Explosive gas migration monitoring for a sanitary landfill facility.

(A) Applicability. This rule applies to each responsible party for any of the following facilities:

(1) A licensed solid waste landfill facility that accepted waste on or after June 1, 1994.

(2) A previously licensed closed solid waste landfill facility that meets the following:


(b) Is so situated that a residence or other occupied structure is located within one thousand feet of the horizontal limits of solid waste placement.

(3) A previously licensed closed solid waste landfill facility that meets the following:

(a) Ceased solid waste acceptance between July 1, 1970 and May 31, 1988.

(b) Has received notification from Ohio EPA that this rule applies, based upon site specific conditions.

(4) A solid waste landfill facility for which a new or revised EGMP is required pursuant to an order of the director, the approved board of health, the environmental review appeals commission, or a court of competent jurisdiction.

(B) Definitions. If a term used in this rule is defined in rule 3745-27-01 of the Administrative Code, the definition in rule 3745-27-01 of the Administrative Code is applicable to this rule unless the term is defined in this rule. As used in this rule:

(1) "Alternative monitoring device" or "AMD" means any type of device other than an explosive gas monitoring probe where the presence and concentration of landfill gas can be measured with a direct reading instrument.

(2) "EGMP" means an explosive gas monitoring plan.

(3) "Facility boundary" means one of the following:

(a) The solid waste landfill facility boundary as depicted in the effective permit.

(b) The property line of all the parcels that contain the limits of solid waste placement.
(4) "LEL" has the same meaning as lower explosive limit.

(5) "Solid waste landfill facility," means any site, location, tract of land, or installation used for the disposal of solid waste.

(C) Exclusions. This rule does not apply to the following facilities:

(1) A solid waste landfill facility that exclusively disposes or has disposed of solid wastes generated on one or more premises owned by the person who owns the solid waste landfill facility.

(2) A solid waste landfill facility owned or operated by a person other than the generator of the wastes that exclusively disposes or has disposed of nonputrescible solid wastes generated by the generator at one or more of the premises owned by the generator.

(D) Notwithstanding the exclusions contained in paragraph (C) of this rule, the director may issue an order directing a responsible party to prepare and submit a new or revised EGMP for a facility in accordance with this rule if the director determines that the potential exists for the formation and subsurface migration of explosive gases in such quantities and under such conditions as to threaten human health or safety or the environment.

(E) Exceedances of methane by volume at or above 1.25 per cent in occupied structures or five per cent methane by volume at the facility boundary shall constitute a threat to human health, safety, and the environment.

(F) Explosive gas monitoring plan.

(1) Submittal and implementation of an EGMP. Unless otherwise excluded by paragraph (C) of this rule, the responsible party shall prepare, submit, and implement an EGMP as follows:

(a) Not later than two hundred and seventy days after the effective date of this rule, the responsible party shall submit an EGMP to Ohio EPA as follows:

(i) For a solid waste landfill facility without an approved EGMP, a new EGMP that complies with this rule.

(ii) For a solid waste landfill facility with an approved EGMP, a revised EGMP that complies with this rule.

(b) Not later than sixty days prior to occupancy of a new occupied structure built within one thousand feet of the horizontal limits of solid waste placement, the responsible party shall submit an EGMP to Ohio EPA.
(c) The most recent approved EGMP shall remain in effect until a revised EGMP is approved by the director in accordance with this rule.

(d) The responsible party shall implement the EGMP upon approval by the director.

(e) The responsible party shall comply with an approved EGMP until the director authorizes the responsible party to cease explosive gas monitoring in accordance with paragraph (O) of this rule.

(2) The responsible party shall establish a stand-alone EGMP on forms prescribed by the director and shall submit the EGMP to Ohio EPA. At a minimum, the EGMP shall include the following:

(a) A description of the explosive gas monitoring network that demonstrates the network conforms to paragraph (H) of this rule and is capable of measuring explosive gas to ensure concentrations of methane do not exceed the following:

(i) 1.25 per cent by volume or twenty-five per cent of the LEL in occupied structures.

(ii) Five per cent by volume or one hundred per cent of the LEL at the facility boundary.

(b) Detailed topographical maps with a scale of one inch equals no greater than two hundred feet showing the following:

(i) The property boundary, facility boundary, and the horizontal limits of solid waste placement of the solid waste landfill facility.

(ii) A zone around the solid waste landfill facility representing the area that is two hundred feet from the horizontal limits of solid waste placement.

(iii) A zone around the solid waste landfill facility representing the area that is one thousand feet from the horizontal limits of solid waste placement.

(iv) All property owners and political subdivisions located within two hundred feet of the horizontal limits of solid waste placement.

(v) All property boundaries and parcel numbers located within one thousand feet of the horizontal limits of solid waste placement.

(vi) All on-site structures and all off-site structures located within the
one thousand feet of the horizontal limits of solid waste placement. The EGMP shall identify those structures that are occupied structures.

(vii) All man made explosive gas migration pathways within one thousand feet of the horizontal limits of solid waste placement including but not limited to roads, railroads, underground utilities, mines, storm sewers, water lines, electric cables, and pipelines.

(viii) All other potential sources of explosive gas within one thousand feet of the horizontal limits of solid waste placement including but not limited to oil and gas wells, landfills, and swamps.

(c) The following geological information:

(i) The ground water surface elevation in the proximity of the solid waste placement and fluctuations in ground water levels.

(ii) A discussion of the topography of the site and surrounding area.

(iii) A discussion of any natural site characteristics that may act as natural impervious boundaries to gas migration or allow natural venting of gas.

(iv) If the subsurface stratification is known, a cross section of the perimeter of the solid waste landfill facility property showing the potential natural pathways. Cross sections shall equal the depth of the solid waste.

(v) A discussion characterizing all known potential explosive gas migration pathways and their associated explosive gas hazard.

(vi) A discussion and identification of any other sources of explosive gas within one thousand feet of the horizontal limits of solid waste placement that may potentially cause subsurface migration of explosive gas.

(d) The following solid waste landfill facility information:

(i) The lowest elevation of solid waste placement.

(ii) The approximate acreage of solid waste placement.

(iii) A discussion of the types of waste that have been disposed or will be disposed at the solid waste landfill facility.

(iv) At a minimum and as applicable, a discussion of the following
historical information pertaining to the solid waste landfill facility:

(a) The date of the initial solid waste license and any subsequent licenses.

(b) The date of initial operation.

(c) The date of cessation of waste acceptance, the date closure activities were completed, and the date when the closure certification report was submitted to the director.

(d) All previous or current authorizations regarding explosive gas management.

(e) The names of all prior owners for all of the real property within the facility boundary.

(e) The following gas investigation information:

(i) A description and an evaluation of the effectiveness of the following:

(a) Any existing gas monitoring system.

(b) Any existing gas extraction system.

(c) Any existing gas venting system.

(ii) Copies of historical records discussing any previous explosive gas investigations including but not limited to probe sampling results and any other type of gas sampling results.

(iii) A discussion of any of the following that could be attributed to current explosive gas presence:

(a) Dead vegetation.

(b) Odors.

(c) Snow melt.

(f) For every probe and AMD, the following:

(i) The schematic of the design that conforms to paragraph (G) of this rule. The schematic may be a generalized construction of the probe or AMD.
(ii) The location and the geo-coordinate on a plan drawing.

(iii) The total depth.

(iv) The total length of the screen interval, if applicable.

(v) The identification designation.

(vi) Methods of construction.

(vii) Materials used in construction.

(viii) Installation procedures and quality assurance measures.

(ix) Security measures capable of protecting the probe or AMD from vandalism, impact damage, and weather, as applicable.

(g) The following appendices to the EGMP:

(i) Appendix A. Copies of letters sent to the entities listed in paragraph (J)(2) of this rule. These letters shall include the location of the solid waste landfill facility and the proximity of occupied structures.

(ii) Appendix B. Documentation of installation of explosive gas alarms in occupied structures within two hundred feet of solid waste placement. At a minimum, this documentation shall include the following:

(a) Communications from the responsible party to the owner of the occupied structure seeking consent to install an explosive gas alarm in the structure.

(b) Confirmatory communication from the responsible party to each owner of an occupied structure that declines consent to install an explosive gas alarm in the structure.

(c) A map depicting all occupied structures within two hundred feet of solid waste placement that have an explosive gas alarm installed.

(iii) Appendix C. Hydrogeologic boring logs, if available.

(iv) Appendix D. Certification reports in accordance with paragraph (G)(2) of this rule.
Appendix E. The most recent deed for each parcel of the solid waste landfill facility property.

Other appendices as necessary.

If Ohio EPA determines that additional information is necessary to determine whether the criteria set forth in paragraph (F)(2) of this rule are satisfied, Ohio EPA may require that the responsible party supply such information as a precondition to further consideration of the EGMP.

The director shall not approve an EGMP unless the following are met:

(a) The EGMP is complete in accordance with paragraph (F)(2) of this rule.

(b) The explosive gas monitoring system is designed and is capable of being constructed and operated in accordance with this rule and with any terms and conditions of the approved EGMP.

(c) Any existing probes or AMDs have been installed and explosive gas is being monitored in accordance with paragraphs (I), (J), and (L) of this rule.

Alterations to the EGMP. The responsible party may submit to Ohio EPA a written request to revise the approved EGMP and may implement the revision only upon obtaining Ohio EPA's concurrence with the request.

(G) Probe and AMD design. The responsible party shall utilize probes and AMDs as follows:

(1) Probe design and construction.

(a) The explosive gas monitoring network shall be designed and constructed utilizing probes that conform to the following:

(i) Accurately detect the existing levels of explosive gas.

(ii) Are screened to the entire depth of solid waste placement, unless a natural barrier exists that is of sufficient impermeability to prevent the migration of explosive gas beyond the barrier.

(iii) Are designed to prevent contamination or dilution of explosive gas samples.

(iv) Are designed to prevent contamination of groundwater.

(v) Are designed to obtain liquid levels, gas pressure, and methane
concentration within the probe.

(b) Ohio EPA may authorize the use of AMDs in lieu of probes if the responsible party demonstrates, based on specific site geology, location, depth of waste, or other factors, that the AMDs will be protective of human health, safety, and the environment. If AMDs are used, the AMDs shall conform to the following:

(i) Accurately detect the existing levels of explosive gas.

(ii) Be capable of detecting gas migration in the explosive gas pathway.

(iii) Be designed to prevent contamination of groundwater.

(c) If at any time Ohio EPA determines the construction, design, or operation of any probe or AMD is not capable of meeting the requirements in this paragraph, then the probe or AMD shall be re-developed by the responsible party to meet these requirements.

(d) The director may require the installation of additional probes, AMDs, alarms, or the abandonment of probes as necessary to monitor explosive gas pathways or to eliminate the potential contamination of groundwater.

(2) Certification of probes or AMDs. Upon installation of new or replacement probes or AMDs, the responsible party shall submit a certification report to the director that at a minimum includes the following:

(a) A drawing showing the locations of all probes and AMDs with their associated identification designations.

(b) Geologic logs, if applicable.

(c) Depth and, if applicable, the length of the screened intervals.

(d) A report setting forth the results obtained from the probe or AMD.

(3) New occupied structures or explosive gas pathways. The responsible party shall install new probes or AMDs in all new explosive gas pathways. A new probe or AMD shall be constructed in accordance with the approved EGMP and this rule. Installation of a new probe or AMD shall be completed and sampled in the following manner:

(a) Prior to occupancy of a new occupied structure within one thousand feet of the horizontal limits of solid waste placement.

(b) Upon discovery of an existing explosive gas pathway or the creation of
any explosive gas pathway within one thousand feet of the horizontal limits of solid waste placement.

(c) Upon discovery of any topographic or other changes occurring in the vicinity of the solid waste landfill facility that create the potential for explosive gas migration towards any occupied structure within one thousand feet of solid waste placement.

(4) Replacement or abandonment of probes or AMDs. The responsible party shall replace or abandon a probe or AMD as follows:

(a) A damaged or inaccessible probe or AMD shall be replaced in accordance with the approved EGMP and in accordance with this rule before the next compliance monitoring event.

(b) As near as possible to the same location as the damaged probe or AMD to monitor the same pathway.

(c) The installation of the new or replacement probe or AMD shall be certified in accordance with paragraph (G)(2) of this rule.

(d) If applicable, the abandonment of probes and AMDs shall be in accordance with rule 3745-9-10 of the Administrative Code.

(H) Explosive gas network design. The responsible party shall ensure that the explosive gas network is capable of detecting explosive gas using probes or alarms as follows unless the responsible party has received authorization from Ohio EPA to use AMDs in lieu of probes:

(1) For an occupied structure located within the horizontal limits of solid waste placement, using explosive gas alarms. Upon consent of the owner of the occupied structure, the responsible party shall install explosive gas alarms in the occupied structure in accordance with the manufacturer's instructions. At a minimum, the explosive gas alarm shall be capable of detecting gas concentrations of 1.25 per cent methane by volume or twenty-five per cent of the LEL.

(2) For an occupied structure located within two hundred feet of the horizontal limits of solid waste placement, the following:

(a) Upon consent of the owner of the occupied structure, install an explosive gas alarm in the occupied structure. At a minimum, the explosive gas alarm shall be capable of detecting gas concentrations of 1.25 per cent methane by volume or twenty-five per cent of the LEL.

(b) Install probes between the horizontal limits of solid waste placement and the occupied structure in such location that explosive gas migration
through the unconsolidated stratigraphic unit or fractured bedrock pathway towards the structure will be detected. If the occupied structure is outside the facility boundary, the probe shall be located as close to the facility boundary as possible.

(3) For an occupied structure located within one thousand feet of the horizontal limits of solid waste placement, by installing a probe between the horizontal limits of solid waste placement and the occupied structure in such location that explosive gas migration through the unconsolidated stratigraphic unit or fractured bedrock pathway towards the structure will be detected. If the occupied structure is outside the facility boundary, the probe shall be located as close to the facility boundary as possible.

(4) For a licensed solid waste landfill facility that accepted waste on or after June 1, 1994, the responsible party shall install probes at the northernmost, southernmost, easternmost, and westernmost points around the facility and be located between the horizontal limits of solid waste placement and the facility boundary.

(I) Compliance monitoring.

(1) Sampling frequency. The responsible party shall conduct explosive gas compliance monitoring in accordance with the following schedule:

(a) For licensed solid waste landfill facility in operation on or after June 1, 1994:

(i) Monthly prior to closure if any portion of the solid waste landfill facility is not lined with a flexible membrane liner.

(ii) Quarterly prior to closure if the solid waste landfill facility is lined with a flexible membrane liner.

(iii) Quarterly during the post closure care period.

(b) For a solid waste landfill facility that ceased acceptance of waste prior to June 1, 1994, but after July 1, 1970, semiannually.

(c) For a solid waste landfill facility regulated under Chapter 3745-29 or Chapter 3745-30 of the Administrative Code, one of the following:

(i) Monthly prior to closure if any portion of the solid waste landfill facility is not lined with a flexible membrane liner.

(ii) Quarterly prior to closure if the solid waste landfill facility is lined with a flexible membrane liner.
(iii) Quarterly during the post closure care period.

(d) At an alternate frequency specified by Ohio EPA in accordance with paragraph (J)(5) of this rule.

(2) Operating record. For a licensed solid waste landfill facility in operation on or after June 1, 1994, the responsible party shall submit all EGMP certification reports, monitoring results, contingency reports, and revisions to the approved EGMP into the operating record in accordance with rule 3745-27-09 of the Administrative Code.

(J) Contingency monitoring.

(1) The responsible party shall implement contingency monitoring upon discovery of either of the following gas concentrations:

(a) Five per cent methane by volume or one hundred per cent of the LEL at any probe or AMD.

(b) 1.25 per cent methane by volume or twenty-five per cent of the LEL in any occupied structure.

(2) Notifications. Upon discovery of gas concentrations exceeding a limit specified paragraph (J)(1) of this rule, the responsible party shall immediately notify the following:

(a) The appropriate Ohio EPA district office and the local board of health.

(b) If the exceedance is in an occupied structure, the local fire department.

(3) Upon implementation of contingency monitoring, the responsible party shall do the following:

(a) Increase the monitoring frequency for each probe and AMD that exceed the LEL to a minimum of weekly unless otherwise directed by Ohio EPA.

(b) Submit the contingency monitoring results to Ohio EPA and the local board of health not later than seven days following each contingency monitoring event, unless otherwise directed by Ohio EPA.

(4) Cessation. The responsible party may cease contingency monitoring when a minimum of four sequential weekly monitoring events no longer exceed the limits specified in paragraph (J)(1) of this rule.

(5) Return to compliance monitoring. Upon cessation of contingency monitoring in
accordance with this rule, the responsible party shall return to compliance monitoring at a frequency specified by Ohio EPA. The first compliance monitoring event shall occur not later than two months after cessation of contingency monitoring.

(K) Remediation procedures. If the responsible party is unable to mitigate or abate explosive gas exceedances at the facility boundary within one thousand feet of an occupied structure after four weeks of contingency monitoring, the responsible party shall prepare a remediation plan.

(1) Remediation plan. The responsible party shall submit a remediation plan to Ohio EPA not later than thirty days after the initial four weeks of contingency monitoring. The plan shall contain an implementation schedule and describe how the formation and migration of explosive gas from the facility will be minimized or abated such that exceedances of the LEL at the facility boundary cease.

(2) The responsible party shall implement the remediation plan not later than thirty days after receipt of concurrence from Ohio EPA.

(3) If the responsible party has implemented the remediation plan and not abated or minimized the formation and migration of explosive gas from the facility such that exceedances of the LEL at the facility boundary continue to occur, then the responsible party shall do the following:

(a) Submit a revised remediation plan not later than thirty days following notification from Ohio EPA that the remedy was not successful.

(b) Implement the revised remediation plan not later than fourteen days after receipt of written approval from Ohio EPA.

(4) Ohio EPA may condition a remediation plan or a revised remediation plan to address any deficiencies. The responsible party shall implement the conditioned remediation plan not later than thirty days after receipt of written approval.

(L) Sampling procedures, calibration, and maintenance.

(1) Sampling procedures. When conducting monitoring, the responsible party shall sample all monitoring locations as follows:

(a) Probes and AMDs shall not be vented prior to sampling gas pressure or methane concentration.

(b) The gas monitoring equipment shall have a detection limit below one per cent methane by volume.
(c) For all probes and AMDs, the following information shall be recorded:

(i) Ambient barometric pressure.

(ii) Ambient air temperature.

(iii) Observed weather conditions.

(d) For probes, information shall be recorded in the following order:

(i) Gas pressure in the probe.

(ii) Peak combustible gas concentration in per cent methane by volume or in per cent LEL.

(iii) Depth to water from the top of casing.

(e) For AMDs, peak combustible gas concentration shall be recorded in per cent methane by volume or in per cent LEL.

(2) Calibration procedures. The responsible party shall maintain documentation of the calibration of explosive gas monitoring equipment and ensure that the gas monitoring equipment used to perform monitoring is properly calibrated per manufacturer’s requirements not later than twenty-four hours prior to performing any sampling. The responsible party shall ensure the following:

(a) Any gases used to calibrate the gas monitoring equipment shall not be expired.

(b) The calibration gas concentration shall be between one per cent and five per cent methane by volume.

(3) Maintenance of explosive gas alarms. The responsible party shall maintain explosive gas alarms installed in occupied structures as follows:

(a) Annually calibrate and assess the performance of the explosive gas alarm. The responsible party shall submit documentation of the condition of each alarm and calibration results to Ohio EPA not later than thirty days after the calibration event.

(b) Replace each defective or non-functioning alarm not later than twenty-four hours after discovery that the alarm is not operating per the manufacturer's specifications.

(c) Immediately notify the individuals identified in paragraph (J)(2) of this rule if an alarm indicates the presence of explosive gas at 1.25 per cent.
methane by volume or twenty-five per cent of the LEL within the occupied structure.

(M) Reporting.

(1) Not later than fifteen days after the date of sampling, the responsible party shall submit the explosive gas sampling results to Ohio EPA and the local board of health on forms prescribed by the director. At a minimum, the results shall include the following:

(a) The identification designation for each probe and AMD sampled.

(b) The ambient barometric pressure, ambient air temperature, and observed weather conditions on the date of sampling.

(c) The concentration of methane in each probe and AMD sampled.

(d) Any additional information specified on the form or requested by Ohio EPA.

(2) An alternate form may be utilized by the responsible party if the alternate form contains all of the information specified in paragraph (M)(1) of this rule.

(N) Upon the director's finding that explosive gas formation and migration threaten human health, safety or the environment, the director may order a responsible party to perform such measures to abate or minimize the formation or migration of explosive gas.

(O) Cessation of explosive gas monitoring. The responsible party of a solid waste landfill facility that has completed post closure care may submit to the director a written request to cease monitoring. The request shall demonstrate that gas formation and migration from the solid waste landfill facility is no longer a threat to human health, safety or the environment.