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Data Tracking Form for Water Resource Recovery Facilities (WRRFs) Co-Digesting Food-based Materials

Introduction:

This survey is designed to gather data about co-digestion systems at Water Resource Recovery Facilities (WRRFs). 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 co-digestion systems at WRRFs.

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 with any questions about the survey or suggestions for improvement.

Organic Waste Processing

Instructions: This survey is designed to gather data on Water Resource Recovery Facilities (WRRFs) with anaerobic digesters that accept and process organic wastes from offsite sources.

Q1. In addition to wastewater solids, is organic waste accepted and processed in your anaerobic digesters (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 co-digested 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
- Co-digestion system 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.

WRRF Digestion Capacity

Instructions: It is assumed that the primary feedstock treated in the digester(s) at your facility is solids from a wastewater collection system. Feedstocks other than wastewater solids 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 receiving both types of feedstocks.

Q10. How many digesters do you have?

Q11. What shape are your digesters?

Q12. What is the solids content (%) in the wastewater solids feed stream going to your digester(s)?

Q13. Please identify the total capacity of all your digesters combined for wastewater solids from your collection system and feedstocks from other offsite sources. Please provide answer in gallons.

Q14. What is the flow of your WRRF (as designed)? Please provide answer in MGD.

Q15. What is the permitted flow of your WRRF (if different from designed flow)? Please provide answer in MGD.

Q16. What is the average dry weather flow? Please provide answer in MGD.

Q17. Please identify your facility's available capacity to accept feedstocks from offsite sources for all digesters combined. When calculating this available capacity, please take into account the average volume of wastewater solids processed at your facility and conveyed to your plant via your collection system.

Q18. Please indicate if this available capacity for processing feedstocks other than wastewater solids is provided in gallons per year or tons per year.

Q19. Please briefly describe how you calculated the available capacity to accept feedstocks from offsite sources.

Q20. What is the average percent solids accepted from offsite sources of feedstock?

WRRF Co-Digestion Capacity

Q21. Please identify the number of months during the year 2015 that your co-digestion system received and processed feedstocks (other than wastewater solids) from offsite sources.

Q22. Please indicate how organic feedstocks from offsite sources are handled upon receipt at your facility.

- Fed into a separate digester
- Combined with wastewater solids
- Other (please specify)

Instructions: The following questions focus on the amount of food-based feedstocks that are processed in your digester.

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
- Food waste
- Source-separated commercial, institutional or residential organic wastes
- Fats, oils and greases (FOG)
- Rendering wastes

Q23. Does your facility accept and process food-based feedstocks? (Y/N)

Note: If the answer to Q23 is "yes" – respondent is directed to Q24.

If the answer to Q23 is "no" – respondent is directed to Q26.

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.

Q24. What was the total volume of food-based materials received in liquid form and processed in the co-digestion system at your facility during the 2015 calendar year? Please express your answer in gallons.

Q25. What was the total weight of food-based materials received in solid form and processed in the co-digestion system at your facility 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 processed in your digester.

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

Q26. Does your facility accept and process non-food-based feedstocks? (Y/N)

Note: If the answer to Q26 is "yes" – respondent is directed to Q27.

If the answer to Q26 is "no" – respondent is directed to Q29.

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.

Q27. What was the total volume of non-food-based materials received in liquid form and processed in the co-digestion system at your facility during the 2015 calendar year? Please express your answer in gallons.

Q28. What was the total weight of non-food-based materials received in solid form and processed in the co-digestion system at your facility during the 2015 calendar year? Please express your answer in tons.

Types of Feedstocks

Q29. Please identify the specific types of feedstocks that are received from offsite sources and processed in the co-digestion system at your WRRF. Check all that apply.

Note: The feedstocks selected in Q29 get carried forward to Q33.

- 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
- Manures
- Mixed yard waste
- Paper mill wastes
- Rendering wastes
- Retail food waste
- Septage

- Source-separated commercial, institutional or residential organic wastes
- Wastewater solids (sludge) from other WRRFs
- Other (please specify)

Tipping Fees

Instructions: The following questions focus on fees charged for accepting and processing organic feedstocks (other than wastewater solids from your collection system) in the co-digestion system at your facility. These fees are known as 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 is wasted each year.

Q30. Are your tipping fees equal for all materials? (Y/N)

Note: If the answer to Q30 is “yes” – respondent is directed to Q31.

If the answer to Q30 is “no” – respondent is directed to Q33.

Q31. 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

Q32. 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

Q33. You indicated that you receive and co-digest the feedstocks identified below. The feedstocks identified in your answer to question 29 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 Q33 for a particular feedstock is "liquid" – respondent is directed to Q34.

If the answer to Q33 for a particular feedstock is "solid" – respondent is directed to Q35.

If the answer to Q33 for a particular feedstock is "both" – respondent is directed to Q34 and Q35.

Q34. You indicated that you receive and co-digest the feedstocks identified below in liquid form. The feedstocks identified in your answer to question 29 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

Q35. You indicated that you receive and co-digest the feedstocks identified below in solid form. The feedstocks identified in your answer to question 29 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

Q36. 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
- Livestock Farms
- Municipal/Residential
- Prisons
- Restaurants and Food Service
- Retail Stores
- Schools
- Sports and Entertainment Venues
- Other Wastewater Treatment Plants
- Other (please specify)

Q37. Please describe any pre-processing/de-packaging that is required before feedstocks from offsite sources are fed into the co-digestion system at your facility. Pre-processing may be conducted by a third-party. If that is the case, please state that in the space provided below.

Q38. Please identify the following specifications for your digester.

- Temperature range
- 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.

Q39. 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

Q40. Is the biogas produced at this facility used onsite, sold or flared?

Q41. Are the post digestion biosolids Class A or Class B?

Q42. Please identify how the biogas produced in your digesters is used. It could be used onsite by the WRRF 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 company fleet/personal vehicles
- Compressed to vehicle fuels: sold to customers
- Renewable natural gas (processed in order to inject to pipeline)
- Other (please specify)

Q43. Are you able to utilize all of the biogas produced in the digesters at this WRRF? (Y/N)

Note: If the answer to Q43 is “yes” – respondent is directed to Q45.

If the answer to Q43 is “no” – respondent is directed to Q44.

Q44. Do you flare the excess biogas? (Y/N)

Note: Both answers lead to Q45.

Q45. Do you have a gas purification system? (Y/N)

Note: If the answer to Q45 is “yes” – respondent is directed to Q46.

If the answer to Q45 is “no” – respondent is directed to Q48.

Q46. What type of gas purification system do you have?

Q47. What is removed by your gas purification system? Check all that apply.

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

Q48. Do you beneficially re-use the post-digestion derived biosolids produced in your co-digestion system? (Select all that apply)

- Yes, de-watered/dried and land applied

- Yes, land applied as is with no dewatering or drying
- 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)

Q49. If any post-digestion derived biosolids were disposed of in landfills or incinerated in 2015, please specify the amount in tons or gallons (if known).

Q50. Is the de-watered/dried digestate further treated prior to land application? (Y/N)

Note: If the answer to Q50 is "yes" – respondent is directed to Q51.

If the answer to Q50 is "no" – respondent is directed to Q52.

Q51. Please indicate what the further treatment is and why it is necessary.

Q52. How do you manage the liquid digestate you produce? Check all that apply.

- Beneficially reused as fertilizer via land application
- Recirculated through digester
- Other (please specify)

Q53. Is the liquid digestate further treated prior to land application? (Y/N)

Note: If the answer to Q53 is "yes" – respondent is directed to Q54.

If the answer to Q53 is "no" – respondent is directed to Q55.

Q54. Please indicate what the further treatment is and why it is necessary.

Q55. 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

Q56. Please provide the following information about your Project/Facility.

Project/Facility Name

Street address

City/Town
State
Zip code
Phone Number

Q57. Please provide the following information for the contact person for facility operations

Name
Title
Email Address
Phone number

Q58. Please provide the contact address (if different from Facility Address)

Street address
City/Town
State
Zip code