emission and migration standards. Collection devices, such as wells and horizontal collectors, shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration.

B) Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover, refuse 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.

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

3) The landfill gas shall be conveyed to a gas control system through the collection header pipe(s). The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected for the period of intended use pursuant to Section 220.250(h) of this Subpart using the following procedures:

A) For existing gas collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in subsection (b)(3)(B) of this Section shall be used.

B) For new gas collection systems, the maximum flow rate shall be in accordance with Section 220.240(a) of this Subpart.

c) Passive Collection Systems:

1) A passive collection system shall be installed with liners on the bottom and all sides in all areas in which gas is to be collected. The liners shall meet all requirements specified in 35 Ill. Adm. Code 811.306.

2) The collection and control system shall either conform with the specifications for active collection systems in subsection (a) of this Section or the owner or operator must obtain the Agency's approval for alternate provisions as provided for in subsection (d) of this Section.

d) Alternate Collection Systems:

 An owner or operator seeking to install an alternate gas collection system shall demonstrate to the Agency that such collection system is capable of capturing the maximum expected gas flow rate from the entire area of the MSW landfill, for the period required in Section 220.250(h) of this Subpart, as calculated pursuant to Section 220.240(a) of this Subpart, and in an equivalent manner to that required by this Section. Any alternate gas collection system must be approved by the Agency. Such alternate shall be effective only when included in a federally enforceable permit or approved as a SIP revision. The alternate shall include any alternate procedures for collection, control, compliance, monitoring, operation, testing, reporting, and recordkeeping that are appropriate.

e) Alternate Emissions Standard:

 Pursuant to Section 28.1 of the Act [415 ILCS 5/28.1], and in accordance with 35 Ill. Adm. Code 106, Subpart G, provisions for adjusted standards, adjusted standards for alternate emissions standards or alternate emissions standards with an alternate compliance schedule shall be granted by the Board, to the extent consistent with federal law. An owner or operator seeking an alternate emissions standard or an alternate emissions standard with an alternate compliance schedule must demonstrate to the Board that, with respect to the MSW landfill, the control requirements meet one or more of the criteria listed in this subsection (e) pursuant to 40 CFR 60.24(f). Any such request must be approved by the Board. Such alternate shall be effective only when included in a federally enforceable permit or approved as a SIP revision. Any alternate shall include any procedures for collection, control, compliance, monitoring, operation, testing, reporting and recordkeeping that are appropriate and a demonstration that the control requirements, as contained in this Subpart, as they apply to the MSW landfill, meet one or more of the following criteria:

1) Unreasonable cost of control resulting from plant age, location, or basic process design;

2) Physical impossibility of installing necessary control equipment; or

3) Other factors specific to the MSW landfill that support an alternate emissions standard or alternate emissions standard with final compliance date.