Survey of Methane and VOC Management

The Bay Area Air Quality Management District (BAAQMD) is considering rulemaking to address Total Organic Compound (methane and volatile organic compound or VOC) emissions from publicly owned treatment works (POTWs) and anaerobic digesters. Regulation 13, Rule 4: Sewage Treatment and Anaerobic Digestion was initially being developed in anticipation of increased local handling and processing of organic waste diverted from landfills due to implementation of SB 1383. However, these rule development efforts were suspended in part due to COVID-19, but also due to the lack of data to properly understand existing management, maintenance, and safety practices at POTWs that control emissions.

BAAQMD recognizes the need to understand if a problem exists before going through the rule-development process. They have requested that BACWA members collect and summarize information on existing practices to manage methane and VOC emissions, with the potential to develop baseline emissions inventories, for anaerobic digestion and lagoons. The information will be used to determine if there is need for specifying best management practices (BMPs) in standard permit conditions for consistency of practices across the sector, and if additional limitations need to be imposed to achieve further reductions.

Some of the requested information is available in your existing Permit to Operate. However, it may not always be where you expect it to be. For example, a permit condition limiting the amount of digester gas production may be associated with a cogeneration engine, rather than the actual digester. If you would like, you may also submit a copy of your BAAQMD Permit to Operate as part of the response to this survey.

Only the information requested directly by BAAQMD will be submitted to them. **Portions of this survey (shown in blue text) include information requests in anticipation of future discussions; these responses will not be provided to BAAQMD.**

Part I. General Plant Information

*1. Name of Agency (and Plant name, if your agency has two Plants)

*2. Name of respondent

* 3. Respondent email address

4. If you are able to share a copy of your facility's BAAQMD permit, please upload it here.

Choose File Choose File No file chosen

* 5. What is the design Average Dry Weather Flow to the treatment plant? (MGD)

* 6. What was the actual 2020 Average Dry Weather Flow to the treatment plant? (MGD) *Either the lowest monthly flow rate or lowest 3-month flow rate are acceptable responses.*

* 7. Does your facility nitrify?

- Yes, all the time
- Yes, sometimes
- Minimally or not at all

* 8. Does your facility denitrify?

- Yes, all the time
- Yes, sometimes
- Minimally or not at all

* 9. Are nitrite and nitrate levels measured throughout the treatment plant?

- ◯ No
- ◯ If Yes, please specify where monitoring occurs:

* 10. Does your facility have anaerobic digestion?

- ◯ Yes
- ◯ No

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11. Is your agency planning to add anaerobic digestion?

- ◯ Yes
- ◯ No

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Part II. Anaerobic Digestion

12. How many anaerobic digesters do you have?

13. What is the volume of each digester? (million gallons)

14. What type of digesters do you have?

- ◯ Mesophilic
- ◯ Thermophilic
- ◯ Acid-Phase
- ◯ Thermal hydrolysis

15. What type of cover(s) are on the anaerobic digester(s)? (Check all that apply)

- ☐ Fixed Cover
- ☐ Floating Cover
- ☐ Expandable Membrane
- ☐ Other (please specify)

16. How do you monitor the operation of your pressure relief valves?

- [ ] Visual observations
- [ ] Audible alarms
- [ ] SCADA
- [ ] Other (please specify)

17. Can you monitor pressure at your PRVs individually?

- ◯ Yes, pressure is monitored individually at PRVs
- ◯ No, pressure is monitored at a common manifold

18. How do you inspect or monitor your digesters for damage or biogas leaks?

- [ ] Visually
- [ ] Pressure monitoring
- [ ] Jerome meter
- [ ] Draeger tubes
- [ ] Other (please specify)

19. When are digester inspections performed?

- [ ] When alarmed
- [ ] Routinely. Please provide the frequency (daily, each shift, weekly, etc.)

20. Do you collect any other observations to control biogas leaks?

- [ ] Wear patterns in seals
- [ ] Holes in seals
- [ ] Binding at the seals
- [ ] Replacement schedule for seals
- [ ] Other (please specify)

21. Which of the following programs/procedures do you have to address biogas management to prevent leaking/venting?

- [ ] Maintenance Program
- [ ] Standard Operating Procedure(s)
- [ ] Inspection protocols
- [ ] Asset management plan
- [ ] Safety procedures

22. How do you estimate biogas volume during a release event? For example, if a PRV vents, how do you determine the release volume?

23. What are your permitted limits on the release of digester gas or hydrogen sulfide? (If applicable)

Part III. Biogas Production and Use

24. How much biogas did your facility produce in 2020? (standard cubic feet per year, or indicate other units)

25. What is your **permitted** biogas production, volume, or thermal output limit? (indicate units such as standard cubic feet per year or therms per year)

If you have a thermal limit, please provide the heating value of your facility's biogas.

26. How much methane does your biogas contain? (% methane)

27. What type of biogas conditioning is used?

- [ ] None
- [ ] Sulfur removal
- [ ] Siloxane removal
- [ ] Carbon dioxide removal
- [ ] Other (please specify)

Please fill in the table below for biogas utilized in 2020:

28. Permitted Capacity (Please indicate units of scf/year, kscf/year, or MMBTU)

Flare

Boilers

IC Engines

Fuel Cells

Turbines

Microturbines

CNG Fueling

CNG Pipeline injection

Other

29. 2020 Production (Please indicate units of scf/year, kscf/year, or MMBTU)

Flare

Boilers

IC Engines

Fuel Cells

Turbines

Microturbines

CNG Fueling

CNG Pipeline injection

Other

30. What does your agency plan to do with biogas in 2021?

- ◯ Same strategy as 2020
- ◯ Our agency will implement the following changes:

31. What does your agency plan to do with biogas in 5 years?

- ◯ Same strategy as 2020
- ◯ Our agency will implement the following changes:

Part IV. Dewatering of Digested Sludge

32. How does your facility dewater your digested sludge **after** digestion?

- ☐ No dewatering
- ☐ Centrifuge
- ☐ Belt filter press
- ☐ Screw press
- ☐ Indirect dryer
- ☐ Direct dryer
- ☐ Drying bed
- ☐ Other (please specify)

33. Is your dewatering system for digested sludge enclosed in a building?

- ◯ Yes, and the building or enclosed dewatering system has odor or VOC controls
- ◯ Yes, but the building or enclosed dewatering system does **not** have odor or VOC controls
- ◯ No, it is not in a building

Part V. Feedstock for Anaerobic Digestion

34. Does your facility receive and feed other feedstocks to the digesters? Check all that your receive.

- [ ] None / not applicable
- [ ] Fats, Oils, and Grease (FOG)
- [ ] Liquid food and beverage processing waste (e.g., dairy, winery, or slaughterhouse waste)
- [ ] Organic fraction of municipal solid waste (e.g., food waste)
- [ ] Source-separated commercial, institutional, or residential organic waste
- [ ] Sludge from another municipal facility
- [ ] Other (please specify)

35. Is your facility planning to accept additional feedstocks for anaerobic digestion in the future? Check all that you are interested in co-digesting.

- [ ] No, we have no plans to accept other feedstocks for digestion
- [ ] Fats, Oils, and Grease (FOG)
- [ ] Liquid food and beverage processing waste (e.g., dairy, winery, or slaughterhouse waste)
- [ ] Organic fraction of municipal solid waste (e.g., food waste)
- [ ] Source-separated commercial, institutional, or residential organic waste
- [ ] Sludge from another municipal facility
- [ ] Other (please specify)

Part VI. Sludge Storage in Ponds & Lagoons

* 36. Does your facility use lagoons or ponds for storing and/or treating sludge?

- ◯ Yes
- ◯ No

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37. What type of sludge lagoons does your facility have?

- ◯ Facultative ponds with surface aeration to prevent methane release and odors
- ◯ Other (please specify)

38. To help us characterize potential emissions, please provide additional details about the sludge lagoons or ponds at your facility:

How many sludge lagoons do you have (number)?

What is the **water depth** of each sludge lagoon ? (indicate units, ft. or m)

What is the **total surface area** of all sludge lagoons? (indicate units, sq. feet, sq. m, or acres)

What is the **total volume** ? (indicate units, million gallons or acre-feet)

How often are solids removed from the sludge lagoon?

What is the typical **load sent** to the lagoons? (lb/day BOD or lb/day Volatile Solids)

What is the typical **load in the overflow or decant** from the lagoons (lb/day of BOD or Volatile Solids)

If loading is unknown, what is the typical Volatile Solids **Reduction** in the lagoons? (% reduction)