Factory Farms and Iowa's Methane Emergency

With every day that the status quo continues, the chance of keeping global temperature rise below the 1.5-degree Celsius tipping point slips further and further away.[1] Much focus remains on cutting carbon dioxide (CO_2) emissions, the largest source of greenhouse gas emissions and warming.[2] But reducing its more insidious counterpart, methane, is even more essential in stabilizing global climate and reducing short-term warming. Banning one of the largest sources of methane emissions — factory farm expansion — is the quickest and only way to secure Iowa's future.

Methane's Importance

Since the Industrial Revolution, greenhouse gas emissions have skyrocketed, filling the air with an overabundance of gases and amplifying the Earth's natural warming effect.[3] Methane is responsible for a third of total warming since then,[4] with a warming effect 86 times stronger than CO_2 on a 20-year timescale.[5] A short-term pollutant, methane stays in the atmosphere for only around 12 years.[6] Despite this shorter lifespan, it traps significantly more atmospheric heat than CO_2 and contributes to the formation of other greenhouse gases, giving it a higher global warming potential than CO_2.[7] This means that reducing the rate of emissions is essential to stabilizing long-term temperature rises,[8] while providing more immediate climate-cooling effects.[9]

Factory Farms

According to state estimates, agriculture contributes 31 percent of Iowa's greenhouse gas emissions and is the state's dominant emitter of methane, accounting for 82 percent of emissions.[10] These emissions are rising, with Iowa's total agricultural emissions increasing by 9 percent between 2013 and 2022.[11] Food & Water Watch (FWW) estimates that the hogs and cattle living on Iowa's factory farms[a] in 2022 emitted 114,000 metric tons of methane.[12] This is equivalent to over 25.1 billion miles driven.[13]

Most cattle methane emissions come from enteric fermentation, a process in the digestive system of ruminants that releases significant amounts of methane.[14] Non-ruminants like hogs also produce methane during digestion, although less on a per-animal basis.[15] However, hogs account for nearly half of all enteric fermentation emissions from Iowa's factory farms,[16] due to the state's extreme concentration of factory hog operations. Iowa today houses one-third of all U.S. factory farmed hogs and over six times what the state did 40 years ago.[17] FWW estimates that cattle and hogs on Iowa's

[a] In this analysis, factory farms are defined as those with 500+ head for dairy farms or 1000+ head for beef and hog operations.

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factory farms in 2022 released over 77,500 metric tons of methane, with hogs alone accounting for 34,600 metric tons.[18]

The other major source of on-farm emissions is manure management, where mega-dairies far exceed beef cattle.[19] From 2002 to 2022, Iowa's dairy cow population exploded, increasing by a staggering 350 percent.[20] FWW estimates that 2022 manure emissions from the state's 150,000 mega-dairy cows neared up to 35,400 metric tons of methane emissions, while beef cattle accounted for 1,370 metric tons.[21] In comparison, manure deposited in fields by grazing cattle releases little to no methane. The rapid industrialization of U.S. agriculture systems and the collapse of family-scale farms are to blame for a more than doubling of U.S. methane emissions from dairy manure over the past thirty years, while total dairy cows remained about the same.[22] Anaerobic lagoons, used by factory farms in an attempt to stifle the smell,[23] still produce more than three times as much methane as the cattle on these farms release through enteric fermentation.[24]

In the face of growing manure emissions, Iowa has embraced anaerobic digesters and factory farm biogas, a false solution peddled by Big Ag and Big Oil. "Biogas" or "renewable natural gas (RNG)" refers to the mixture of gases that are produced after organic materials like factory farm manure are broken down in a process called anaerobic digestion.[25] Waste goes into an oxygen-free space called a digester, and even more waste and gas (mostly methane and CO_2) come out.[26] Once upgraded, this gas is often interchangeable with fossil or fracked natural gas, used primarily for vehicle fuel.[27]

Iowa lawmakers passed House File 522 in 2021,[28] allowing the largest factory farms to install factory farm gas digesters as an alternative to aerobic manure management systems.[29] This bill, however, fails to account for the reality that digesters do not address any enteric fermentation emissions.[30] They leak methane at higher rates than oil and gas supply chains,[31] and produce the same pollutants as fossil fuels when burned as an end-use.[32]

Urgent Need to Reduce Methane

Reducing methane emissions benefits human and climate systems alike. Methane emissions help form ground-level ozone, an unhealthy pollutant that poses respiratory and circulatory mortality risks.[33] Even just a few hours of exposure increase a person's risk of worsening illness, hospital admission, or death.[34] Iowa's temperatures have risen since the beginning of the twentieth century, and the occurrence of extreme weather events has increased, negatively impacting Iowa's agricultural seasons.[35] Reducing methane now will rapidly curb ozone pollution and further warming,[36] necessary to protect Iowa's climate.

To protect Iowans and their future, Food & Water Watch recommends:

- The Iowa legislature must pass a moratorium on new and expanding factory farms and must pass the Clean Water for Iowa Act which would require the existing CAFOs contributing most to Iowa's pollution problems to obtain Clean Water Act discharge permits.
- The Iowa legislature and governor must say no to dangerous false solutions and industry scams like carbon capture pipelines and factory farm gas. State agencies like the Iowa Utilities Board and Department of Natural Resources must follow suit.

Endnotes

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