3745-256-84 **Waste determination procedures - tanks, surface impoundments, and containers.**

(A) Waste determination procedure to determine average volatile organic (VO) concentration of a hazardous waste at the point of waste origination.

(1) An owner or operator shall determine the average VO concentration at the point of waste origination for each hazardous waste placed in a waste management unit exempted under paragraph (C)(1) of rule 3745-256-83 of the Administrative Code from using air emission controls in accordance with standards specified in rules 3745-256-85 to 3745-256-88 of the Administrative Code, as applicable to the waste management unit.

(a) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the hazardous waste stream is placed in a waste management unit exempted under paragraph (C)(1) of rule 3745-256-83 of the Administrative Code from using air emission controls, and thereafter an initial determination of the average VO concentration of the waste stream shall be made for each averaging period that a hazardous waste is managed in the unit; and

(b) Perform a new waste determination whenever changes to the source generating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level that is equal to or greater than the VO concentration limit specified in paragraph (C)(1) of rule 3745-256-83 of the Administrative Code.

(2) For a waste determination that is required by paragraph (A)(1) of this rule, the average VO concentration of a hazardous waste at the point of waste origination shall be determined using either direct measurement as specified in paragraph (A)(3) of this rule or by knowledge as specified in paragraph (A)(4) of this rule.

(3) Direct measurement to determine average VO concentration of a hazardous waste at the point of waste origination.

(a) Identification. The owner or operator shall identify and record the point of waste origination for the hazardous waste.

(b) Sampling. Samples of the hazardous waste stream shall be collected at the point of waste origination in a manner such that volatilization of organics contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

(i) The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass-weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but shall not exceed one year.

(ii) A sufficient number of samples, but no less than four samples, shall be collected and analyzed for a hazardous waste determination. All of the samples for a given waste determination shall be collected within a one-hour period. The average of the four or more sample results constitutes a waste determination for the waste stream. One or more waste determinations may be required to represent the complete range of waste compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the source or process generating the hazardous waste stream. Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

(iii) All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organics occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of acceptable sample collection and handling procedures for a total volatile organic constituent concentration may be found in method 25D in 40 CFR Part 60 appendix A.

(iv) Sufficient information, as specified in the "site sampling plan" required under paragraph (A)(3)(b)(iii) of this rule, shall be prepared and recorded to document the waste quantity represented by the samples and, as applicable, the operating conditions for the source or process generating the hazardous waste represented by the samples.

(c) Analysis. Each collected sample shall be prepared and analyzed in accordance with method 25D in 40 CFR Part 60 appendix A for the total concentration of volatile organic constituents, or using one or more methods when the individual organic compound concentrations are identified and summed and the summed waste concentration accounts for and reflects all organic compounds in the waste with Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which also can be expressed as 1.8×10^{-6} atmospheres/gram-mole/m^3] at twenty-five degrees Celsius. At the owner's or operator's discretion, the owner or operator may adjust test data obtained by any appropriate method to discount any contribution to the total volatile organic concentration that is a result of including a compound with a Henry's law constant value of less than 0.1 Y/X at twenty-five degrees Celsius. To adjust these data, the measured concentration of each individual chemical constituent contained in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}). If the owner or operator elects to adjust test data, the adjustment shall be made to all individual chemical constituents with a Henry's law constant value greater than or equal to 0.1 Y/X at twenty-five degrees Celsius contained in the waste. Constituent-specific adjustment factors (f_{m25D}) can be obtained by contacting the "Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC" 27711. Other test methods may be used if they meet the requirements in paragraph (A)(3)(c)(i) or (A)(3)(c)(ii) of this rule and provided the requirement to reflect all organic compounds in the waste with Henry's law constant values greater than or equal to 0.1 Y/X [which also can be expressed as 1.8×10^{-6} atmospheres/gram-mole/m^3] at twenty-five degrees Celsius, is met.

(i) Any U.S. EPA standard method that has been validated in accordance with "Alternative Validation Procedure for EPA Waste and Wastewater Methods," 40 CFR Part 63 appendix D.

(ii) Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of method 301 in 40 CFR Part 63 appendix A. The data are acceptable if the data meet the criteria specified in Section 6.1.5 or Section 6.3.3 of method 301. If correction is required under section 6.3.3 of method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of method 301 are not required.

(d) Calculations.

(i) The average VO concentration on a mass-weighted basis shall be calculated by using the results for all waste determinations conducted in accordance with paragraphs (A)(3)(b) and (A)(3)(c) of this rule and the following equation:

$$\bar{C} = \frac{1}{Q_T} \, x \, \sum_{i=1}^{n} (Q_i \ x \ C_i)$$

Where:

$\bar{C}$ = Average VO concentration of the hazardous waste at the point of waste origination on a mass-weighted basis, ppmw.

i = Individual waste determination "i" of the hazardous waste.

n = Total number of waste determinations of the hazardous waste conducted for the averaging period (not to exceed one year).

Q_i = Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T = Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i = Measured VO concentration of waste determination "i" as determined in accordance with the requirements of paragraph (A)(3)(c) of this rule (i.e. the average of the four or more samples specified in paragraph (A)(3)(b)(ii) of this rule), parts per million by weight (ppmw).

(ii) To determine C_i, for individual waste samples analyzed in accordance with paragraph (A)(3)(c) of this rule, the owner or operator shall account for VO concentrations determined to be below the limit of detection of the analytical method by using the following VO concentration:

(a) If method 25D in 40 CFR Part 60 appendix A is used for the analysis, one-half the blank value determined in the method at Section 4.4 of method 25D in 40 CFR Part 60 appendix A.

(b) If any other analytical method is used, one-half the sum of the limits of detection established for each organic constituent in the waste that has a Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/ mole-fraction-in-the-liquid-phase (0.1 Y/X) [which also can be expressed as 1.8 x 10^{-6} atmospheres/gram-mole/m^3] at twenty-five degrees Celsius.

(e) Provided that the test method is appropriate for the waste as required under paragraph (A)(3)(c) of this rule, Ohio EPA will determine compliance based on the test method used by the owner or operator as recorded pursuant to paragraph (F)(1) of rule 3745-256-90 of the Administrative Code.

(4) Use of owner or operator knowledge to determine average VO concentration of a hazardous waste at the point of waste origination.

(a) Documentation shall be prepared that presents the information used as the basis for the owner's or operator's knowledge of the hazardous waste stream's average VO concentration. Examples of information that may be used as the basis for knowledge include material balances for the source or process generating the hazardous waste stream; constituent-specific chemical test data for the hazardous waste stream from previous testing that are still applicable to the current waste stream; previous test data for other locations managing the same type of waste stream; or other knowledge based on information included in manifests, shipping papers, or waste certification notices.

(b) If test data are used as the basis for knowledge, then the owner or operator shall document the test method, sampling protocol, and the means by which sampling variability and analytical variability are accounted for in the determination of the average VO concentration. For example, an owner or operator may use organic concentration test data for the hazardous waste stream that are validated in accordance with method 301 in 40 CFR Part 63 appendix A as the basis for knowledge of the waste.

(c) An owner or operator using chemical constituent-specific concentration test data as the basis for knowledge of the hazardous waste may adjust the test data to the corresponding average VO concentration value which would have been obtained had the waste samples been analyzed using method

25D in 40 CFR Part 60 appendix A. To adjust these data, the measured concentration for each individual chemical constituent contained in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}).

(d) In the event that the director and the owner or operator disagree on a determination of the average VO concentration for a hazardous waste stream using knowledge, then the results from a determination of average VO concentration using direct measurement as specified in paragraph (A)(3) of this rule shall be used to establish compliance with the applicable requirements of rules 3745-256-80 to 3745-256-90 of the Administrative Code. The director may perform or request that the owner or operator perform this determination using direct measurement. The owner or operator may choose one or more appropriate methods to analyze each collected sample in accordance with the requirements of paragraph (A)(3)(c) of this rule.

(B) Waste determination procedures for treated hazardous waste.

(1) An owner or operator shall perform the applicable waste determination for each treated hazardous waste placed in a waste management unit exempted under paragraph (C)(2)(a) to (C)(2)(f) of rule 3745-256-83 of the Administrative Code from using air emission controls in accordance with standards specified in rules 3745-256-85 to 3745-256-88 of the Administrative Code, as applicable to the waste management unit.

(a) An initial determination of the average VO concentration of the waste stream shall be made before the first time any portion of the material in the treated waste stream is placed in a waste management unit exempted under paragraphs (C)(2), (C)(3), or (C)(4) of rule 3745-256-83 of the Administrative Code from using air emission controls, and thereafter update the information used for the waste determination at least once every twelve months following the date of the initial waste determination; and

(b) Perform a new waste determination whenever changes to the process generating or treating the waste stream are reasonably likely to cause the average VO concentration of the hazardous waste to increase to a level such that the applicable treatment conditions specified in paragraph (C)(2), (C)(3), or (C)(4) of rule 3745-256-83 of the Administrative Code are not achieved.

(2) The owner or operator shall designate and record the specific provision in paragraph (C)(2) of rule 3745-256-83 of the Administrative Code under which the waste determination is being performed. The waste determination for the treated hazardous waste shall be performed using the applicable procedures specified in paragraphs (B)(3) to (B)(9) of this rule.

(3) Procedure to determine the average VO concentration of a hazardous waste at the point of waste treatment.

(a) Identification. The owner or operator shall identify and record the point of waste treatment for the hazardous waste.

(b) Sampling. Samples of the hazardous waste stream shall be collected at the point of waste treatment in a manner such that volatilization of organics contained in the waste and in the subsequent sample is minimized and an adequately representative sample is collected and maintained for analysis by the selected method.

(i) The averaging period to be used for determining the average VO concentration for the hazardous waste stream on a mass-weighted average basis shall be designated and recorded. The averaging period can represent any time interval that the owner or operator determines is appropriate for the hazardous waste stream but shall not exceed one year.

(ii) A sufficient number of samples, but no less than four samples, shall be collected and analyzed for a hazardous waste determination. All of the samples for a given waste determination shall be collected within a one-hour period. The average of the four or more sample results constitutes a waste determination for the waste stream. One or more waste determinations may be required to represent the complete range of waste compositions and quantities that occur during the entire averaging period due to normal variations in the operating conditions for the process generating or treating the hazardous waste stream. Examples of such normal variations are seasonal variations in waste quantity or fluctuations in ambient temperature.

(iii) All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste stream are collected such that a minimum loss of organics occurs throughout the sample collection and handling process, and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of acceptable sample collection and handling procedures for a total volatile organic constituent concentration may be found in method 25D in 40 CFR Part 60 appendix A.

(iv) Sufficient information, as specified in the "site sampling plan" required under paragraph (B)(3)(b)(iii) of this rule, shall be prepared and recorded to document the waste quantity represented by the samples and, as applicable, the operating conditions for the process treating the hazardous waste represented by the samples.

(c) Analysis. Each collected sample shall be prepared and analyzed in accordance with method 25D in 40 CFR art 60 appendix A for the total concentration of volatile organic constituents, or using one or more methods when the individual organic compound concentrations are identified and summed and the summed waste concentration accounts for and reflects all organic compounds in the waste with Henry's law constant values at least 0.1 mole-fraction-in-the-gas-phase/mole-fraction-in-the-liquid-phase (0.1 Y/X) [which also can be expressed as 1.8 x 10^{-6} atmospheres/gram-mole/m^3] at twenty-five degrees Celsius. When the owner or operator is making a waste determination for a treated hazardous waste that is to be compared to an average VO concentration at the point of waste origination or the point of waste entry to the treatment system to determine if the conditions of paragraphs (C)(2)(a) to (C)(2)(f) of rule 3745-205-82 of the Administrative Code, or paragraphs (C)(2)(a) to (C)(2)(f) of rule 3745-265-83 of the Administrative Code are met, then the waste samples shall be prepared and analyzed using the same method or methods as were used in making the initial waste determinations at the point of waste origination or at the point of entry to the treatment system. At the owner or operator's discretion, the owner or operator may adjust test data obtained by any appropriate method to discount any contribution to the total volatile organic concentration that is a result of including a compound with a Henry's law constant value less than 0.1 Y/X at twenty-five degrees Celsius. To adjust these data, the measured concentration of each individual chemical constituent in the waste is multiplied by the appropriate constituent-specific adjustment factor (f_{m25D}). If the owner or operator elects to adjust test data, the adjustment shall be made to all individual chemical constituents with a Henry's law constant value greater than or equal to 0.1 Y/X at twenty-five degrees Celsius contained in the waste. Constituent-specific adjustment factors (f_{m25D}) can be obtained by contacting the "Waste and Chemical Processes Group, Office of Air Quality Planning and Standards, Research Triangle Park, NC" 27711. Other test methods may be used if meet the requirements in paragraph (A)(3)(c)(i) or (A)(3)(b)(ii) of this rule and provided the requirement to reflect all organic compounds in the waste with Henry's law constant values greater than or equal to 0.1 Y/X [which also can be expressed as 1.8×10^{-6} atmospheres/gram-mole/m^3] at twenty-five degrees Celsius, is met.

(i) Any U.S. EPA standard method that has been validated in accordance with "Alternative Validation Procedure for EPA Waste and Wastewater Methods," 40 CFR Part 63 appendix D.

(ii) Any other analysis method that has been validated in accordance with the procedures specified in Section 5.1 or Section 5.3, and the corresponding calculations in Section 6.1 or Section 6.3, of method 301 in 40 CFR Part 63 appendix A. The data are acceptable if the data meet the criteria specified in Section 6.1.5 or Section 6.3.3 of method 301. If correction is required under Section 6.3.3 of method 301, the data are acceptable if the correction factor is within the range 0.7 to 1.30. Other sections of method 301 are not required.

(d) Calculations. The average VO concentration the on a mass-weighted basis shall be calculated by using the results for all waste determinations conducted in accordance with paragraphs (B)(3)(b) and (B)(3)(c) of this rule and the following equation:

$$\bar{C} = \frac{1}{Q_T} \; x \; \sum_{i=1}^{n} (Q_i \; x \; C_i)$$

Where:

$\bar{C}$ = Average VO concentration of the hazardous waste at the point of waste origination on a mass-weighted basis, ppmw.

i = Individual waste determination "i" of the hazardous waste.

n = Total number of waste determinations of the hazardous waste conducted for the averaging period (not to exceed one year).

Q_i = Mass quantity of hazardous waste stream represented by C_i, kg/hr.

Q_T = Total mass quantity of hazardous waste during the averaging period, kg/hr.

C_i = Measured VO concentration of waste determination "i" as determined in accordance with the requirements of paragraph (B)(3)(c) of this rule (i.e. the average of the four or more samples specified in paragraph (B)(3)(b)(ii) of this rule), ppmw.

(e) Provided that the test method is appropriate for the waste as required under paragraph (B)(3)(c) of this rule, compliance shall be determined based on the test method used by the owner or operator as recorded pursuant to paragraph (F)(1) of rule 3745-256-90 of the Administrative Code.

(4) Procedure to determine the exit concentration limit (C_t) for a treated hazardous waste.

(a) The point of waste origination for each hazardous waste treated by the process at the same time shall be identified.

(b) If a single hazardous waste stream is identified in paragraph (B)(4)(a) of this rule, then the exit concentration limit (C_t) shall be five hundred ppmw.

(c) If more than one hazardous waste stream is identified in paragraph (B)(4)(a) of this rule, then the average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with the requirements of paragraph (A) of this rule. The exit concentration limit (C_t) shall be calculated by using the results determined for each individual hazardous waste stream and the following equation:

$$C_t = \frac{\sum_{x=1}^{m}(Q_x \times \bar{C}_x) + \sum_{y=1}^{n}(Q_y \times 500\ \text{ppmw})}{\sum_{x=1}^{m} Q_x + \sum_{y=1}^{n} Q_y}$$

Where:

C_t = Exit concentration limit for treated hazardous waste, ppmw.

x = Individual hazardous waste stream "x" that has an average VO concentration less than five hundred ppmw at the point of waste origination as determined in accordance with the requirements of paragraph (A) of rule 3745-256-84 of the Administrative Code.

y = Individual hazardous waste stream "y" that has an average VO concentration equal to or greater than five hundred ppmw at the point of waste origination as determined in accordance with the requirements of paragraph (A) of rule 3745-256-84 of the Administrative Code.

m = Total number of "x" hazardous waste streams treated by process.

n = Total number of "y" hazardous waste streams treated by process.

Q_x = Annual mass quantity of hazardous waste stream "x," kg/yr.

Q_y = Annual mass quantity of hazardous waste stream "y," kg/yr.

$\bar{C}_x$ = Average VO concentration of hazardous waste stream "x" at the point of waste origination as determined in accordance with the requirements of paragraph (A) of rule 3745-256-84 of the Administrative Code, ppmw.

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(5) Procedure to determine the organic reduction efficiency (R) for a treated hazardous waste.

(a) The R for a treatment process shall be determined based on results for a minimum of three consecutive runs.

(b) All hazardous waste streams entering the treatment process and all hazardous waste streams exiting the treatment process shall be identified. The owner or operator shall prepare a sampling plan for measuring these streams that accurately reflects the retention time of the hazardous waste in the process.

(c) For each run, information shall be determined for each hazardous waste stream identified in paragraph (B)(5)(b) of this rule using the following procedures:

(i) The mass quantity of each hazardous waste stream entering the process (Q_b) and the mass quantity of each hazardous waste stream exiting the process (Q_a) shall be determined.

(ii) The average VO concentration at the point of waste origination of each hazardous waste stream entering the process ($\bar{C}_b$) during the run shall be determined in accordance with the requirements of paragraph (A)(3) of this rule. The average VO concentration at the point of waste treatment of each waste stream exiting the process ($\bar{C}_a$) during the run shall be determined in accordance with the requirements of paragraph (B)(3) of this rule.

(d) The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be calculated by using the results determined in accordance with paragraph (B)(5)(c) of this rule and the following equations:

$$E_b = \frac{1}{10^6} \sum_{j=1}^{m} (Q_{bj} \times \bar{C}_{bj})$$

$$E_a = \frac{1}{10^6} \sum_{j=1}^{m} (Q_{aj} \times \bar{C}_{aj})$$

Where:

E_a = Waste volatile organic mass flow exiting process, kg/hr.

E_b = Waste volatile organic mass flow entering process, kg/hr.

m = Total number of runs (at least three)

j = Individual run "j"

Q_b = Mass quantity of hazardous waste entering process during run "j," kg/hr.

Q_a = Average mass quantity of hazardous waste exiting process during run "j," kg/hr.

$\bar{C}_a$ = Average VO concentration of hazardous waste exiting process during run "j" as determined in accordance with the requirements of paragraph (B)(3) of rule 3745-256-84 of the Administrative Code, ppmw.

$\bar{C}_b$ = Average VO concentration of hazardous waste entering process during run "j" as determined in accordance with the requirements of paragraph (A)(3) of rule 3745-256-84 of the Administrative Code, ppmw.

(e) The R of the process shall be calculated by using the results determined in accordance with paragraph (B)(5)(d) of this rule and the following equation:

$$R = \frac{E_b - E_a}{E_b} \times 100\%$$

Where:

R = Organic reduction efficiency, per cent.

E_b = Waste volatile organic mass flow entering process as determined in accordance with the requirements of paragraph (B)(5)(d) of this rule, kg/hr.

E_a = Waste volatile organic mass flow exiting process as determined in accordance with the requirements of paragraph (B)(5)(d) of this rule, kg/hr.

(6) Procedure to determine the organic biodegradation efficiency (R_{bio}) for a treated hazardous waste.

(a) The fraction of organics biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR Part 63 appendix C.

(b) The R_{bio} shall be calculated by using the following equation:

$$R_{bio} = F_{bio} x\ 100\%$$

Where:

R_{bio} = Organic biodegradation efficiency, per cent.

F_{bio} = Fraction of organic biodegraded as determined in accordance with the requirements of paragraph (B)(6)(a) of this rule.

(7) Procedure to determine the required organic mass removal rate (RMR) for a treated hazardous waste.

(a) All of the hazardous waste streams entering the treatment process shall be identified.

(b) The average VO concentration of each hazardous waste stream at the point of waste origination shall be determined in accordance with the requirements of paragraph (A) of this rule.

(c) For each individual hazardous waste stream that has an average VO concentration equal to or greater than five hundred ppmw at the point of waste origination, the average volumetric flow rate and the density of the hazardous waste stream at the point of waste origination shall be determined.

(d) The RMR shall be calculated by using the average VO concentration, average volumetric flow rate, and density determined for each individual hazardous waste stream, and the following equation:

$$RMR = \sum_{y=1}^{n}\left[V_y \times k_y \times \frac{\left(\overline{C_y} - 500\ ppmw\right)}{10^6}\right]$$

RMR = Required organic mass removal rate, kg/hr.

y = Individual hazardous waste stream "y" that has an average VO concentration equal to or greater than five hundred ppmw at the point of waste origination as determined in accordance with the requirements of paragraph (A) of rule 3745-256-84 of the Administrative Code.

n = Total number of "y" hazardous waste streams treated by process.

V_y = Average volumetric flow rate of hazardous waste stream "y" at the point of waste origination, m^3/hr.

k_y = Density of hazardous waste stream "y," kg/m^3

$\bar{C}_y$ = Average VO concentration of hazardous waste stream "y" at the point of waste origination as determined in accordance with the requirements of paragraph (A) of rule 3745-256-84 of the Administrative Code, parts per million.

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(8) Procedure to determine the actual organic mass removal rate (MR) for a treated hazardous waste.

(a) The MR shall be determined based on results for a minimum of three consecutive runs. The sampling time for each run shall be one hour.

(b) The waste volatile organic mass flow entering the process (E_b) and the waste volatile organic mass flow exiting the process (E_a) shall be determined in accordance with the requirements of paragraph (B)(5)(d) of this rule.

(c) The MR shall be calculated by using the mass flow rate determined in accordance with the requirements of paragraph (B)(8)(b) of this rule and the following equation:

$MR = E_b - E_a$

Where:

MR = Actual organic mass removal rate, kg/hr.

E_b = Waste volatile organic mass flow entering process as determined in accordance with the requirements of paragraph (B)(5)(d) of this rule, kg/hr.

E_a = Waste volatile organic mass flow exiting process as determined in accordance with the requirements of paragraph (B)(5)(d) of this rule, kg/hr.

(9) Procedure to determine the actual organic mass biodegradation rate (MR_{bio}) for a treated hazardous waste.

(a) The MR_{bio} shall be determined based on results for a minimum of three consecutive runs. The sampling time for each run shall be one hour.

(b) The waste organic mass flow entering the process (E_b) shall be determined in accordance with the requirements of paragraph (B)(5)(d) of this rule.

(c) The fraction of organic biodegraded (F_{bio}) shall be determined using the procedure specified in 40 CFR Part 63 appendix C.

(d) The MR_{bio} shall be calculated by using the mass flow rates and fraction of organic biodegraded determined in accordance with the requirements of paragraphs (B)(9)(b) and (B)(9)(c) of this rule, respectively, and the following equation:

$MR_{bio} = E_b \times F_{bio}$

Where:

MR_{bio} = Actual organic mass biodegradation rate, kg/hr.

E_b = Waste organic mass flow entering process as determined in accordance with the requirements of paragraph (B)(5)(d) of this rule, kg/hr.

F_{bio} = Fraction of organic biodegraded as determined in accordance with the requirements of paragraph (B)(9)(c) of this rule.

(C) Procedure to determine the maximum organic vapor pressure of a hazardous waste in a tank.

(1) An owner or operator shall determine the maximum organic vapor pressure for each hazardous waste placed in a tank using "Tank Level 1" controls in accordance with the standards specified in paragraph (C) of rule 3745-256-85 of the Administrative Code.

(2) An owner or operator shall use either direct measurement as specified in paragraph (C)(3) of this rule or knowledge of the waste as specified by paragraph (C)(4) of this rule to determine the maximum organic vapor pressure which is representative of the hazardous waste composition stored or treated in the tank.

(3) Direct measurement to determine the maximum organic vapor pressure of a hazardous waste.

(a) Sampling. A sufficient number of samples shall be collected to be representative of the waste contained in the tank. All samples shall be collected and handled in accordance with written procedures prepared by the owner or operator and documented in a site sampling plan. This plan shall describe the procedure by which representative samples of the hazardous waste are collected such that a minimum loss of organics occurs throughout the sample collection and handling process and by which sample integrity is maintained. A copy of the written sampling plan shall be maintained on-site in the facility operating records. An example of acceptable sample collection and handling procedures may be found in method 25D in 40 CFR Part 60 appendix A.

(b) Analysis. Any appropriate one of the following methods may be used to analyze the samples and compute the maximum organic vapor pressure of the hazardous waste:

(i) Method 25E in 40 CFR Part 60 appendix A;

(ii) Methods described in American petroleum institute publication 2517, third edition, February 1989, "Evaporative Loss from External Floating-Roof Tanks";

(iii) Methods obtained from standard reference texts;

(iv) ASTM method D2879-10; and

(v) Any other method approved by the director.

(4) Use of knowledge to determine the maximum organic vapor pressure of the hazardous waste. Documentation shall be prepared and recorded that presents the information used as the basis for the owner's or operator's knowledge that the maximum organic vapor pressure of the hazardous waste is less than the maximum vapor pressure limit listed in paragraph (B)(1)(a) of rule 3745-256-85 of the Administrative Code for the applicable tank design capacity category. An example of information that may be used is documentation that the hazardous waste is generated by a process for which at other locations it previously has been determined by direct measurement that the waste maximum organic vapor pressure is less than the maximum vapor pressure limit for the appropriate tank design capacity category.

(D) Procedure for determining no detectable organic emissions for the purpose of complying with rules 3745-256-80 to 3745-256-90 of the Administrative Code:

(1) The test shall be conducted in accordance with the procedures specified in method 21 of 40 CFR Part 60 appendix A. Each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices shall be checked. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to the interface of the cover and the cover's foundation mounting; the periphery of any opening on the cover and the cover's associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve.

(2) The test shall be performed when the unit contains a hazardous waste having an organic concentration representative of the range of concentrations for the hazardous waste expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

(3) The detection instrument shall meet the performance criteria of method 21 of 40 CFR Part 60 appendix A, except the instrument response factor criteria in Section 3.1.2(a) of method 21 shall be for the average composition of the organic constituents in the hazardous waste placed in the waste management unit, not for each individual organic constituent.

(4) The detection instrument shall be calibrated before use on each day of the instrument's use by the procedures specified in method 21 of 40 CFR Part 60 appendix A.

(5) Calibration gases shall be as follows:

(a) Zero air (less than ten parts per million by volume (ppmv) hydrocarbon in air), and

(b) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, ten thousand ppmv methane or n-hexane.

(6) The background level shall be determined according to the procedures in method 21 of 40 CFR Part 60 appendix A.

(7) Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in method 21 of 40 CFR Part 60 appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

(8) The arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of five hundred ppmv except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (D)(9) of this rule. If the difference is less than five hundred ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.

(9) For the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of ten thousand ppmw. If the difference is less than ten thousand ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.

[Comment: For dates of non-regulatory government publications, publications of recognized organizations and associations, federal rules, and federal statutory provisions referenced in this rule, see rule 3745-50-11 of the Administrative Code titled "Incorporated by reference."]

Effective:	6/12/2023
Five Year Review (FYR) Dates:	Exempt

CERTIFIED ELECTRONICALLY

Certification

06/02/2023

Date

Promulgated Under:	119.03
Statutory Authority:	3734.12
Rule Amplifies:	3734.12

Appendix to rule 3745-256-84 of the Administrative Code

Compounds With Henry's Law Constant Less Than 0.1 Y/X

Compound name	CAS* Number
Acetaldol	107-89-1
Acetamide	60-35-5
2-Acetylaminofluorene	53-96-3
3-Acetyl-5-hydroxypiperidine	----
3-Acetylpiperidine	618-42-8
1-Acetyl-2-thiourea	591-08-2
Acrylamide	79-06-1
Acrylic acid	79-10-7
Adenine	73-24-5
Adipic acid	124-04-9
Adiponitrile	111-69-3
Alachlor	15972-60-8
Aldicarb	116-06-3
Ametryn	834-12-8
4-Aminobiphenyl	92-67-1
4-Aminopyridine	504-24-5
Aniline	62-53-3
o-Anisidine	90-04-0
Anthraquinone	84-65-1
Atrazine	1912-24-9
Benzenearsonic acid	98-05-5
Benzenesulfonic acid	98-11-3
Benzidine	92-87-5
Benzo(a)anthracene	56-55-3
Benzo(k)fluoranthene	207-08-9
Benzoic acid	65-85-0

Compound name	CAS* Number
Benzo(g,h,i)perylene	191-24-2
Benzo(a)pyrene	50-32-8
Benzyl alcohol	100-51-6
gamma-BHC	58-89-9
Bis(2-ethylhexyl)phthalate	117-81-7
Bromochloromethyl acetate	----
Bromoxynil	1689-84-5
Butyric acid	107-92-6
Caprolactam (hexahydro-2H-azepin-2-one)	105-60-2
Catechol (o-dihydroxybenzene)	120-80-9
Cellulose	9004-34-6
Cell wall	----
Chlorhydrin (3-Chloro-1,2-propanediol)	96-24-2
Chloroacetic acid	79-11-8
2-Chloroacetophenone	93-76-5
p-Chloroaniline	106-47-8
p-Chlorobenzophenone	134-85-0
Chlorobenzilate	510-15-6
p-Chloro-m-cresol (6-chloro-m-cresol)	59-50-7
3-Chloro-2,5-diketopyrrolidine	----
Chloro-1,2-ethane diol	----
4-Chlorophenol	106-48-9
Chlorophenol polymers (2-chlorophenol & 4-chlorophenol)	95-57-8 and 106-48-9
1-(o-Chlorophenyl)thiourea	5344-82-1
Chrysene	218-01-9
Citric acid	77-92-9
Creosote	8001-58-9
m-Cresol	108-39-4

Compound name	CAS* Number
o-Cresol	95-48-7
p-Cresol	106-44-5
Cresol (mixed isomers)	1319-77-3
4-Cumylphenol	27576-86
Cyanide	57-12-5
4-Cyanomethyl benzoate	----
Diazinon	333-41-5
Dibenzo(a,h)anthracene	53-70-3
Dibutylphthalate	84-74-2
2,5-Dichloroaniline (N,N'-dichloroaniline)	95-82-9
2,6-Dichlorobenzonitrile11	1194-65-6
2,6-Dichloro-4-nitroaniline	99-30-9
2,5-Dichlorophenol	333-41-5
3,4-Dichlorotetrahydrofuran	3511-19
Dichlorvos (DDVP)	62-73-7
Diethanolamine	111-42-2
N,N-Diethylaniline	91-66-7
Diethylene glycol	111-46-6
Diethylene glycol dimethyl ether (dimethyl Carbitol)	111-96-6
Diethylene glycol monobutyl ether (butyl Carbitol)	112-34-5
Diethylene glycol monoethyl ether acetate (Carbitol acetate)	112-15-2
Diethylene glycol monoethyl ether (Carbitol Cellosolve)	111-90-0
Diethylene glycol monomethyl ether (methyl Carbitol)	111-77-3
N,N'-Diethylhydrazine	1615-80-1
Diethyl (4-methylumbelliferyl) thionophosphate	299-45-6
Diethyl phosphorothioate	126-75-0
N,N'-Diethylpropionamide	15299-99-7
Dimethoate	60-51-5

Compound name	CAS* Number
2,3-Dimethoxystrychnidin-10-one	357-57-3
4-Dimethylaminoazobenzene.	60-11-7
7,12-Dimethylbenz(a)anthracene	57-97-6
3,3-Dimethylbenzidine	119-93-7
Dimethylcarbamoyl chloride	79-44-7
Dimethyldisulfide	624-92-0
Dimethylformamide	68-12-2
1,1-Dimethylhydrazine	57-14-7
Dimethylphthalate	131-11-3
Dimethylsulfone	67-71-0
Dimethylsulfoxide	67-68-5
4,6-Dinitro-o-cresol	534-52-1
1,2-Diphenylhydrazine	122-66-7
Dipropylene glycol (1,1'-oxydi-2-propanol)	110-98-5
Endrin	72-20-8
Epinephrine	51-43-4
mono-Ethanolamine	141-43-5
Ethyl carbamate (urethane)	5-17-96
Ethylene glycol	107-21-1
Ethylene glycol monobutyl ether (butyl Cellosolve)	111-76-2
Ethylene glycol monoethyl ether (Cellosolve)	110-80-5
Ethylene glycol monoethyl ether acetate (Cellosolve acetate)	111-15-9
Ethylene glycol monomethyl ether (methyl Cellosolve)	109-86-4
Ethylene glycol monophenyl ether (phenyl Cellosolve)	122-99-6
Ethylene glycol monopropyl ether (propyl Cellosolve)	2807-30-9
Ethylene thiourea (2-imidazolidinethione)	96-45-7
4-Ethylmorpholine	100-74-3
3-Ethylphenol	620-17-7

Compound name	CAS* Number
Fluoroacetic acid, sodium salt	62-74-8
Formaldehyde	50-00-0
Formamide	75-12-7
Formic acid	64-18-6
Fumaric acid	110-17-8
Glutaric acid	110-94-1
Glycerin (Glycerol)	56-81-5
Glycidol	556-52-5
Glycinamide	598-41-4
Glyphosate	1071-83-6
Guthion	86-50-0
Hexamethylene-1,6-diisocyanate (1,6-diisocyanatohexane)	822-06-0
Hexamethyl phosphoramide	680-31-9
Hexanoic acid	142-62-1
Hydrazine	302-01-2
Hydrocyanic acid	74-90-8
Hydroquinone	123-31-9
Hydroxy-2-propionitrile (hydracrylonitrile)	109-78-4
Indeno (1,2,3-cd) pyrene	193-39-5
Lead acetate	301-04-2
Lead subacetate (lead acetate, monobasic)	1335-32-6
Leucine	61-90-5
Malathion	121-75-5
Maleic acid	110-16-7
Maleic anhydride	108-31-6
Mesityl oxide	141-79-7
Methane sulfonic acid	75-75-2
Methomyl	16752-77-5
p-Methoxyphenol	150-76-5

Compound name	CAS* Number
Methyl acrylate	96-33-3
4,4'-Methylene-bis-(2-chloroaniline)	101-14-4
4,4'-Methylenediphenyl diisocyanate (diphenyl methane diisocyanate)	101-68-8
4,4'-Methylenedianiline	101-77-9
Methylene diphenylamine (MDA)	----
5-Methylfurfural	620-02-0
Methylhydrazine	60-34-4
Methyliminoacetic acid	----
Methyl methane sulfonate	66-27-3
1-Methyl-2-methoxyaziridine	----
Methylparathion	298-00-0
Methyl sulfuric acid (sulfuric acid, dimethyl ester)	77-78-1
4-Methylthiophenol	106-45-6
Monomethylformamide (N-methylformamide)	123-39-7
Nabam	142-59-6
alpha-Naphthol	90-15-3
beta-Naphthol	135-19-3
alpha-Naphthylamine	134-32-7
beta-Naphthylamine	91-59-8
Neopentyl glycol (dimethylolpropane)	126-30-7
Niacinamide	98-92-0
o-Nitroaniline	88-74-4
Nitroglycerin	55-63-0
2-Nitrophenol	88-75-5
4-Nitrophenol	100-02-7
N-Nitrosodimethylamine	62-75-9
Nitrosoguanidine	674-81-7
N-Nitroso-n-methylurea	684-93-5

Compound name	CAS* Number
N-Nitrosomorpholine (4-nitrosomorpholine)	59-89-2
Oxalic acid	144-62-7
Parathion	56-38-2
Pentaerythritol	115-77-5
Phenacetin	62-44-2
Phenol	108-95-2
Phenylacetic acid	103-82-2
m-Phenylene diamine	108-45-2
o-Phenylene diamine	95-54-5
p-Phenylene diamine	106-50-3
Phenyl mercuric acetate	62-38-4
Phorate.	298-02-2
Phthalic anhydride	85-44-9
alpha-Picoline (2-methyl pyridine)	109-06-8
1,3-Propane sulfone	1120-71-4
beta-Propiolactone.	57-57-8
Proporur (Baygon)	----
Propylene glycol	57-55-6
Pyrene	129-00-0
Pyridinium bromide	39416-48-3
Quinoline	91-22-5
Quinone (p-benzoquinone)	106-51-4
Resorcinol	108-46-3
Simazine	122-34-9
Sodium acetate	127-09-3
Sodium formate	141-53-7
Strychnine	57-24-9
Succinic acid	110-15-6
Succinimide	123-56-8

Compound name	CAS* Number
Sulfanilic acid	121-47-1
Terephthalic acid	100-21-0
Tetraethyldithiopyrophosphate	3689-24-5
Tetraethylenepentamine	112-57-2
Thiofanox	39196-18-4
Thiosemicarbazide	79-19-6
2,4-Toluenediamine	95-80-7
2,6-Toluenediamine	823-40-5
3,4-Toluenediamine	496-72-0
2,4-Toluene diisocyanate	584-84-9
p-Toluic acid	99-94-5
m-Toluidine	108-44-1
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
Triethanolamine	102-71-6
Triethylene glycol dimethyl ether	----
Tripropylene glycol	24800-44-0
Warfarin	81-81-2
3,4-Xylenol (3,4-dimethylphenol)	95-65-8
* CAS number means chemical abstracts number.	