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# 40 C.F.R. § 60.35f

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## Test methods and procedures.

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For approval, a state plan must include provisions in this section to calculate the landfill NMOC emission rate or to conduct a surface emission monitoring demonstration.

(a)

(1) *NMOC Emission Rate.* The landfill owner or operator must calculate the NMOC emission rate using either Equation 1 provided in paragraph (a)(1)(i) of this section or Equation 2 provided in paragraph (a)(1)(ii) of this section. Both Equation 1 and Equation 2 may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (a)(1)(i) of this section, for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (a)(1)(ii) of this section, for part of the life of the landfill. The values to be used in both Equation 1 and Equation 2 are 0.05 per year for  $k$ , 170 cubic meters per megagram for  $L_0$ , and 4,000 parts per million by volume as hexane for the  $C_{NMOC}$ . For landfills located in geographical areas with a 30-year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the  $k$  value to be used is 0.02 per year.

(i)

(A) Equation 1 must be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^n 2 k L_0 M_i (e^{-kt_i}) (C_{NMOC}) (3.6 \times 10^{-9}) \quad (\text{Eq. 1})$$

Where:

$M_{NMOC}$  = Total NMOC emission rate from the landfill, megagrams per year.  $k$  = Methane generation rate constant, year<sup>-1</sup>.  $L_0$  = Methane generation potential, cubic meters per megagram solid waste.  $M_i$  = Mass of solid waste in the  $i^{\text{th}}$  section, megagrams.  $t_i$  = Age of the  $i^{\text{th}}$  section, years.  $C_{NMOC}$  = Concentration of NMOC, parts per million by volume as hexane.  $3.6 \times 10^{-9}$  = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for  $M_i$  if documentation of the nature and amount of such wastes is maintained.

(ii)

(A) Equation 2 must be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC} = 2 L_0 R (e^{-kC} - e^{-kT}) C_{NMOC} (3.6 \times 10^{-9}) \quad (\text{Eq. 2})$$

Where:

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$M_{\text{NMOC}}$  = Mass emission rate of NMOC, megagrams per year.  $L_0$  = Methane generation potential, cubic meters per megagram solid waste.  $R$  = Average annual acceptance rate, megagrams per year.  $k$  = Methane generation rate constant, year<sup>-1</sup>.  $t$  = Age of landfill, years.  $C_{\text{NMOC}}$  = Concentration of NMOC, parts per million by volume as hexane.  $c$  = Time since closure, years; for an active landfill  $c = 0$  and  $e^{-kc} = 1.3.6 \times 10^{-9}$  = Conversion factor.

(B) The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value of  $R$ , if documentation of the nature and amount of such wastes is maintained.

(2) *Tier 1.* The owner or operator must compare the calculated NMOC mass emission rate to the standard of 34 megagrams per year.

(i) If the NMOC emission rate calculated in paragraph (a)(1) of this section is less than 34 megagrams per year, then the owner or operator must submit an NMOC emission rate report according to § 60.38f(c), and must recalculate the NMOC mass emission rate annually as required under § 60.33f(e).

(ii) If the NMOC emission rate calculated in paragraph (a)(1) of this section is equal to or greater than 34 megagrams per year, then the landfill owner or operator must either:

(A) Submit a gas collection and control system design plan within 1 year as specified in § 60.38f(d) and install and operate a gas collection and control system within 30 months according to § 60.33f(b) and (c);

(B) Determine a site-specific NMOC concentration and recalculate the NMOC emission rate using the Tier 2 procedures provided in paragraph (a)(3) of this section; or

(C) Determine a site-specific methane generation rate constant and recalculate the NMOC emission rate using the Tier 3 procedures provided in paragraph (a)(4) of this section.

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