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

Introduction

2019 On-Farm Digester Survey

Thank you for your continued participation in EPA's AD data collection project!

The survey has been streamlined making it even easier to submit your data. Two years of operating data (2017 and 2018) will be collected this yea. Completion of this survey is voluntary.

We hope the reports EPA has produced based on this data are useful to you and the rest of the biogas industry. As with previous years, the data collected through this survey will also be aggregated prior to its release. Thank you for taking the time to provide survey data. Your input is greatly appreciated.

The goals of this project have not changed. EPA is collecting the data requested in this survey to quantify and track the amount of food waste processed and available processing capacity in the United States. The survey also requests information on types of feedstocks processed, the sources of feedstocks and the end uses of anaerobic digestion products. This year (2019) is the third year of the project.

Please contact us with any questions about the survey or suggestions for improvement.

The public reporting and record keeping burden for this collection of information is estimated to average 30 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

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Farm Location and Contact Information

To allow interested parties to verify the completeness of EPA's research, general information (farm name, city, state, and operational status) will be included in the report of findings (2020). All annual reports will be posted on EPA's anaerobic digestion website.

* 1. Project/Farm Information

Project/Farm Name

Street Address

City/Town

State -- select state --

ZIP/Postal Code

Phone Number

* 2. Contact person for farm operations:

Name

Title

Email Address

Phone Number

3. If you do not wish to have your farm's general information (farm name, city, and state) included in future EPA reports, please check the box below.

☐ Please do not include the information provided on this page in future publications summarizing the data collected via this survey.

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Organic Waste Processing

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

* 4. It is assumed that your anaerobic digestion system was primarily built to process livestock manure produced on your farm. In addition to this manure waste stream, are other organic wastes processed in your anaerobic digester (commonly referred to as “co-digestion)?

- ◯ Yes
- ◯ No

LOGIC
Yes --> P5:Farm Operating Status
No --> P4:Co-Digestion of other Organic Wastes

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Co-digestion of other Organic Wastes

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

- ◯ Yes
- ◯ No

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Farm Operating Status

Please identify the operating status of the co-digestion system at your farm.

* 6. Farm operating status:

- ◯ Planning stage; Design stage; Permitting Process
- ◯ Co-digestion system under construction
- ◯ Operational
- ◯ Temporary shut-down
- ◯ Ceased operation
- ◯ Other (please specify)

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Planning Stage; Design Stage; Permitting Process

* 7. What is the targeted date for your co-digestion system to become operational (MM/DD/YYYY)?

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Under Construction

* 8. What is the targeted date for your co-digestion system to become operational (MM/DD/YYYY)?

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Operational

9. What date did your co-digestion system become operational (MM/DD/YYYY)?

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Temporary Shut-down

10. What date did your co-digestion system temporarily shut-down (MM/DD/YYYY)?

11. What is the targeted date for your co-digestion system to re-start operations (MM/DD/YYYY)?

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Ceased Operation

12. What date did your co-digestion system cease operations (MM/DD/YYYY)?

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

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On-Farm Co-Digestion Capacity

Instructions: It is assumed that the primary feedstock treated in your on-farm digester is manure. The following questions are designed to provide information about the capacity of your digester for co-digesting feedstocks other than manure from your own livestock. EPA is trying to determine how much feedstock from other sources could potentially be processed in your digester. If you had an unlimited amount of feedstock available to you – how much could you process in a year?

Later questions in this survey will ask how much food waste and non-food waste were processed or co-digested in your digester in 2017 and 2018. The combined amount of food waste and non-food waste processed in any given year should be less than or equal to the available capacity reported below.

* 14. Please identify your facility's available capacity to accept feedstocks from offsite sources.

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

- ◯ Gallons per year
- ◯ Tons per year

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

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Months of Operation

* 17. Please identify the number of months during the year 2017 that your anaerobic digestion system received and processed feedstocks from offsite sources.

* 18. Please identify the number of months during the year 2018 that your anaerobic digestion system received and processed feedstocks from offsite sources.

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Food-Based Feedstocks

The following questions focus on the amount of food-based feedstocks or food waste that is 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
- Retail food waste
- Source-separated commercial, institutional or residential organic wastes
- Fats, oils and greases (FOG)
- Slaughterhouse waste

* 19. Does your farm accept/process food-based feedstocks?

- ◯ Yes
- ◯ No

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Amount of Food-Based Feedstocks Co-Digested in 2017 & 2018

The food-based feedstocks (food waste) received/processed at your farm may be in liquid form, solid form or both. In the spaces provided below, please provide the total volume of the liquids received/processed in gallons and the total weight of the solids in tons for the years specified. If you received/processed all food-based feedstocks in only one form, indicate "0" in the other space.

* 20. What was the total volume of food-based materials received/processed in liquid form at your farm during the 2017 calendar year? Please express your answer in gallons.

* 21. What was the total weight of food-based materials received/processed in solid form at your farm during the 2017 calendar year? Please express your answer in tons.

* 22. What was the total volume of food-based materials received/processed in liquid form at your farm during the 2018 calendar year? Please express your answer in gallons.

* 23. What was the total weight of food-based materials received/processed in solid form at your farm during the 2018 calendar year? Please express your answer in tons.

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Non-Food-Based Feedstocks

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
- De-icing fluid
- Lab (or Pharma) wastes
- Paper mill wastes
- Crude glycerin

* 24. Does your farm accept/process non-food-based feedstocks?

- ◯ Yes
- ◯ No

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Amount of Non-Food-Based Feedstocks Processed in 2017 & 2018

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

* 25. What was the total volume of non-food-based materials received/processed in liquid form at your farm during the 2017 calendar year? Please express your answer in gallons.

* 26. What was the total weight of non-food-based materials received/processed in solid form at your farm during the 2017 calendar year? Please express your answer in tons.

* 27. What was the total volume of non-food-based materials received/processed in liquid form at your farm during the 2018 calendar year? Please express your answer in gallons.

* 28. What was the total weight of non-food-based materials received/processed in solid form at your farm during the 2018 calendar year? Please express your answer in tons.

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Types of Feedstocks Processed

* 29. Have the types of feedstocks received/processed in your digester changed since you last responded to this survey?

- ◯ Yes
- ◯ No
- ◯ This is my first response to this survey.

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Types of Feedstocks Processed

* 30. Please identify the specific types of feedstocks that are received at/processed in your digester. Check all that apply.

- [ ] Beverage processing industry waste
- [ ] Crop residues
- [ ] Crude glycerin
- [ ] 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
- [ ] Landfill leachate
- [ ] Manures
- [ ] Mixed yard waste
- [ ] Paper mill wastes
- [ ] Retail food waste
- [ ] Septage
- [ ] Slaughterhouse wastes
- [ ] Source-separated commercial, institutional or residential organic wastes
- [ ] Wastewater solids (sludge)
- [ ] Other (please specify)

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Tipping Fees

The following questions focus on fees charged for accepting and processing feedstocks at anaerobic digestion facilities (AKA Tipping Fees).

* 31. Do you collect tipping fees?

- ◯ Yes
- ◯ No

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Tipping Fees

* 32. Are you willing to share information about the tipping fees you collect?

- ◯ Yes
- ◯ No

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Tipping Fee Revenue

This data is being gathered to analyze revenue potential for the biogas industry. An approximation of revenue collected is acceptable. If your farm was not operational during any of the years identified below, please indicate “N/A” or “0”.

33. How much revenue did your farm collect in tipping fees in 2017?

34. How much revenue did your farm collect in tipping fees in 2018?

35. If you would like to provide any other relevant or important information related to tipping fees, please do so below.

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Feedstock Sources

36. Have the sources of the feedstocks received/processed in your digester changed since you last responded to this survey?

- ◯ Yes
- ◯ No
- ◯ This is my first response to this survey.

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Feedstock Sources

* 37. Please identify the sources of the feedstocks that are received and processed in the anaerobic digestion system at your farm. Check all that apply.

- [ ] Airports
- [ ] Biodiesel production
- [ ] Corporate complex
- [ ] 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)

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Pre-Processing Information

* 38. Are pre-processing or de-packaging activities conducted on your feedstocks before they are added to your digester?

- ◯ Yes
- ◯ No

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Pre-Processing Information - onsite offsite

39. Do pre-processing / de-packaging activities occur offsite or at your farm?

- ◯ Offsite
- ◯ Onsite (at your farm)
- ◯ Both

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Pre-Processing Information

40. Please identify the pre-packaging or de-packaging activities that are conducted at your farm. Check all that apply.

- [ ] Manual or mechanized de-packaging
- [ ] Screening for debris or sorting
- [ ] Grinding and/or maceration
- [ ] Third party processing
- [ ] Shredding
- [ ] Heating
- [ ] pH adjustment
- [ ] Centrifugal separation
- [ ] Liquid/solid separation
- [ ] Other (please specify)

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Digester Operating Parameters

41. Please identify the operating temperature range for your digester.

- ◯ Mesophilic
- ◯ Thermophilic
- ◯ Unheated/Ambient

42. Please indicate if your digester is "wet" or "dry."

- ◯ Wet, low-solids system, less than 15% (by volume) solids content.
- ◯ Dry, high-solids system, greater than 15% (by volume) solids content.

43. Please identify the design that best fits your design type/configuration:

- ◯ Continuously Stirred Tank Reactor (CSTR)
- ◯ Plug-flow
- ◯ Covered Lagoon
- ◯ Fixed film
- ◯ Suspended Media
- ◯ Percolating Bed
- ◯ Upflow Anaerobic Sludge Blanket (UASB)
- ◯ Anaerobic Sequencing Batch Reactor (ASBR)
- ◯ Membrane Bioreactor (MBR)
- ◯ Hybrid/Multi-stage
- ◯ Other (please specify)

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Product End-Uses - Biogas Volume

It is recognized that the metrics that farms use to measure biogas production may vary. EPA does not expect you to convert your measurements. Please provide the average biogas production volume at your farm in one of the units identified below.

Standard Cubic Foot (SCF)

44. For calendar year 2017

SCF per minute (SCFM)	
SCF per day (SCFD)	
SCF per year (SCFY)	
Other	

45. For calendar year 2018

SCF per minute (SCFM)	
SCF per day (SCFD)	
SCF per year (SCFY)	
Other	

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Product End-Uses - Biogas Location

* 46. Is the biogas produced at this farm used onsite, sold, or flared? (check all that apply)

- [ ] Used onsite
- [ ] Sold
- [ ] Flared
- [ ] Other (please specify)

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Product End-Uses - Biogas

* 47. Please identify how the biogas produced at this farm is used. Check all that apply:

- [ ] Produce mechanical power
- [ ] Produce heat and electricity (CHP)
- [ ] Produce electricity used behind the meter (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
- [ ] Renewable natural gas (processed in order to inject to pipeline)
- [ ] Other (please specify)

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Product End-Uses - Biogas Utilization

* 48. Are you able to utilize all of the biogas produced?

- ◯ Yes
- ◯ No

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Product End-Uses - Biogas Excess

49. Do you flare the excess biogas?

- ◯ Yes
- ◯ No

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Product End-Uses - Biogas Purification

* 50. Do you have a gas cleaning system?

- ◯ Yes
- ◯ No

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Product End-Uses - Biogas Purification Details

51. What is removed by your gas cleaning system? (select all that apply)

- [ ] Moisture
- [ ] Sulfur
- [ ] Siloxanes
- [ ] Carbon dioxide
- [ ] Compressed gas
- [ ] Hydrogen sulfide
- [ ] Particulates
- [ ] OxygenNitrogenVOCs
- [ ] Nitrogen
- [ ] VOCs
- [ ] Other (please specify)

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Product End-Uses - Digestate

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

- [ ] Yes, de-watered/dried and land applied
- [ ] Yes, composted into a reusable or salable product
- [ ] Yes, processed into animal bedding
- [ ] Yes, processed into other salable product (e.g., flower pots)
- [ ] No, landfilled
- [ ] No, incinerated
- [ ] Other (please specify)

53. If any digestate was disposed of in landfills or incinerated **in 2017**, please specify the amount in tons or gallons (if known):

54. If any digestate was disposed of in landfills or incinerated **in 2018**, please specify the amount in tons or gallons (if known):

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Digestate Land Application

* 55. Is the de-watered/dried digestate further treated prior to land application?

- ◯ Yes
- ◯ No

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Digestate Land Application Further Processing

56. Please indicate what additional processing occurs and why.

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Digestate Processing

* 57. How do you manage the liquid digestate you produce? (Select all that apply)

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

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Digestate Land Application

* 58. Is the liquid digestate further treated prior to land application?

- ◯ Yes
- ◯ No

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Digestate Land Application Further Processing

59. Please indicate what additional processing occurs and why.

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Digestate Nutrient Recovery

60. Do you recover nutrients from your digestate?

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

Please click **DONE** to submit your data.