

FINAL

At this year's COP28, the United Nations' annual climate conference, reducing methane emissions has been a hot topic of discussion for countries around the world. Fossil fuel companies pledged to reduce methane from pipeline leaks, using technology like satellites or drones to detect these rogue methane emissions. EPA announced new rules this month that also are estimated to stop methane from leaking into the atmosphere from leaks and flaring. In Louisiana alone, industrial facilities and oil and gas operations leaked and flared enough methane to power all the houses in Baton Rouge for one year!¹ While stopping leaks is important, neither of these rules addresses the source of these methane emissions- mining, drilling, and burning fossil fuels. And neither the United States, by far the largest emitter of methane from oil and gas, nor China, by far the largest emitter of methane from coal, have meaningfully reduced their consumption or production of fossil fuels.²

Methane is a colorless, odorless gas that is the main component of "natural gas".³ While methane itself is not known to be dangerous to human health, it reacts with oxygen at ground level to form ozone.⁴ Exposure to ozone can cause respiratory symptoms, and chronic or long-term exposure can lead to asthma.⁵ Although methane can be harmful to human health, it is also detrimental to the Earth's climate. While both carbon dioxide and methane are greenhouse gasses that affect the global temperature, they do so in different ways, and require different solutions. Methane's lifespan in the atmosphere is about 12 years, while CO2 can remain in the atmosphere for centuries.⁶ Compared to carbon dioxide, a ton of methane absorbs about *85 times* more heat over a 20 year period.⁷ In fact, while methane currently makes up about 16% of all greenhouse gas emissions, it is responsible for between 20-30% of all global warming.⁸

Because methane is short lived and punches above its weight in trapping heat, reducing methane emissions immediately has become a priority. About 40% of methane emissions are from natural sources like decaying plant matter, but the remaining 60% are caused by human activities.⁹ Of these anthropogenic (human-caused) emissions, more than a third are from animal agriculture, mostly from raising cows for meat and milk.¹⁰ About an equal amount are

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<https://www.businessreport.com/newsletters/new-federal-rule-requires-oil-and-gas-industry-to-monitor-for-methane-leaks>

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<https://www.iea.org/reports/curtailing-methane-emissions-from-fossil-fuel-operations/executive-summary>; data about fossil fuel use by year at <https://www.macrotrends.net/>

³ <https://nj.gov/health/eoh/rtkweb/documents/fs/1202.pdf>

⁴ <https://royalsocietypublishing.org/doi/10.1098/rsta.2021.0104>

⁵ <https://www.cdc.gov/niosh/topics/ozone/default.html>

⁶ <https://climate.nasa.gov/vital-signs/methane/>

⁷ <https://unece.org/challenge>

⁸ <https://www.epa.gov/gmi/importance-methane>

⁹ <https://climate.nasa.gov/vital-signs/methane/>

¹⁰

<https://www.reuters.com/sustainability/climate-energy/global-dairy-companies-announce-alliance-cut-methane-cop28-2023-12-05/>

from producing, burning, and transporting fossil fuels like oil, gas, and coal.¹¹ The remaining emissions are largely from trash decomposing in landfills.¹² The EPA recently stated that “rapid, sharp cuts in methane can generate near-immediate climate benefits.”¹³

Methane is used both as a fuel and as a feedstock for petrochemical production. Notably, methane is a feedstock for hydrogen, ammonia, and methanol. While these three chemicals have great potential as fuels which do not release CO₂ when burned, the flush of recently proposed new facilities along the Gulf Coast would use natural gas as feedstock and emit huge amounts of CO₂ during their production. These facilities plan to rely on carbon capture technology to supposedly capture their CO₂ emissions. There are real zero carbon methods to produce hydrogen, ammonia, and methanol without starting with fossil fuels. Methanol can be made from waste from the lumber industry.¹⁴ Green hydrogen is produced from splitting water into hydrogen and emitting oxygen, and is powered by renewable energy.¹⁵ However blue hydrogen production requires massive amounts of energy and releases both carbon dioxide as a waste product and methane from leaks, like our previous Chemical of the Month ammonia.¹⁶ A 2021 study concluded, after finding that greenhouse gas emissions from blue hydrogen are higher than simply burning natural gas, that “blue hydrogen is best viewed as a distraction, something that may delay needed action to truly decarbonize the global energy economy, in the same way that has been described for shale gas as a bridge fuel and for carbon capture and storage in general.”¹⁷

The summer of 2023 was the hottest on record for much of Louisiana.¹⁸ In order to keep global temperatures from increasing over the 1.5C mark, the United Nations found that global methane production must decrease by at least 45% during this decade.¹⁹ Dramatically reducing global methane production is one of the best ways that we can prevent temperatures from climbing even higher.

HOW TO REDUCE METHANE EMISSIONS:

- Join your local utility watchdog, like the Alliance for Affordable Energy, to learn more about how to speak up for Louisiana to be powered by renewable energy sources, not methane emitting natural gas. <https://all4energy.org>

¹¹ <https://climatenexus.org/international/methane-at-cop27/>

¹² <https://climatenexus.org/international/methane-at-cop27/>

¹³

<https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-operations/epas-final-rule-oil-and-natural-gas>

¹⁴ <https://www.weforum.org/agenda/2023/08/green-methanol-clean-fuel/>

¹⁵ <https://www.ft.com/content/d6b0dead-ff85-41ab-a39b-cc6973f0db59>

¹⁶ <https://doi.org/10.1002/ese3.956>

¹⁷ <https://doi.org/10.1002/ese3.956>

¹⁸

<https://www.wunderground.com/article/safety/heat/news/2023-09-01-record-hottest-summer-south-phoenix-houston-miami>

¹⁹

<https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions>

- Attend city and parish council meetings to make your voice heard about proposed blue hydrogen, blue ammonia, carbon capture, and blue methanol facilities.
- Landfills are the number three source of human-caused methane emissions. The less waste you send to the landfill, the better! Consider backyard composting for food waste, and join swap or buy nothing groups to get rid of unwanted household items.
- Proteins from plant-based sources produce much smaller methane emissions than animal proteins.²⁰ Beans, lentils, seeds, nuts, and grains are delicious and contain healthy proteins with no saturated fat or cholesterol.

²⁰ <https://www.un.org/en/climatechange/science/climate-issues/food>