Factory Farm Biogas:

A False Climate & Pollution Solution

Tarah Heinzen, Great Lakes CAFO Manure Conference, May 2, 2024

Factory Farm Climate & Water Impacts

Factory Farm Climate Impacts

- Agriculture is responsible for 10% of U.S. GHG emissions
  - 10% of emissions are methane

- Agriculture accounts for more than a third of U.S. methane emissions
  - 27% from enteric fermentation
  - 9% from manure management – and increasing

- Methane has 80 times the warming power of CO2 in the short-term

Factory Farm Climate Impacts

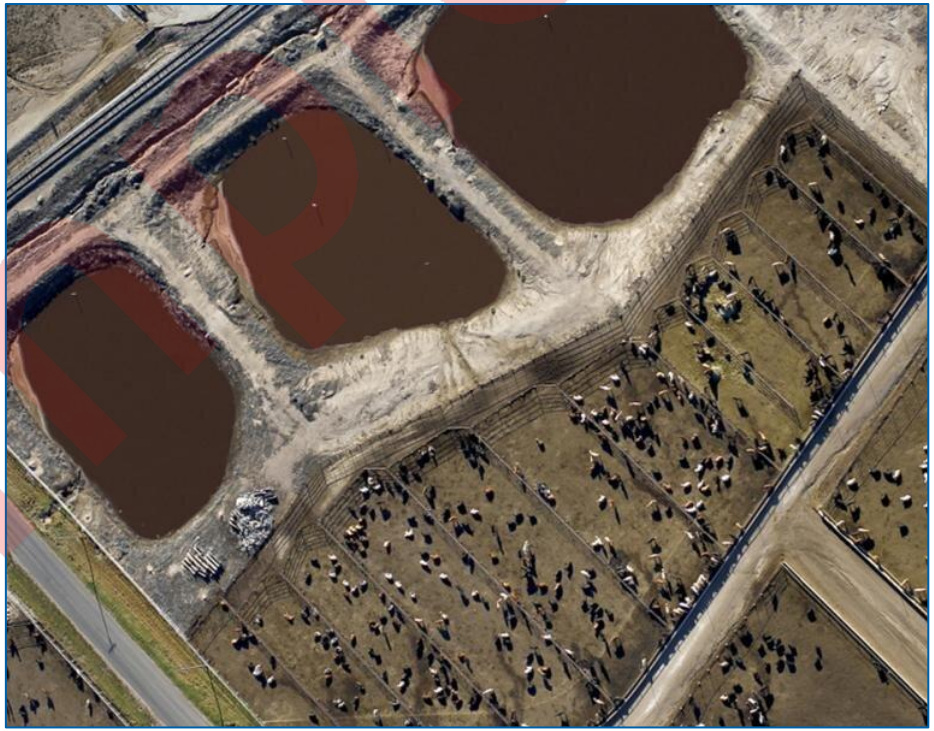
Table 2-7: Emissions from Agriculture (MMT CO_2 Eq.)

Gas/Source	1990	2005	2018	2019	2020	2021	2022	Percent Change Since 1990
CO_2	**7.1**	**7.9**	**7.2**	**7.2**	**8.0**	**7.6**	**8.6**	**21.0%**
Urea Fertilization	2.4	3.5	4.9	5.0	5.1	5.2	5.3	120.4%
Liming	4.7	4.4	2.2	2.2	2.9	2.4	3.3	-30.3%
CH_4	**241.7**	**264.4**	**285.0**	**280.2**	**282.4**	**281.8**	**276.8**	**14.5%**
Enteric Fermentation	183.1	188.2	196.8	197.3	196.3	196.5	192.6	5.2%
Manure Management	39.1	55.0	67.7	66.7	66.9	66.4	64.7	65.3%
Rice Cultivation	18.9	20.6	19.9	15.6	18.6	18.3	18.9	-0.4%
Field Burning of Agricultural Residues	0.5	0.6	0.6	0.7	0.6	0.6	0.6	14.4%
N_2O	**302.3**	**309.5**	**350.2**	**332.6**	**309.2**	**315.3**	**308.0**	**1.9%**
Agricultural Soil Management	288.8	294.1	333.4	315.6	292.1	298.0	290.8	0.7%
Manure Management	13.4	15.2	16.6	16.8	16.9	17.1	17.0	27.2%
Field Burning of Agricultural Residues	0.2	0.2	0.2	0.2	0.2	0.2	0.2	15.5%
Total	**551.1**	**581.8**	**642.4**	**620.1**	**599.7**	**604.8**	**593.4**	**7.7%**

U.S. EPA – Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022

Water Pollution Threats

- Millions of tons of waste
- Numerous pollutants of concern
- 14,000 miles of polluted rivers
- 90,000 acres of polluted lakes



Factory Farm Pollution Regulation

Failed Clean Water Act Program

- Primary federal law protecting waters via permit system
- EPA estimates 75% of CAFOs discharge (requiring permit) but only 29% have permits
- Permits that do exist are weak and ineffective

CAFO Clean Water Permits

- Only apply to “Large” CAFOs
- Do not address heavy metals, pesticides, pharmaceuticals
- Rely on nutrient management plans designed to optimize crop yield
- Allow numerous practices known to harm water quality
- Based on outdated weather data

Food & Water Watch v. EPA

- FWW petitioned EPA to strengthen CAFO pollution regulations (and then sued when it refused)
- EPA agreed to conduct a "detailed study" of CAFO water pollution

BEFORE THE UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

FOOD & WATER WATCH, ARKANSAS RIGHTS KOALITION, ASSATEAGUE COASTAL TRUST (MARYLAND), ASSOCIATION OF IRRITATED RESIDENTS (CALIFORNIA), BUFFALO RIVER WATERSHED ALLIANCE (ARKANSAS), CENTER FOR BIOLOGICAL DIVERSITY, CENTER FOR FOOD SAFETY, CONCERNED CITIZENS AGAINST INDUSTRIAL CAFOS (MARYLAND), DAKOTA RURAL ACTION (SOUTH DAKOTA), DALLAS COUNTY FARMERS AND NEIGHBORS (IOWA), DES MOINES WATER WORKS (IOWA), DODGE COUNTY CONCERNED CITIZENS (MINNESOTA), DON'T WASTE ARIZONA, THE ENVIRONMENTAL INTEGRITY PROJECT, GRAND RIVERKEEPER (OKLAHOMA), HELPING OTHERS MAINTAIN ENVIRONMENTAL STANDARDS (ILLINOIS), ILLINOIS CITIZENS FOR CLEAN AIR & WATER, INSTITUTE FOR AGRICULTURE AND TRADE POLICY, INTERFAITH WORKER JUSTICE (NEW MEXICO), IOWA CITIZENS FOR COMMUNITY IMPROVEMENT, JEFFERSON COUNTY FARMERS & NEIGHBORS (IOWA), JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE, KEWAUNEE CITIZENS ADVOCATING RESPONSIBLE ENVIRONMENTAL STEWARDSHIP (WISCONSIN), LAND STEWARDSHIP PROJECT (MINNESOTA), MIDWEST ENVIRONMENTAL ADVOCATES (WISCONSIN), MISSOURI RURAL CRISIS CENTER, MOMS ACROSS AMERICA EASTERN SHORE CHAPTER (MARYLAND), MONTGOMERY TOWNSHIP FRIENDS OF FAMILY FARMS (PENNSYLVANIA), NORTH CAROLINA ENVIRONMENTAL JUSTICE NETWORK, OZARK RIVER STEWARDS (ARKANSAS), PATUXENT RIVERKEEPER (MARYLAND), POWESHIEK COMMUNITY ACTION TO RESTORE ENVIRONMENTAL STEWARDSHIP (IOWA), PRESERVE OUR SHORE ACCOMACK COUNTY (VIRGINIA), AND RIO VALLE CONCERNED CITIZENS (NEW MEXICO),

Petitioners,

v.

SCOTT PRUITT, ADMINISTRATOR,
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

PETITION TO REVISE THE CLEAN WATER ACT REGULATIONS FOR CONCENTRATED ANIMAL FEEDING OPERATIONS

Factory Farm Gas Exacerbates Water Pollution

What is Factory Farm Biogas

- Biogas consists of methane, CO2, and other gases produced during anaerobic decomposition
- Produces energy for on-farm use or to sell and inject into pipelines as “renewable natural gas”

Biogas Entrenches Factory Farms

- Primary Digesters capture methane created from CAFO manure storage practices – not enteric emissions

- Viable on only the largest factory farms

Table 2. Typical Characteristics for Profitable Biogas Recovery Systems

Animal Type	Manure Management Method[1]	Size of Operation
Dairy	Flushed or scraped freestall barns and open lots	≥ 500 head
Swine	Houses with flush, pit recharge, or pull-plug pit systems[2]	≥ 2,000 head

U.S. EPA, 2018

Factory Farm Biogas is not About “Green” Energy

- U.S. dairy and hog gas potential is less than **1%** of total 2019 U.S. natural gas use

Table 1. Potential for Biogas Recovery Systems at U.S. Swine and Dairy Operations

Animal Sector	Candidate Farms	Energy Generating Potential		
		MW	MWh/year	Thousands of MMBtu/year
Swine	5,409	837	6,597,520	71,484
Dairy	2,704	1,172	9,240,893	100,124
Total	**8,113**	**2,009**	**15,838,413**	**171,608**

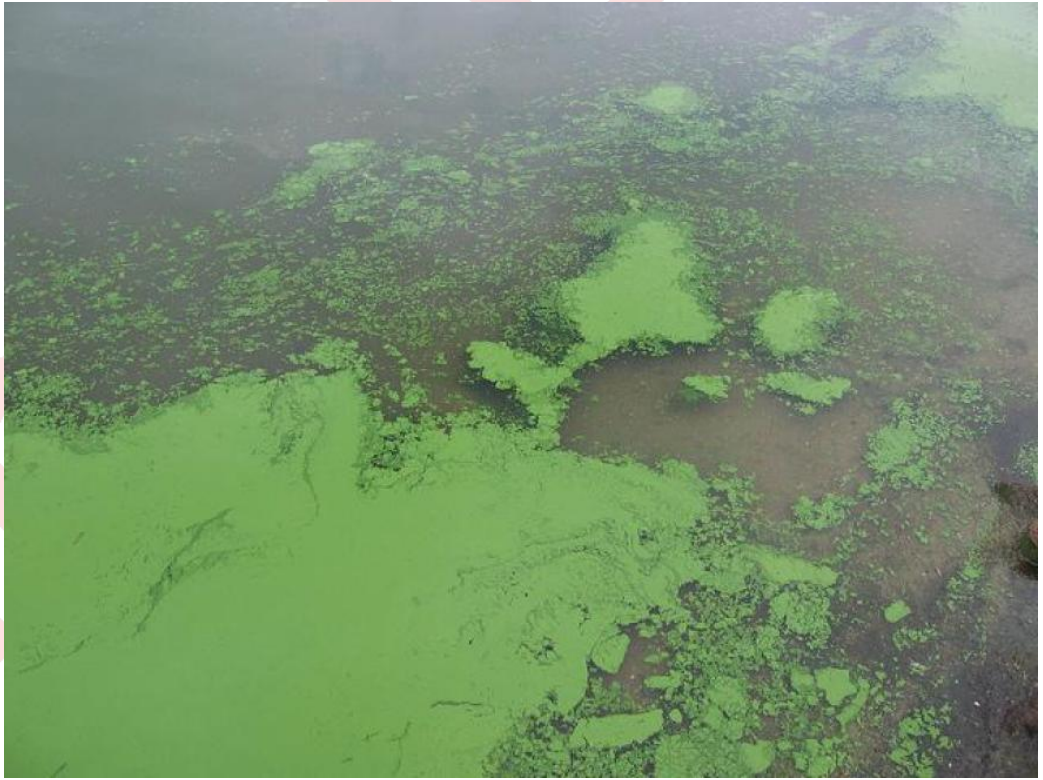
U.S. EPA, 2018

Greenwashing Factory Farm Gas

Digesters DO NOT get rid of factory farm waste

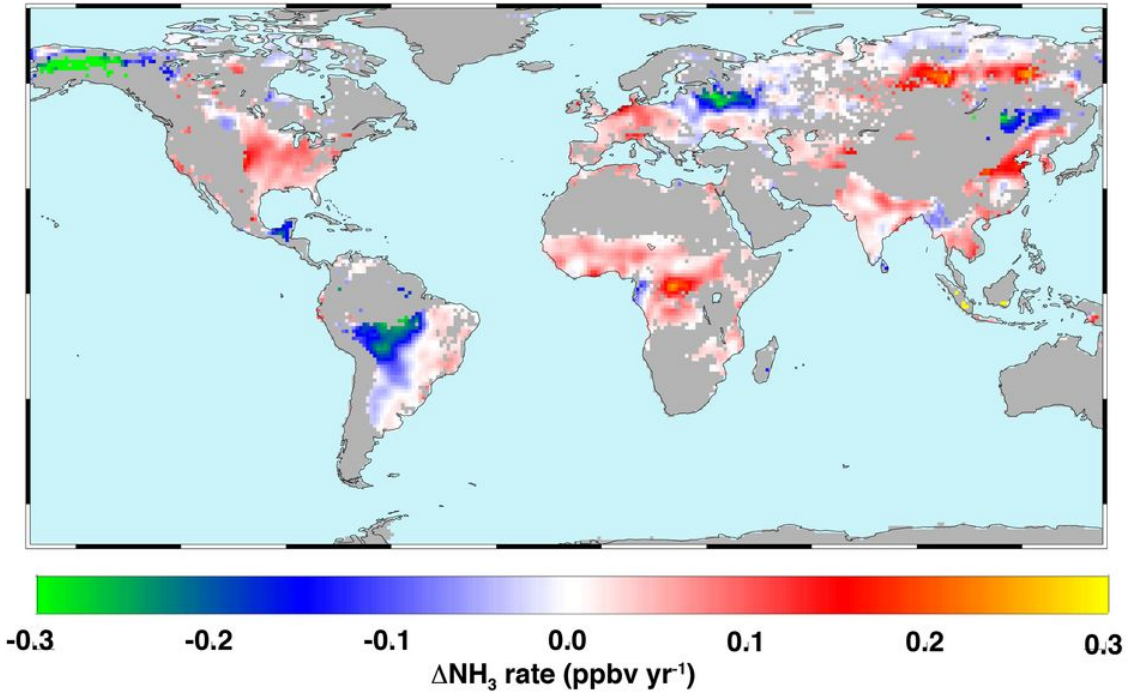
Digesters Exacerbate Water Pollution

Digesters make nutrients MORE LIKELY to pollute waterways



Digesters Exacerbate Water Pollution

Digesters increase toxic ammonia emissions



Digesters Do Not Eliminate Pathogens or Antibiotics

J Environ Qual. 2018 Mar-Apr; 47(2): 336–344.
Published online 2018 Mar 1. doi: 10.2134/jeq2017.07.0285
PMCID: PMC716649
PMID: 29634809

Fate of Manure-Borne Pathogens during Anaerobic Digestion and Solids Separation

Tucker R. Burch, [1] Susan K. Spencer, [1] Spencer S. Borchardt, [2,3] Rebecca A. Larson, [4] and Mark A. Borchardt [1]

Author information · Article notes · Copyright and License information Disclaimer

Associated Data

Supplementary Materials

Abstract

Go to:

Anaerobic digestion can inactivate zoonotic pathogens present in cattle manure, which reduces transmission of these pathogens from farms to humans through the environment. However, the variability of inactivation across farms and over time is unknown because most studies have examined pathogen inactivation under ideal laboratory conditions or have focused on only one or two full-scale digesters at a time. In contrast, we sampled seven full-scale digesters treating cattle manure in Wisconsin for 9 mo on a biweekly basis (n = 118 pairs of influent and effluent samples) and used real-time quantitative polymerase chain reaction to analyze these samples for 19 different microbial genetic markers. Overall, inactivation of pathogens and fecal indicators was highly variable. When aggregated across digester and season, log-

ELSEVIER

Science of The Total Environment
Volume 721, 15 June 2020, 137532

Review

Manure anaerobic digestion effects and the role of pre- and post-treatments on veterinary antibiotics and antibiotic resistance genes removal efficiency

Biyensa Gurmessa, Ester Foppa Pedretti, Stefania Cocco, Valeria Cardelli, Giuseppe Corti

Show more

Add to Mendeley · Share · Cite

https://doi.org/10.1016/j.scitotenv.2020.137532

Get rights and content

Highlights

- AD effect on VAs and ARGs removal was reviewed.
- AD does not guarantee complete removal of all types of VAs in manure.
- VAs and ARGs are entering soils with digestate compromising environmental quality.

What We Can Do About It

- Push EPA to consider for digester dangers in CAFO detailed study
- Update federal pollution standards to account for digestate risks
- Oppose state and federal incentives for factory farm gas
- Educate elected officials who think biogas is a climate solution

theinzen@fwwatch.org

foodandwaterwatch.org