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## Data Tracking Form for On-Farm Anaerobic Digesters Co-Digesting Food-based Materials

### Introduction:

This survey is designed to gather data about on-farm anaerobic digestion systems. Completion of this survey is voluntary. The data collected will be aggregated prior to its release. Individual facility information will not be disclosed to the public. Thank you for taking the time to provide this valuable information. Your input is greatly appreciated.

One focus of EPA's Sustainable Materials Management Program is to increase the rate of diversion of organic materials from landfills. As diversion efforts become more successful in the United States, more processing capacity is needed to manage the diverted materials. A portion of this much needed capacity is provided by anaerobic digestion facilities, including on-farm digesters.

EPA is collecting the data requested in this survey to quantify and track organic materials processing capacity and to document the increases in this capacity. The survey is also collecting data on types of feedstocks processed and the end uses of anaerobic digestion products. EPA will use the data to help measure and evaluate the effectiveness of our efforts to promote anaerobic digestion for organics recycling.

Effort was taken to make this survey as streamlined as possible. Please contact us at [R3\\_AD\\_Data@epa.gov](mailto:R3_AD_Data@epa.gov) with any questions about the survey or suggestions for improvement.

### Organic Waste Processing

**Instructions:** This survey is designed to gather data on anaerobic digestion systems on livestock farms that co-digest other organic wastes with manure.

Q1. It is assumed that your anaerobic digestion system was primarily built to process livestock manures produced on your farm. In addition to this manure waste stream, are organic wastes accepted from offsite sources and processed in your anaerobic digester (commonly referred to as "co-digestion")? (Y/N)

**Note:** If the answer to Q1 is "yes" – respondent is directed to Q3.

If the answer to Q1 is "no" – respondent is directed to Q2.

Q2. If other organic wastes are not being processed in your anaerobic digester at this time: (1) is your facility planning for or interested in co-digesting other organic wastes in the future?; OR (2) did your facility previously co-digest other organic wastes? (Y/N)

**Note:** Note: Both answers lead to Q3.

**Facility operating status:**

**Note:** The respondent will be directed to the appropriate follow-up question (Q4 – Q9) depending on the answer to this question (Q3).

Q3. Please identify the status of your facility

- Planning stage/Design stage/Permitting process
- Under construction
- Operational
- Temporary shut-down
- Ceased operation
- Other

Q4. What is the targeted date for your co-digestion system to be operational?

Q5. What date did your co-digestion system become operational?

Q6. What date did your co-digestion system temporarily shut-down?

Q7. What is the targeted date for your co-digestion system to re-start operations?

Q8. What date did your co-digestion system cease operations?

Q9. Please state the reason your co-digestion system ceased operations.

**On-Farm Co-Digestion Capacity**

**Instructions:** It is assumed that the primary feedstock treated in the anaerobic digestion system on your farm is livestock manure produced by your livestock. Feedstocks other than manure may also be received at your facility in liquid and/or solid form. The following questions are designed to provide information about the capacity of your facility for co-digesting feedstocks from offsite sources.

Q10. Taking into account the average volume of manure from your livestock processed in your anaerobic digestion system, please identify the available capacity to process other feedstocks from offsite sources.

Q11. Please indicate if this available capacity for processing feedstocks other than manure from your livestock is provided in gallons per year or tons per year.

Q12. Please identify the number of months during the year 2015 that your anaerobic digestion system received and processed feedstocks from offsite sources.

**Instructions:** The following questions focus on the amount of food-based feedstocks that are co-digested in the anaerobic digester on your farm.

Food-based feedstocks include, but are not limited to:

- Fruit/vegetative wastes
- Food processing industry waste
- Beverage processing industry waste
- Food service waste, pre & post-consumer
- Retail food waste
- Source-separated commercial, institutional or residential organic wastes
- Fats, oils and greases (FOG)
- Rendering wastes

Q13. Does your farm accept and process food-based feedstocks from off-site sources? (Y/N)

**Note:** If the answer to Q13 is “yes” – respondent is directed to Q14.

If the answer to Q13 is “no” – respondent is directed to Q16.

**Instructions:** The food-based feedstocks received at your facility may be in liquid form, solid form or both. In the spaces provided below, please provide the total volume of the liquids in gallons and the total weight of the solids in tons. If you receive all food-based feedstocks in only one form, indicate "0" in the other space.

Q14. What was the total volume of food-based materials received in liquid form and processed in the anaerobic digestion system at your farm during the 2015 calendar year? Please express your answer in gallons.

Q15. What was the total weight of food-based materials received in solid form and processed in the anaerobic digestion system at your farm during the 2015 calendar year? Please express your answer in tons.

**Instructions:** The following questions focus on the amount of non-food-based feedstocks that are co-digested in the anaerobic digester on your farm.

Non-food-based feedstocks include, but are not limited to:

- Mixed yard waste
- Crop residues
- Manures
- Wastewater solids (sludge)
- Septage
- Litters
- De-icing fluid
- Lab (or Pharma) wastes
- Paper mill wastes
- Crude glycerine

Q16. Does your farm accept and process non-food-based feedstocks from off-site sources? (Y/N)

**Note:** If the answer to Q16 is “yes” – respondent is directed to Q17.

If the answer to Q16 is “no” – respondent is directed to Q19.

**Instructions:** The non-food-based feedstocks received at your facility may be in liquid form, solid form or both. In the spaces provided below, please provide the total volume of the liquids in gallons and the total weight of the solids in tons. If you receive all non-food-based feedstocks in only one form, indicate "0" in the other space.

Q17. What was the total volume of non-food-based materials received in liquid form and processed in the anaerobic digestion system at your farm during the 2015 calendar year? Please express your answer in gallons.

Q18. What was the total weight of non-food-based materials received in solid form and processed in the anaerobic digestion system at your farm during the 2015 calendar year? Please express your answer in tons.

### **Types of Feedstocks**

Q19. Please identify the specific types of feedstocks that are received from offsite sources and processed in the co-digestion system at your farm. Check all that apply.

**Note:** The feedstocks selected in Q19 get carried forward to Q23.

- Beverage processing industry waste
- Crop residues
- Crude glycerine
- De-icing fluid
- Fats, oils and greases (FOG)
- Food processing industry waste
- Food service waste, pre & post-consumer
- Fruit/vegetative wastes
- Lab (or Pharma) wastes
- Litters
- Manure from other farms
- Mixed yard waste
- Paper mill wastes
- Rendering wastes
- Retail food waste
- Septage
- Source-separated commercial, institutional or residential organic wastes
- Wastewater solids (sludge)
- Other (please specify)

### **Tipping Fees**

**Instructions:** The following questions focus on fees charged for accepting organic feedstocks from offsite sources and processing these feedstocks in the anaerobic digestion system at your farm (AKA Tipping Fees).

EPA encourages generators of wasted food and other organic waste to divert such materials from landfill disposal because it is better for the environment. With data on tipping fees from facilities that process organic feedstocks in an environmentally sound manner, generators will have more information to evaluate the cost of recycling vs. landfilling. This information will support the nationwide effort to more sustainably manage the vast quantities of food that are wasted each year.

Q20. Are your tipping fees equal for all materials? (Y/N)

**Note:** If the answer to Q20 is “yes” – respondent is directed to Q21.

If the answer to Q20 is “no” – respondent is directed to Q23.

Q21. Which of the following ranges best represents your tipping fees for co-digesting liquid feedstocks?

- N/A – Facility does not process liquid feedstock.
- Business Confidential/Prefer not to say
- \$0.00-\$0.05 per gallon
- \$0.06-\$0.10 per gallon
- \$0.11-\$0.20 per gallon
- \$0.21-\$0.50 per gallon
- \$0.51-\$1 per gallon
- > \$1 per gallon

Q22. Which of the following ranges best represents your tipping fees for co-digesting solid feedstocks?

- N/A – Facility does not process solid feedstock.
- Business Confidential/Prefer not to say
- \$0-\$10 per ton
- \$11-\$20 per ton
- \$21-\$30 per ton
- \$31-\$40 per ton
- \$41-\$50 per ton
- \$51-\$60 per ton
- \$61-\$70 per ton
- \$71 or more per ton

Q23. You indicated that you receive and co-digest the feedstocks identified below. The feedstocks identified in your answer to question 19 above will be listed on this page. Please indicate whether these feedstocks are in liquid form (with tipping fees in dollars per gallon) or solid form (with tipping fees in dollars per ton) or both?

**Note:** If the answer to Q23 for a particular feedstock is “liquid” – respondent is directed to Q24.

If the answer to Q23 for a particular feedstock is “solid” – respondent is directed to Q25.

If the answer to Q23 for a particular feedstock is “both” – respondent is directed to Q24 and Q25.

Q24. You indicated that you receive and co-digest the feedstocks identified below in liquid form. The feedstocks identified in your answer to question 19 above will be listed on this page. Which of the following ranges best represents your tipping fee for these liquid feedstocks?

- Prefer not to say
- \$0.00-\$0.05 per gallon
- \$0.06-\$0.10 per gallon
- \$0.11-\$0.20 per gallon
- \$0.21-\$0.50 per gallon
- \$0.51-\$1 per gallon
- > \$1 per gallon

Q25. You indicated that you receive and co-digest the feedstocks identified below in solid form. The feedstocks identified in your answer to question 19 above will be listed on this page. Which of the following ranges best represents your tipping fee for these solid feedstocks?

- Prefer not to say
- \$0-\$10 per ton
- \$11-\$20 per ton
- \$21-\$30 per ton
- \$31-\$40 per ton
- \$41-\$50 per ton
- \$51-\$60 per ton
- \$61-\$70 per ton
- \$71 or more per ton

Q26. Please identify the sources of the feedstocks that are received and processed in the co-digestion system at your facility. Check all that apply.

- Airports
- Biodiesel production
- Corporate complexes
- Farmers Markets
- Food/Beverage Processors
- Fruit/Vegetable Farms
- Grocery Stores/Supermarkets
- Healthcare
- Hospitality
- Industrial
- Laboratories/Pharmaceutical Companies
- Other Livestock Farms
- Municipal/Residential
- Prisons
- Restaurants and Food Service
- Retail Stores
- Schools
- Sports and Entertainment Venues
- Wastewater Treatment Plants
- Other (please specify)

Q27. Please describe any pre-processing/de-packaging that occurs before feedstocks other than manure are fed into the co-digestion system at your farm. Pre-processing may be conducted by a third-party. If that is the case, please state that in the space provided below.

Q28. Please identify the following specifications for your digester.

- Temperature range
- Wet or dry
- Batch or continuous
- Number of stages

## **Product End-Uses**

**Instructions:** It is recognized that the metrics that facilities use to measure biogas production may vary. EPA does not expect you to convert your measurements.

Q29. Please provide the average biogas production volume at your facility during calendar year 2015 in one of the units identified below.

Standard Cubic Foot per Minute (SCFM)

Standard Cubic Foot per Day (SCFD)

Standard Cubic Foot per Year (SCFY)

Other

Q30. Is the biogas produced at this facility used onsite, sold or flared?

Q31. Please identify how the biogas produced in your digesters is used. It could be used onsite by the farm or offsite by a purchaser. Check all that apply.

- Produce mechanical power
- Produce heat and electricity (CHP)
- Produce electricity (including net metering)
- Produce electricity (sold to grid)
- Fuel boilers and furnaces to heat digesters
- Fuel boilers and furnaces to heat other spaces
- Compressed to vehicle fuels: used for farm/personal vehicles
- Compressed to vehicle fuels: sold to customers
- Renewable natural gas (processed in order to inject to pipeline)
- Other (please specify)

Q32. Are you able to utilize all of the biogas produced in the anaerobic digestion system at your farm? (Y/N)

**Note:** If the answer to Q32 is “yes” – respondent is directed to Q34.

If the answer to Q32 is “no” – respondent is directed to Q33.

Q33. Do you flare the excess biogas? (Y/N)

**Note:** Both answers lead to Q34.

Q34. Do you have a gas purification system? (Y/N)

**Note:** If the answer to Q34 is “yes” – respondent is directed to Q35.

If the answer to Q34 is “no” – respondent is directed to Q37.

Q35. What type of gas purification system do you have?

Q36. What is removed by your gas purification system? Check all that apply.

- Moisture
- Sulfur
- Siloxanes
- Carbon Dioxide
- Compressed Gas
- Other (please specify)

Q37. Do you beneficially re-use the solid digestate you produce? (Select all that apply)

- Yes, de-watered/dried and land applied
- Yes, land applied as is with no dewatering or drying
- Yes, processed into animal bedding
- Yes, composted into a reusable or salable product
- Yes, processed into other salable products (e.g., flower pots)
- No, landfilled
- No, incinerated
- Other (please specify)

Q38. If any digestate was disposed of in landfills or incinerated in 2015, please specify the amount in tons or gallons (if known).

Q39. Is the de-watered/dried digestate further treated prior to land application? (Y/N)

**Note:** If the answer to Q39 is “yes” – respondent is directed to Q40.

If the answer to Q39 is “no” – respondent is directed to Q41.

Q40. Please indicate what the further treatment is and why it is necessary.

Q41. How do you manage the liquid digestate you produce? Check all that apply.

- Beneficially reused as fertilizer via land application
- Recirculated through digester
- Discharged to a wastewater treatment plant
- Other (please specify)

Q42. Is the liquid digestate further treated prior to land application? (Y/N)



**Note:** If the answer to Q42 is “yes” – respondent is directed to Q43.

If the answer to Q42 is “no” – respondent is directed to Q44.

Q43. Please indicate what the further treatment is and why it is necessary.

Q44. Do you recover nutrients from your digestate?

- No
- Yes, phosphorous recovery by chemical precipitation (e.g., struvite)
- Yes, ammonia recovery
- Other (please specify)

### **Project/Facility Information**

Q45. Please provide the following information about your Project/Farm.

Project/Farm Name

Street address

City/Town

State

Zip code

Phone Number

Q46. Please provide the following information for the contact person for facility operations

Name

Title

Email Address

Phone number

Q47. Please provide the contact address (if different from Facility Address)

Street address

City/Town

State

Zip code