

# Manure Management Systems



## Final Rule: Mandatory Reporting of Greenhouse Gases

*Under the Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain a manure management system (as defined below) that emits at least 25,000 metric tons or more of GHGs (methane [CH<sub>4</sub>] and nitrous oxide [N<sub>2</sub>O]) per year (expressed as carbon dioxide equivalent) must report emissions from manure management systems. Owners or operators are required to collect emission data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.*

**NOTE:** EPA will not be implementing subpart JJ of Part 98 using funds provided in its FY2010 appropriations or Continuing Appropriations Act, 2011 (Public Law 111-242), due to a Congressional restriction prohibiting the expenditure of funds for this purpose.

## Who Is Required to Report Emissions?

A facility that emits 25,000 metric tons or more of carbon dioxide equivalent (CO<sub>2</sub>e) per year from manure management systems is required to report. A manure management system is a system that stabilizes or stores livestock manure in one or more of the following system components:

- Uncovered anaerobic lagoons.
- Liquid/slurry systems with and without crust covers (including but not limited to ponds and tanks).
- Storage pits.
- Digesters, including covered anaerobic lagoons.
- Solid manure storage.
- Drylots, including feedlots.
- High-rise houses for poultry production (poultry without litter).
- Poultry production with litter.
- Deep bedding systems for cattle and swine.
- Manure composting.
- Aerobic treatment.

GHG emissions from sources at livestock facilities unrelated to the stabilization or storage of manure do not have to be reported. These sources include daily spread or pasture/range/paddock systems or land application activities or other methods of manure utilization not listed above. In addition, manure management activities located off site from a livestock operation are not included in this rule. These offsite activities include but are not limited to offsite land application of manure, other offsite methods of manure utilization, or offsite manure composting operations.

To reduce the burden on facilities in determining whether they need to report under the rule, the rule includes a population threshold table for beef, dairy, swine, and poultry operations. The population threshold level is an estimate of the average annual animal population below which the 25,000 metric tons CO<sub>2</sub>e per year threshold would not be exceeded. Facilities with average annual animal populations below the population threshold are not required to report or complete the calculations to determine whether they emit 25,000 metric tons CO<sub>2</sub>e per year. If the average annual animal population at a facility is equal to or higher than the threshold population presented in the table, the facility operator is encouraged to conduct a more thorough analysis to determine if reporting is required.

## What GHGs Must Be Reported?

All facilities with manure management systems that meet or exceed the reporting threshold must report the following:

- Annual methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions, aggregated from all of the system components listed above.
- CH<sub>4</sub> generated, CH<sub>4</sub> destroyed, and CH<sub>4</sub> leakage from anaerobic digesters.

A facility that is subject to this rule only because of emissions from manure management systems is not required to report emissions from any other source category at the facility (e.g., fuel combustion sources) unless the source category is independently subject to the rule.

## How Are GHG Emissions Calculated?

For each manure management system component other than anaerobic digesters, calculate CH<sub>4</sub> and N<sub>2</sub>O emissions using the methods provided in the rule and the following inputs:

- Average annual animal population.
- Typical animal mass.
- Fraction of manure by weight for each animal type managed in each system component (assumed to be equal to the fraction of volatile solids/nitrogen handled in each system component).
- Volatile solids excretion rates as provided in a look-up table.
- Volatile solids and nitrogen removal rates through solids separation as provided in a look-up table.
- Maximum CH<sub>4</sub>-producing potential of the managed manure and CH<sub>4</sub> conversion factors as provided in look-up tables.
- Methane conversion factors as provided in a look-up table.
- Nitrogen excretion rates as provided in a look-up table.
- N<sub>2</sub>O emission factors as provided in a look-up table.

For anaerobic digesters, calculate CH<sub>4</sub> emissions, the annual mass of CH<sub>4</sub> generated, and the annual mass of CH<sub>4</sub> destroyed using methods provided in the rule and the following inputs:

- Continuous monitoring of CH<sub>4</sub> concentration, flow rate, temperature, and pressure of digester gas.
- CH<sub>4</sub> destruction efficiency of the destruction device.
- CH<sub>4</sub> leakage from the collection system as provided in a look-up table.
- CH<sub>4</sub> collection efficiency as provided in a look-up table.

The reports must include any of the above information used to estimate GHG emissions. A list of the specific data to be reported for this source category is contained in 40 CFR part 98, subpart JJ.

A checklist for data that must be monitored is available at [www.epa.gov/climatechange/emissions/downloads/checklists/manuremanagement.pdf](http://www.epa.gov/climatechange/emissions/downloads/checklists/manuremanagement.pdf).

## For More Information

This document is provided solely for informational purposes. It does not provide legal advice, have legally binding effect, or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits in regard to any person. The series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the final rule.

Visit EPA's Web site ([www.epa.gov/climatechange/emissions/ghgrulemaking.html](http://www.epa.gov/climatechange/emissions/ghgrulemaking.html)) for more information, including the final preamble and rule, additional information sheets on specific industries, the schedule for training sessions, and other documents and tools. For questions that cannot be answered through the Web site please contact us at: [ghgmrr@epa.gov](mailto:ghgmrr@epa.gov).