

ATTACHMENT 1

SECOND 15 DAY MODIFICATIONS TO THE ORIGINAL PROPOSED REGULATION TO REDUCE METHANE EMISSIONS FROM MUNICIPAL SOLID WASTE LANDFILLS

Note: This document contains staff's second set of proposed modifications to the proposed regulatory text as set forth in Appendix A to the Staff Report: Initial Statement of Reasons, released on May 8, 2009. All of the text shown below is new language to be added to the California Code of Regulations. The originally proposed language is shown with no underlines or strikeouts. The first set of modifications to the originally proposed language was released on October 5, 2009; the modifications are shown in ~~strikeout~~ to indicate deletions and underline to indicate additions. The second set of modifications are shown in ~~double-strikeout~~ to indicate proposed deletions and double underline to indicate proposed additions. The symbol "*****" indicates that regulatory language not being amended is not shown. The rationale for the modifications to the regulation is set forth below.

Amend sections 95462, 95463, 95464, 95465, 95466, 95468, 95469, 95470, 95471, 95473, and 95475, title 17, California Code of Regulation to read as follows.

§ 95462. Exemptions

- (b) This subarticle does not apply to landfills that receive only construction and demolition wastes, inert waste, or non-decomposable wastes.
- (c) This subarticle does not apply to closed or inactive MSW landfills with less than 450,000 tons of waste-in-place.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95463. Determination for Installing a Gas Collection and Control System

- (b) *MSW Landfills Greater Than or Equal to 450,000 Tons of Waste-in-Place:* Within 90 days of the effective date of this subarticle or upon reaching 450,000 tons of waste-in-place, each owner or operator of an MSW landfill having greater than or equal to 450,000 tons of waste-in-place must calculate the landfill gas heat input

capacity pursuant to section 95471(b) and must submit a Landfill Gas Heat Input Capacity Report to the Executive Officer.

- (1) If the calculated landfill gas heat input capacity is less than 3.0 million British thermal units per hour (MMBtu/hr) recovered, the owner or operator must:
 - (A) Recalculate the landfill gas heat input capacity annually using the procedures specified in section 95471(b).
 - (B) Submit an annual Landfill Gas Heat Input Capacity Report to the Executive Officer until either of the following conditions is met:
 1. The calculated landfill gas heat input capacity is greater than or equal to 3.0 MMBtu/hr recovered, or
 2. If the MSW landfill is active, the owner or operator submits a Closure Notification pursuant to section 95470(b)(1). Submitting the Closure Notification fulfills the requirements of this subarticle. If the MSW landfill is closed or inactive ~~closed or inactive~~, submittal of the Closure Notification is not required to fulfill the requirements of the subarticle.

- (2) If the landfill gas heat input capacity is greater than or equal to 3.0 MMBtu/hr recovered the owner or operator must either:
 - (A) Comply with the requirements of sections 95464 through 95476, or
 - (B) Demonstrate to the satisfaction of the Executive Officer that after four consecutive quarterly monitoring periods there is no measured concentration of methane of 200 parts per million by volume (ppmv) or greater using the instantaneous surface monitoring procedures specified in sections 95471(c)(1) and 95471(c)(2). Based on the monitoring results, the owner or operator must do one of the following:
 1. If there is any measured concentration of methane of 200 ppmv or greater from the surface of an active, inactive, or closed MSW landfill, comply with sections 95464 through 95476;

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95464. Gas Collection and Control System Requirements

(a) *Design Plan and Installation.*

(1) *Design Plan:* If a gas collection and control system which meets the requirements of either sections 95464(b)(1), 95464(b)(2) or 95464(b)(3) has not been installed, the owner or operator of a MSW landfill must submit a Design Plan to the Executive Officer within one year after the effective date of this subarticle, or within one year of detecting any leak on the landfill surface exceeding a methane concentration of 200 ppmv pursuant to section 95463(b)(2)(B). The Executive Officer must review and either approve or disapprove the Design Plan within 120 days. The Executive Officer may request that additional information be submitted as part of the review of the Design Plan. At a minimum, the Design Plan must meet the following requirements:

(A) The Design Plan must be prepared and certified by a professional engineer.

(B) 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 sections 95464(b)(1), 95464(b)(2) or 95464(b)(3).

~~(D)~~(C) The Design Plan must include any proposed alternatives to the requirements, test methods, procedures, compliance measures, monitoring, and recordkeeping or reporting requirements pursuant to section 95468.

~~(E)~~(D) A description of potential mitigation measures to be used to prevent the release of methane or other pollutants into the atmosphere during the installation or preparation of wells, piping, or other equipment; during repairs or the temporary shutdown of gas collection system components; or, when solid waste is to be excavated and moved.

~~(F)~~(E) For active MSW landfills, the design plan must identify areas of the landfill that are closed or inactive.

~~(G)~~(F) Design the gas collection and control system to handle the expected gas generation flow rate from the entire area of the MSW landfill and to collect gas at an extraction rate to comply with the surface methane emission limits in section 95465 and component leak standard in section 95464(b)(1)(B). The expected gas generation flow rate from the MSW landfill must be calculated pursuant to section 95471(e).

1. Any areas of the landfill that contain only asbestos-containing waste, inert waste, or non-decomposable solid waste may be excluded from collection provided that the owner or operator submits documentation to the Executive Officer containing the nature, date of deposition, location and amount of asbestos or non-decomposable solid waste deposited in the area. This documentation may be included as part of the Design Plan.

~~(H) As operating experience is gained and as site conditions change, the Design Plan may be revised, subject to the approval of the Executive Officer.~~

- (b)(2)(B) Route the collected gas to an open flare that meets the requirements of 40 CFR §60.18 (as last amended ~~65 73 Fed.Reg. 61752 78209, (October 17, 2000~~ December 22, 2008)), which is incorporated by reference herein. The operation of an open flare is not allowed except under the following conditions:

(5) An amended Design Plan must be submitted to the Executive Officer within 90 days of any event that requires a change to the Design Plan.

~~(5)(6)~~ The gas collection system must be operated, maintained, and expanded in accordance with the procedures and schedules in the approved Design Plan.

(e) *Repairs and Temporary Shutdown of Gas Collection System Components:* The requirements of sections 95464(b)(1)(A), 95464(b)(1)(B), and 95464(c), do not apply to individual landfill gas collection system components that must be temporarily shut down in order to repair the components, due to catastrophic events such as earthquakes, to connect new landfill gas collection system components to the existing system, to extinguish landfill fires, or to perform construction activities pursuant to section 95466, provided the following requirements are met:

- (1) Any new gas collection system components required to maintain compliance with this subarticle must be included in the most recent Design Plan pursuant to section 95464(a)(4).

- (2) Methane emissions are minimized during shutdown pursuant to section 95464(a)(1)(E)(D).

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95465. Surface Methane Emission Standards

- (a) Except as provided in sections 95464(d), 95464(e), and 95466, beginning January 1, 2011, or upon commencing operation of a newly installed gas collection and control system or modification of an existing gas collection and control system pursuant to 95464(a)(1), whichever is later, no location on the MSW landfill surface may exceed either of the following methane concentration limits:

- (1) 500 ppmv, other than non-repeatable, momentary readings, as determined by instantaneous surface emissions monitoring.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95466. Construction Activities

- ~~(b) Any new gas collection system components, or modifications to the existing system, must be included in the most recent Design Plan pursuant to section 95464(a).~~

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95468. Alternative Compliance Options

- (a) The owner or operator may request alternatives to the compliance measures, monitoring requirements, test methods and procedures of sections 95464, 95469, and 95471. Any alternatives requested by the owner or operator must be

submitted in writing to the Executive Officer. Alternative compliance option requests may include, but are not limited to, the following:

- (1) Semi-continuous operation of the gas collection and control system due to insufficient landfill gas flow rates.
- (2) Additional time allowance for leak repairs for landfills having consistent issues related to the procurement and delivery of necessary parts to complete the repair, or adverse weather conditions that impede repair work.
- (3) Alternative wind speed requirements for landfills consistently having winds in excess of the limits specified in this subarticle.
- (4) Alternative walking patterns to address potential safety and other issues, such as: steep or slippery slopes, monitoring instrument obstructions, and physical obstructions.
- (5) Exclusion of construction areas and other dangerous areas from landfill surface inspection.
- (6) Exclusion of paved roads that do not have any cracks, pot holes, or other penetrations from landfill surface inspection.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95469. Monitoring Requirements

- (a) *Surface Emissions Monitoring Requirements:* Any owner or operator of a MSW landfill with a gas collection and control system must conduct instantaneous and integrated surface monitoring of the landfill surface quarterly using the procedures specified in section 95471(c).
 - (1) *Instantaneous Surface Monitoring:* Any reading exceeding the limit specified in section 95465(a)(1) must be recorded as an exceedance and the following actions must be taken:

- (C) Any closed or inactive MSW landfill, or any closed or inactive areas on an active MSW landfill that has no monitored exceedances of the limit specified in section 95465(a)(1) after four consecutive quarterly monitoring periods may monitor annually. Any

exceedances of the limits specified in section 95465(a)(1) detected during the annual monitoring that can not be remediated within 10 calendar days will result in a return to quarterly monitoring of the landfill.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95470. Recordkeeping and Reporting Requirements.

(a) *Recordkeeping Requirements.*

(1) An owner or operator must maintain the following records, whether in paper, electronic, or other format, for at least five years:

(2) The owner or operator must maintain the following records, whether in paper, electronic, or other format, for the life of each gas control device, as measured during the initial source test or compliance determination:

(E) For an open flare: the flare type (i.e., steam-assisted, air-assisted, or non-assisted); all visible emission readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test as specified in CFR 40 §60.18 (as last amended ~~65 73~~ Fed.Reg. ~~64752 78209, (October 17, 2000~~ December 22, 2008), which is incorporated by reference herein; and records of the flare pilot flame or flare flame monitoring and records of all periods of operations during which the pilot flame or the flare flame is absent.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95471. Test Methods and Procedures

(c) *Surface Emissions Monitoring Procedures:* The owner or operator must measure the landfill surface concentration of methane using a hydrocarbon detector meeting the requirements of section 95471(a). The landfill surface must be inspected using the following procedures:

(1) *Monitoring Area:* The entire landfill surface must be divided into individually identified 50,000 square foot grids. The grids must be used for both instantaneous and integrated surface emissions monitoring.

(B) The walking pattern must be no more than a 25-foot spacing interval and must traverse each monitoring grid.

2. If aAn owner or operator of a MSW landfill can demonstrate that in the ~~past~~ three years before the effective date of this subarticle ~~that~~ there were no measured exceedances of the limits specified in section 95465(a)(1) by annual or quarterly monitoring, the owner or operator may increase the walking pattern spacing to 100-foot intervals. The owner or operator must return to a 25-foot spacing interval upon any exceedances of the limits specified in section 95465 that cannot be remediated within 10 calendar days or upon any exceedances detected during a compliance inspection.

~~(C) Portions of slopes that are 30 degrees and greater, wet or icy surfaces, construction areas, and other dangerous areas may be excluded from landfill surface inspection. Paved roads that do not have any cracks, pot holes, or other penetrations may also be excluded.~~

~~(DC)~~ Surface testing must be terminated when the average wind speed exceeds five miles per hour or the instantaneous wind speed exceeds 10 miles per hour. The Executive Officer may approve alternatives to this wind speed surface testing termination for MSW landfills consistently having measured winds in excess of these specified limits. Average wind speed must be determined on a 15-minute average using an on-site anemometer with a continuous recorder for the entire duration of the monitoring event.

~~(ED)~~ Surface emissions testing must be conducted only when there has been no measurable precipitation in the preceding 72 hours.

(f) *Control Device Destruction Efficiency Determination.* The following methods of analysis must be used to determine the efficiency of the control device in reducing methane:

(1) *Enclosed Combustors:* One of the following test methods, all of which are incorporated by reference herein (and all as promulgated in 40 CFR, Part 60, Appendix A, as last amended 65 Fed.Reg. 61744 (October 17, 2000) at the pages cited below must be used to determine the efficiency of the control device in reducing methane by at least 99 percent, or in reducing the outlet methane concentration for lean burn engines to less than 3,000 ppmv, dry basis, corrected to 15 percent oxygen:

U.S. EPA Reference Method 18, Measurement of Gaseous Organic Compound Emissions By Gas Chromatography (65 Fed.Reg. at 62007);

U.S. EPA Reference Method 25, Determination of Total Gaseous Nonmethane Organic Emissions as Carbon (65 Fed.Reg. at 62044);

U.S. EPA Reference Method 25A, Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer (65 Fed.Reg. at 62062); or

U.S. EPA Reference Method 25C, Determination of Nonmethane Organic Compounds in Landfill Gases (65 Fed.Reg. at 62066).

The following equation must be used to calculate destruction efficiency:

$$Destruction\ Efficiency = \left[1 - \left(\frac{Mass\ of\ Methane_{outlet}}{Mass\ of\ Methane_{inlet}} \right) \right] \times 100\%$$

(2) *Open Flares:* Open flares must meet the requirements of 40 CFR §60.18 (as last amended ~~65~~ 73 Fed.Reg. ~~61752~~ 78209, ~~(October 17, 2000~~ December 22, 2008).

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95473. Implementation, Enforcement, and Related Fees

- (a) The Executive Officer, at his or her discretion, may enter into an agreement with a District to implement and enforce this subarticle. Pursuant to this agreement, an owner or operator of a MSW landfill must pay any fees assessed by a District for the purpose of recovering the District's cost of implementing and enforcing the requirements of this subarticle. Implementation and enforcement of other law as described in Section 95474 cannot result in a standard, requirement, or prohibition less stringent than provided in this subarticle, as determined by the Executive Officer.
- (b) The Executive Officer may request any owner or operator to demonstrate that a landfill does not meet the applicability criteria specified in this subarticle. Such demonstration must be submitted to the Executive Officer within 90 days of a written request received from the Executive Officer.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.

§ 95475. Definitions

- (a) For purposes of this subarticle, the following definitions apply:

- (6) "Closed MSW Landfill" means that a MSW landfill is no longer accepting solid waste for disposal and has documentation that the closure was conducted in accordance with the applicable statutes, regulations, and local ordinances in effect at the time of closure. ~~or can document that the landfill is no longer receiving solid waste.~~

- (11) "Exceedance" means the concentration of methane measured within 3 inches above the landfill surface that exceeds 500 ppmv, other than non-repeatable, momentary readings, as determined by instantaneous surface emissions monitoring; or the average methane concentration measurements that exceed 25 ppmv, as determined by integrated surface emissions monitoring.

(17) “Inactive MSW Landfill” means a MSW landfill that is no longer accepting solid waste for disposal, or can document that the landfill is no longer receiving solid waste.

(18) “Inert Waste” means any material meeting the definition of “Inert Waste” as defined in Title 27, California Code of Regulations, Division 2, Subdivision 1, Chapter 3, Subchapter 2, Article 2, Section 20230(a) (effective July 18, 1997).

(~~18~~19) “Landfill Gas” means any untreated, raw gas derived through a natural process from the decomposition of organic waste deposited in a MSW landfill, from the evolution of volatile species in the waste, or from chemical reactions of substances in the waste.

(~~19~~20) “Landfill Surface” means the area of the landfill under which decomposable solid waste has been placed, excluding the working face.

(~~20~~21) “Municipal Solid Waste Landfill” or “MSW Landfill” means an entire disposal facility in a contiguous geographical space where solid waste is placed in or on land.

(~~21~~22) “Non-decomposable Solid Waste” means materials that do not degrade biologically to form landfill gas. Examples include, but are not limited to, earth, rock, concrete asphalt paving fragments, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, ceramics, clay products, inert slag, asbestos-containing waste, and demolition materials containing minor amounts (less than 10 percent by volume) of wood and metals. Materials that do not meet this definition are considered decomposable solid waste.

(~~22~~23) “Non-repeatable, Momentary Readings” means indications of the presence of methane, which persist for less than five seconds and do not recur when the sampling probe of a portable gas detector is placed in the same location.

(~~23~~24) “Operator” means any person or entity, including but not limited to any government entity, corporation, partnership, trustee, other legal entity, or individual that:

(A) Operates the MSW landfill;

- (B) Is responsible for complying with any federal, state, or local requirements relating to methane emissions from real property used for MSW landfill purposes and subject to this subarticle;
- (C) Operates any stationary equipment for the collection of landfill gas;
- (D) Purchases landfill gas from an owner or operator of a MSW landfill and operates any stationary equipment for the treatment of landfill gas; or
- (E) Purchases untreated landfill gas from an owner or operator of a MSW landfill and operates any stationary equipment for the combustion of landfill gas.

(2425) “Owner” means any person or entity, including but not limited to any government entity, corporation, partnership, trustee, other legal entity, or individual that:

- (A) Holds title to the real property on which the MSW landfill is located, including but not limited to title held by joint tenancy, tenancy in common, community property, life estate, estate for years, lease, sublease, or assignment, except title held solely as security for a debt such as mortgage;
- (B) Is responsible for complying with any federal, state, or local requirements relating to methane emissions from real property used for MSW landfill purposes and subject to this subarticle.
- (C) Owns any stationary equipment for the collection of landfill gas;
- (D) Purchases the landfill gas from an owner or operator of a MSW landfill and owns any stationary equipment for the treatment of landfill gas; or
- (E) Purchases untreated landfill gas from an owner or operator of a MSW landfill and owns any stationary equipment for the combustion of landfill gas.

(2526) “Perimeter” means along the MSW landfill’s permitted facility boundary.

(2627) “Professional Engineer” means an engineer holding a valid certificate issued by the State of California Board of Registration for Professional Engineers and Land Surveyors or an engineer holding a valid certificate issued by a state offering reciprocity with California.

- (~~2728~~) “Solid Waste” means all decomposable and non-decomposable solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, manure, vegetable or animal solid and semisolid wastes, sludge, and other discarded solid and semisolid wastes. Solid waste also includes any material meeting the definition of Solid Waste in 40 CFR 60.751 (as last amended 64 Fed.Reg 9262, Feb 24, 1999) as incorporated by reference herein.
- (~~2829~~) “Subsurface Gas Migration” means underground landfill gases that are detected at any point on the perimeter pursuant to California Code of Regulations Title 27, section 20921.
- (~~2930~~) “Waste-in-Place” means the total amount of solid waste placed in the MSW landfill estimated in tons. The refuse density is assumed to be 1,300 pounds per cubic yard and the decomposable fraction is assumed to be 70 percent by weight.
- (~~3031~~) “Well Raising” means a MSW landfill activity where an existing gas collection well is temporarily disconnected from a vacuum source, and the non-perforated pipe attached to the well is extended vertically to allow the addition of a new layer of solid waste or the final cover; or is extended horizontally to allow the horizontal extension of an existing layer of solid waste or cover material. The extended pipe (well extension) is then re-connected in order to continue collecting gas from that well.
- (~~3132~~) “Working Face” means the open area where solid waste is deposited daily and compacted with landfill equipment.

Note: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38580, 39600, and 39601, Health and Safety Code. Reference: Sections 38501, 38505, 38510, 38550, 38551, 38560, 38560.5, 39003, 39500, 39600, and 39601, Health and Safety Code.