

**GENERAL PERMIT 13.1 TEMPLATE**  
**ANAEROBIC DIGESTER SYSTEM CONTROLLED BY A FLARE**

## **B. Facility-Wide Terms and Conditions**

Note: The following are the terms and conditions for a General PTIO to be issued to a **non-Title V** facility

1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
  - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
    - (1) None.
  - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
    - (1) None.

## **C. Emissions Unit Terms and Conditions**

**1. [Emissions Unit ID], [Company Equipment ID]**

Anaerobic Digester system controlled by a flare. Flare heat input rate ≤ 10 mmBtu/hr.

**Operations, Property and/or Equipment Description:**

Anaerobic digester system controlled by a flare

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. None.

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

b. None.

b) Applicable Emissions Limitations and/or Control Requirements

(1) The specific operation(s), property, and/or equipment that constitute each emissions unit along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures are identified below. Emissions from each unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	Emissions of carbon monoxide (CO) shall not exceed 0.37 pounds per million BTU (lb/mmBtu).  Emissions of sulfur dioxide (SO <sub>2</sub> ) shall not exceed 0.33 lb/mmBtu.  See c)(1) and c)(2).
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/2001	Emissions of nitrogen oxides (NO <sub>x</sub> ) shall not exceed 0.068 lb/mmBtu and 3.0 tons per year.  Emissions of volatile organic compounds (VOC) shall not exceed 0.14 lb/mmBtu and 6.2 tons per year.  See b)(2)a and b)(2)g.
c.	OAC rule 3745-31-05(A)(3)(a)(ii), as effective 12/1/2006	See b)(2)b.
d.	OAC rule 3745-31-05(E)	Emissions of volatile organic compounds

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
	[Voluntary restriction to control VOC emissions and State-only enforceable limitation to ensure compliance with OAC rule 3745-15-07]	(VOC) shall not exceed 0.14 lb/mmBtu and 6.2 tons per year.  See b)(2)c and b)(2)d.
e.	OAC rule 3745-17-11(B)	See b)(2)e.
f.	OAC rule 3745-17-07(B)(1)	See b)(2)f.
g.	OAC rule 3745-18-06(E)	The emission limitations of this rule are less stringent than the emission limitations established by ORC 3704.03(T).

(2) Additional Terms and Conditions

- a. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then these emission limitations/control measures no longer apply.

- b. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

BAT is not required if the air contaminant source was installed or modified on or after August 3, 2006 and has the potential to emit, taking into account air pollution controls installed on the source, less than ten tons per year of emissions of an air contaminant or precursor of an air contaminant for which a national ambient air quality standard has been adopted under the Clean Air Act.

BAT requirements listed under OAC rule 3745-31-05(A)(3) do not apply to the NO<sub>x</sub> emissions from this air contaminant source since the uncontrolled potential to emit is less than 10 tons per year.

- c. This General Permit for this air contaminant source takes into account the following voluntary restriction (including the use of any applicable air pollution control equipment) as proposed by the permittee for the purpose of avoiding BAT requirements under OAC rule 3745-31-05(A)(3):

The emissions from the digestion process shall be vented to the flare during any instance when digester gas is present in the feedstock equilibrium tank, primary

digester, or dual purpose tank and the combined heat and power unit is not firing digester gas.

- d. Anaerobic digesters, including all associated equipment and grounds, shall be designed, operated, and maintained so as to prevent the emission of objectionable odors.
- e. The uncontrolled mass rate of particulate emissions from this emissions unit is less than 10 pounds per hour. Pursuant to OAC rule 3745-17-11(A)(2)(a)(ii), Figure II of OAC rule 3745-17-11 does not apply. In addition, Table I of OAC rule 3745-17-11 does not apply because the process weight rate is equal to zero. Process weight is defined in OAC rule 3745-17-01(B)(17).
- f. This emissions unit is exempt from the visible PE limitations specified in OAC rule 3745-17-07(A) pursuant to OAC rule 3745-17-07(A)(3)(h) because the emissions unit is not subject to the requirements of OAC rule 3745-17-11.
- g. The lb / MMBtu and ton per year emissions limitations for NO<sub>x</sub> and CO are based on the emissions unit's potentials to emit. No monitoring, recordkeeping, or reporting requirements are necessary to demonstrate compliance with these emissions limitations.
- h. The permittee shall properly install, operate, and maintain a device to continuously monitor the flare pilot flame or electric arc ignition when the emissions unit is in operation. The monitoring device and any recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

c) Operational Restrictions

- (1) Digester gas combusted in this emissions unit shall not exceed 1000 parts per million on a volume basis (ppm<sub>v</sub>) of hydrogen sulfide.
- (2) Digester gas combusted in the flare serving this emissions unit shall not be less than 500 Btu/scf.
- (3) A pilot flame shall be maintained at all times in the flare's pilot light burner or the arcing of the flare's electric arc ignition system shall pulse continually when the emissions unit is in operation.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall monitor and record hydrogen sulfide concentrations when operating the emissions unit with digester gas using one of the two following options:

Option 1: Weekly gas detector tube sampling. The accuracy of gas detector tubes is presumed to be ± 10%, unless the permittee is able to demonstrate better accuracy of the detector tubes compared to a certified gas standard. The permittee shall perform gas detector tube monitoring in accordance with the manufacturer's instructions for use of the detector tubes and associated sampling system. Any deviations from the manufacturer's instructions should be recorded with the concentration results of the sampling.

Option 2: Continuous digester gas monitoring system. The permittee may install a sampling and analysis system to continuously monitor and record the H<sub>2</sub>S content of the digester gas. The permittee shall properly install, operate, and maintain a continuous digester gas H<sub>2</sub>S monitoring device and recorder that measures and records the H<sub>2</sub>S concentrations in the digester gas when the emissions unit is in operation, including periods of startup and shutdown. The H<sub>2</sub>S monitoring device and recorder shall be capable of satisfying the performance requirements specified in 40 CFR Part 60, Appendix B, Performance Specification 5 and shall be capable of accurately measuring the H<sub>2</sub>S concentration. The H<sub>2</sub>S monitoring device and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals, with any modifications deemed necessary by the permittee.

Whenever the monitored value for hydrogen sulfide exceeds the lower limit of the accuracy of the monitoring system as measured by either of the above monitoring options, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

- a. the date and time the deviation began;
- b. the magnitude of the deviation at that time;
- c. the date the investigation was conducted;
- d. the name(s) of the personnel who conducted the investigation; and
- e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the hydrogen sulfide concentration below the maximum limit specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

- a. a description of the corrective action;
- b. the date the corrective action was completed;
- c. the date and time the deviation ended;
- d. the total period of time (in minutes) during which there was a deviation;
- e. hydrogen sulfide readings immediately after the corrective action was implemented; and
- f. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

- (2) The permittee shall maintain monthly records of the heat content of the digester gas, in Btu/scf.

- (3) The permittee shall maintain daily records of all periods of time during which the electric arc system was inoperable or there was no flare pilot flame when digester gas was present in the feedstock equilibrium tank, primary digester, or dual purpose tank, and the combined heat and power unit was not firing digester gas.
- (4) The permittee shall monitor and record the volume of digester gas flared in standard cubic feet per year, and shall calculate and record the annual heat input to the flare in million Btu.

e) Reporting Requirements

- (1) The reports required by this permit may be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal; or they may be mailed as a hard copy to the appropriate district office or local air agency.
- (2) Annual Permit Evaluation Report (PER) forms will be mailed to the permittee at the end of the reporting period specified in the Authorization section of this permit. The permittee shall submit the PER in the form and manner provided by the director by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.
- (3) The permittee shall identify the following information in the annual permit evaluation report in accordance with the monitoring requirements in d)(1), d)(2) and d)(3):
  - a. all periods of time during which the flare's electric arc ignition system was not functioning properly or there was no flare pilot flame when digester gas was present in the feedstock equilibrium tank, primary digester, or dual purpose tank, and the combined heat and power unit was not firing digester gas;
  - b. each month during which digester gas with a minimum heat content of less than 500 Btu / scf was burned in this emissions unit;
  - c. each period during which digester gas containing an H<sub>2</sub>S concentration greater than allowed by c)(1) was burned.

f) Testing Requirements

- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:
  - a. Emissions limitation:  
Emissions of carbon monoxide (CO) shall not exceed 0.37 lb/mmBtu.  
Applicable compliance method:  
Compliance shall be demonstrated using the emissions factor for CO from USEPA reference document AP-42, Fifth Edition, Compilation of Air Pollution Emission Factors, Section 13.5 Table 13.5-1 (9/91).

If required, the permittee shall demonstrate compliance with applicable emission limitations through emission testing performed in accordance with 40 CFR Part 60, Appendix A, Methods 1-4 and:

For CO, 40 CFR Part 60, Appendix A Method 10

b. Emissions Limitation:

Emissions of sulfur dioxide (SO<sub>2</sub>) shall not exceed 0.33 lb/mmBtu.

Applicable Compliance Method:

The permittee shall demonstrate compliance with the emissions limitation through the required monitoring and recordkeeping in d)(1) and using the following equation:

$$E = (10^6 \text{ Btu} / 1 \text{ mmBtu}) * (1 / \text{digester gas heat content}) * (\text{H}_2\text{S ppm}_v / 1,000,000) * 0.088 \text{ lb H}_2\text{S/ft}^3 \text{ H}_2\text{S} * 1.88 \text{ lb SO}_2/\text{lb H}_2\text{S} = \text{SO}_2 \text{ lb/mmBtu}$$

Where:

E = SO<sub>2</sub> emissions rate, lb/mmBtu

Digester gas heat content = average heat content of digester gas in Btu/scf from d)(2).

H<sub>2</sub>S ppm<sub>v</sub> = average concentration of H<sub>2</sub>S in digester gas, from d)(1)

If required, sulfur dioxide emissions shall be determined according to test Methods 1 - 4, and 6 as set forth in 40 CFR, Part 60 Appendix A.

c. Emissions limitation:

Emissions of nitrogen oxides (NO<sub>x</sub>) shall not exceed 3.0 tons per year. Emissions of volatile organic compounds (VOC) shall not exceed 6.2 tons per year.

Applicable compliance method:

Compliance with the annual limitations shall be assumed as long as compliance with the hourly limitations is maintained (each annual limitation was calculated by multiplying the hourly limitation by 8760, and then dividing by 2000).

If required, the permittee shall demonstrate compliance with applicable emission limitations through emission testing performed in accordance with 40 CFR Part 60, Appendix A, Methods 1-4 and:

For NO<sub>x</sub>, 40 CFR Part 60, Appendix A Method 7 or 7E

For VOC, 40 CFR Part 60, Appendix A Method 25A

If required, the permittee shall confirm, through the applicable methods and procedures specified in 40 CFR Part 60.18, that the flare's exit velocity and the

net heating value of the digester gas conform to the maximum design values specified by the flare manufacturer.

g) Miscellaneous Requirements

- (1) None.