


**Mandatory Reporting of
Greenhouse Gas (GHG) Emissions**
Update for Animal Agriculture


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Key Messages


A new EPA reporting requirement for greenhouse gases is in place that includes 'manure management'.

- Efforts to exclude 'manure management' from reporting continue to be pursued.
- As it stands today, some [relatively large] livestock and poultry operations should be prepared to begin keeping records in January that will enable them to report 2010 GHG emissions to EPA in 2011.



Background:

Greenhouse Gas Emissions Reporting

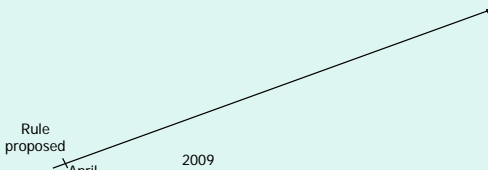
Part of plan to address 'climate change' & counter 'global warming' 

- **Intent is to collect accurate and timely emissions data to inform future policy decisions.**
- **Separate, but related to:**
 - Climate change legislation (Cap & Trade)
 - EPA's Inventory of GHG Sources and Sinks
 - Carbon footprints
 - Carbon credits

Background:
Mandatory Reporting Proposed

Mandatory reporting of greenhouse gas (GHG) emissions was proposed by EPA early in 2009.


- Proposed rule was published in the Federal Register on April 10th.
- Comments requested



The diagram shows a horizontal line representing a timeline. A vertical tick mark on the left is labeled 'April'. A vertical tick mark further to the right is labeled '2009'. An arrow points from the 'April' mark towards the '2009' mark, with the text 'Rule proposed' written above the arrow.

Proposed EPA Rule
Mandatory Reporting of Greenhouse Gases


- **Require reporting of GHG emissions by large sources and suppliers in the U.S.**
 - Facilities emitting 25,000 metric tons or more per year of CO₂e emissions required to submit annual reports to EPA.
 - The gases covered by the proposed rule were carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and other fluorinated gases including nitrogen trifluoride (NF₃) and hydrofluorinated ethers (HFE).
- **Reporting for 'Manure Management' is required under Subpart JJ.**



Consideration of Comments

Comment period ended in June (2009).

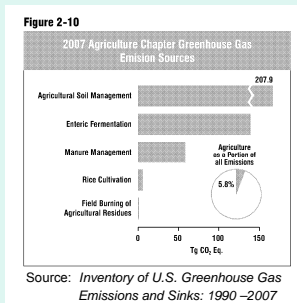
- **EPA received nearly 17,000 comments regarding the proposed rule.**
- **EPA has stated that the comments were considered in preparing the final rule.**



Common Agricultural Concerns

Questioned:

- **The need to report 'manure management' emissions**
 - Very small contributor to U.S. GHG inventory
- **The methods, assumptions and equations employed to determine emissions**
- **The merits of reporting vs. costs to report**



Current Situation:

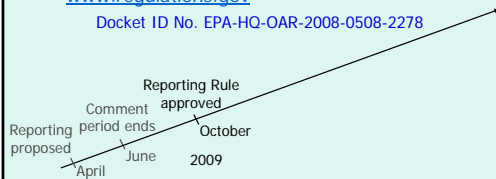
Mandatory Reporting Rule Enacted

The final rule was signed by EPA Administrator Jackson on September 22nd.

The final rule was published in the Federal Register on October 30th

www.regulations.gov

Docket ID No. EPA-HQ-OAR-2008-0508-2278



Final EPA Rule

Mandatory Reporting of Greenhouse Gases

- **Basic intent and required reporting of GHG emissions remained intact as proposed.**
 - Facilities emitting 25,000 metric tons or more per year of GHG emissions (CO₂e) are required to submit annual reports to EPA.


• In the final rule, 'manure management' sources are required to report under Subpart JJ.



Changes in Final EPA Rule Mandatory Reporting of Greenhouse Gases

Some source and supply categories are not required to report at this time:

- Electronics manufacturing
- **Ethanol production**
- Fluorinated GHG production
- **Food processing**
- Industrial landfills
- Magnesium production
- Oil and natural gas systems
- SF6 from electrical equipment
- Underground coal mines
- Wastewater treatment
- Suppliers of coal



Changes in Final EPA Rule Manure Management Reporting of GHG

Facility size (animal number) thresholds changed


Estimated # of head to meet 25,000 MT CO₂e threshold in Table JJ-1.

Proposed Rule

Animal species	Threshold # of head
Beef cattle	89,000
Dairy cows	5,000
Swine	73,000
Poultry	895,000

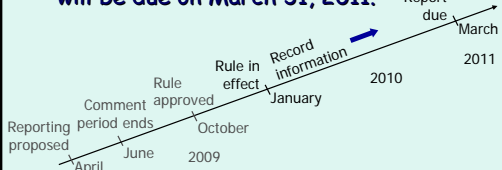
Final Rule

Animal species	Threshold # of head
Beef cattle	29,300
Dairy cows	3,200
Swine	34,100
Laying hens	723,600



Road Ahead: Reporting Rule Implementation

- Final rule goes into effect December 29, 2009.
- The rule requires monitoring to begin on January 1, 2010.
- The first reports (for 2010 emissions) will be due on March 31, 2011.



Detour in the Road: Implementation of Reporting Rule for Manure Management Is Halted

- The Congressional Appropriations Committee attached a budgetary restriction to EPA's Appropriation Bill for fiscal year 2009-10.

Federal fiscal year: Oct. 1, 2009 – Sep. 30, 2010



Response to Budgetary Restriction

- EPA halted implementation of reporting rule for manure management
- Notices posted on EPA website and attached to related communications.

"EPA will not be implementing subpart JJ of the Mandatory GHG Reporting Rule due to a Congressional restriction prohibiting the expenditure of funds for this purpose."



A Road Test of EPA's 'Applicability Tool'

<http://www.epa.gov/climatechange/emissions/GHG-calculator/index.html>

Applicability Tool

Is the Mandatory Greenhouse Gas Reporting Rule applicable to your FACILITY?

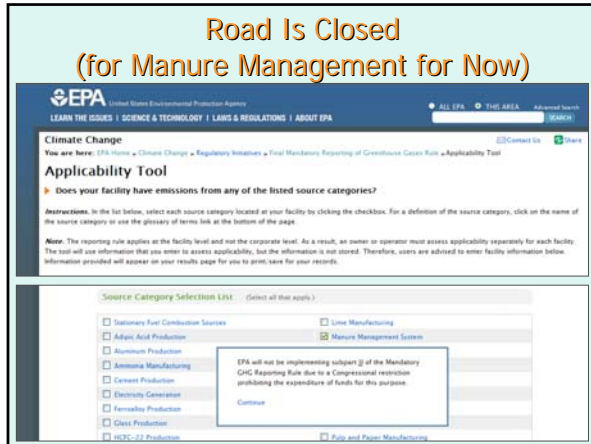
This tool is designed to help you assess whether your facility would be required to report greenhouse gas (GHG) emissions as required by EPA's Mandatory GHG Reporting Rule. Applicability depends on the source categories located at the facility and, for some source categories, the emission level or production capacity.

This tool is not intended for Suppliers of fossil fuels or industrial GHGs and Engine Manufacturers. However, guidance for Suppliers and Engine Manufacturers is available at the following links:

- Mobile Sources Information Sheet
- Suppliers of Natural Gas Information Sheet
- Suppliers of Carbon Dioxide Information Sheet
- Suppliers of Coal-based Liquid Fuels Information Sheet
- Suppliers of Industrial Greenhouse Gases Information Sheet

Run the Applicability Tool in

Required browser settings for using this tool: JavaScript and cookies must be enabled in your browser. More >



**Blind Curve Ahead:
 Uncertain Future of Reporting Rule
 for Manure Management**

- **Still unclear what actions Congress will take**
 - Budgetary restriction is for fiscal year 2010.
 - Annual re-establishment of restriction?
 - What happens if restriction is not renewed?
 - Exclusion of manure management from reporting
 - Enough support to revise or amend the rule?
 - New legislation

We must amend this rule!

I say 'Amen!' to the rule!

**Blind Curve Ahead:
 Uncertain Future of Reporting Rule
 for Manure Management**

- **Still very much unclear if and when Subpart JJ of the rule will be implemented**
 - Without Congressional [budgetary] restrictions, EPA is obligated to enforce enacted regulations
 - Does delayed implementation equate to delayed need to report?
- **EPA is quiet on the issue**
 - Restricted from working on implementation

Readying to Comply with the Final GHG Mandatory Reporting Rule

- **Know your facility**
- **Assess facility size vs. animal # threshold**
 - If clearly below the threshold, (and no other significant GHG sources) no need to report.
- **Collect [organize] information to calculate GHG emissions**
 - Animal #s
 - Durations on facility (animals raised for meat)
 - Allocation of manure by MMS



Facility

EPA definition:

The rule defines a 'facility' as...

"any physical property, plant, building, structure, source, or stationary equipment located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way and under common ownership or common control, that emits or may emit any greenhouse gas."



Manure Management System

EPA definition of this 'source category':

A 'manure management system' (MMS) is...

"a system that stabilizes and/or stores livestock manure, litter or manure wastewater in one or more of the following system components:"

List provided in rule:


- Uncovered anaerobic lagoon
- Liquid/slurry systems
- Storage pits
- Digesters
- Solid manure storage
- Dry lots
- High-rise houses for poultry
- Poultry production with litter
- Deep bedding systems
- Manure composting
- Aerobic treatment

Manure Management System

EPA definition of 'manure management system' is narrower than commonly taken in Ag.

MMS ≡ containment [facility] of manure
 (i.e. livestock waste control facility, LWCF)

MMS ≠ Collection → Utilization



What's not an MMS?

- **Systems lacking any manure storage [stabilization] capacity**
 - Grazing, pasture-based systems
 - Year-round daily-haul systems
- **Land-application systems**
- **Off-site systems**
 - On a site that's not a livestock facility
 - Off-site composting operation

} Note that the rule does not refer to AFO/CAFO at all.

How does facility initially size up?

Compare to thresholds listed in the final rule

Example: Cattle feedlot & swine finishing operation

- Common ownership
- Facilities across road

Ave. herd sizes (rough #s)

- 20,000 head of cattle
- 10,000 hogs

$\frac{20,000 \text{ hd}}{29,300 \text{ hd}} + \frac{10,000 \text{ hogs}}{34,100 \text{ hogs}} = 0.682 + 0.293 = 0.975 < 1$

Animal species	Threshold # of head
Beef cattle	29,300
Dairy cows	3,200
Swine	34,100
Laying hens	723,600

Complete list is in Table JJ-2.

If combined size < 100% of threshold, don't report (unless expand animal #s).
 If combined size ≥ 100% of threshold, continue on to collecting information.

Conclusion: Very close to threshold. Need to redo with firmer animal #s.

Animal Information to Collect

Animal data is used for annual inventory of herd for manure (volatile solids) production

- Static herds (i.e. dairy, breeding/repro operations)
 - ✓ Number of animals by size grouping
 - ? Typical weight by specie group (option to default wt)
- 'Growing' herds (i.e. finishing, grower, nursery)
 - ✓ Number of animals 'produced' annually (best assumption: - turns/yr x turn size)
 - ✓ Ave. # days on site [or in given size range by wt]
 - ? Typical weight of size range (option to default wt)



MMS Information to Collect

MMS data is used to estimate GHG emissions from breakdown of volatile solids in manure

- MMS usage
 - ✓ List of MMS on facility
 - ✓ Fraction of excreted manure handled by each MMS (Best assumption: use nutrient management plan info)

Example MMS Allocations

Assessing manure destiny varies from easy to challenging



Data Collection

Suggest \leq monthly records maintained

Manure Management Monitoring Checklist 

Final Rule: Mandatory Reporting of Greenhouse Gases

NOTE: EPA will not be implementing subpart JJ of the Mandatory GHG Reporting Rule using funds provided in its FY2010 appropriations due to a Congressional restriction prohibiting the expenditure of funds for this purpose.

What Must Be Monitored?

For estimating emissions from all manure management system components except anaerobic digesters, measure these parameters ...

Static animal populations (e.g., dairy cows, laying hens, breeding pigs):

Annual animal inventory

Growing animal populations (e.g., beef cows, veal, market pigs, broilers, turkeys):

Average annual animal population by animal type, estimated by monitoring:

Average number of days each animal is kept at the facility Number of animals produced annually

Data Collection

Manure management system component use:

Fraction of manure by weight for each animal type managed in each system component

For anaerobic digesters, measure these parameters...

Methane flow to digester combustion device:

Daily average volumetric flow rate to digester (cubic feet/minute) Pressure at which flow is measured for each operating day (atm)

Daily average methane concentration of digester gas (percent, wet basis) Number of digester operating days per year (days/yr)

Temperature at which flow is measured for each operating day (°R)

Methane destruction at digesters:

Number of operating hours of combustion device

See also the information sheet for Manure Management (EPA-430-F-09-026R) at: www.epa.gov/climatechange/emissions/downloads/infosheets/manuremanagement.pdf

My facility has more than the threshold animal #s, will I need to report?

That depends...

- **On policy resolutions beyond our control**
- **Whether calculated CO₂e emissions exceed 25,000 metric tons per year**
 - EPA used very conservative assumptions when setting the animal # thresholds

Suggest keeping good documentation in either case

What must be submitted in a report?

- ✓ List of MMS at facility
 - ✓ % manure per MMS (by animal group)
 - ✓ Ave. annual animal #s
 - ✓ Ave. # days in growing period
 - ✓ Animals produced per year
 - ✓ Typical animal weights
 - ✓ Facility CO₂e emissions
 - ✓ For digesters only
 - ✓ Several readings and values
- ✓ CH₄ emissions from MMS
 - ✓ VS values used
 - ✓ Methane generation potentials (B₀) used
 - ✓ Methane conversion factors
 - ✓ Ave. ambient temperatures
 - ✓ N₂O emissions
 - ✓ N excretion values used (by animal group)
 - ✓ N₂O emission factors used (for each MMS)

Sampling & Monitoring

Will I need to sample manure and/or monitor air emissions on my facility?

- **Manure sampling**
 - Rule uses default values for volatile solids (VS) and nitrogen (N) excretion rates, so sampling is not required
 - No indication if farm data could be used, but may consider if expect to be lower values.
- **Air monitoring**
 - Only required for digesters

Who submits the report?

- **Facility owners and operators must select a designated representative for their facility.**
 - The rule allows owners and operators the flexibility to select any person as their designated representative, including third-party representatives such as contractors.




EPA Assistance in Reporting

Planned general assistance

- **On-line applicability tool to assist in determining whether required to report**
- **Training on the emissions reporting system (fall 2010)**
 - Electronic reporting system operational in January 2011

What assistance will EPA provide for manure management?




Assistance for Manure Management

Developmental-stage efforts:

- **Extension fact sheets, spreadsheets**
- **Some commodity associations may also provide assistance or facilitate training**

Some questions remain unanswered.
These efforts are not aided by uncertainty about eventual implementation and the state of 'necessary silence' by EPA.



Can reporting end once started?

- **Facilities and suppliers may cease annual reporting by reducing their GHG emissions.**
 - After 5 consecutive years of emissions below 25,000 metric tons CO₂e/year
 - After 3 consecutive years of emissions below 15,000 metric tons CO₂e/year
 - If the GHG-emitting processes or operations are shut down
- **Records need to be retained for 3 years.**



Also in view:

Climate Change Legislation Proposed

Climate Change Bills considered by Congress

- U.S. House of Representatives passes a proposed bill on June 26th.
- U.S. Senate bill moves out of committee [Environment] on November 5th.



Proposed Climate Change Bills

- Intended to cut U.S. GHG production, and bolster alternative energy sources, clean technologies, and efficient building standards
- Cornerstone of bills is implementation of 'Cap & Trade' policy
- House version:
 - American Clean Energy and Security Act of 2009, also known as the Waxman-Markey Bill
- Senate version:
 - The Clean Energy Jobs and American Power Act, also known as the Kerry-Boxer Bill



Other GHG Regulatory Activity

- Proposed EPA rule to require major GHG emitters to install advanced pollution-control technology to operate any new or significantly modified facility
- Efforts to associate with Clear Air Act
 - Some in Congress want to modify CAA to require air permits for facilities emitting more than 25,000 metric ton GHG per year



Endangerment Finding

December 7, 2009

The U.S. Environmental Protection Agency announced that greenhouse gases threaten the public health and welfare of the American people.



The Road Ahead

Key points for consideration

- **Mandatory GHG Reporting Rule that includes 'manure management' is in place**
 - Optimism abounds that manure management will be excluded
 - Preparation for reporting (complying with rule) is advised
- **Other GHG-control efforts ramping up**
 - Deserve attention

Thank You.

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Follow-up info will be put on
Air Quality page of Animal
Manure Management website



http://www.extension.org/pages/Air_Quality_in_Animal_Agriculture
<http://www.extension.org/animal+manure+management>
