July 30, 2021

Administrator Michael S. Regan
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20004
[By email]

Dear Administrator Regan,

On behalf of our tens of thousands of health professional and concerned citizen members and the populations we serve, we write to urge the U.S. Environmental Protection Agency (EPA) to adopt more stringent measures to reduce the emissions of methane and associated pollution from both new and existing oil and gas operations. Such measures would help to slow climate change and convey significant health benefits by reducing pollution of the air, land, and water.

Extraction, processing, transport and distribution of methane all contribute to emissions, both of methane and of accompanying pollution like volatile organic compounds (VOCs) and toxic gases. These emissions pose serious threats to human health, directly as in the case of exposure to toxic gases as well as the smog formed from VOCs, and due to methane's contribution to

climate change. Such emissions must be controlled to protect public health. Therefore, we call on EPA to take the following steps:

- Establish stronger standards to control emissions from new, reconstructed and modified oil and gas processes and equipment, including increased frequency for leak detection and repair (LDAR) surveys and modern/zero-emitting equipment.
- Extend these same strong standards to existing oil and gas processes and equipment.

These steps are urgently needed. Public health depends on a broader and more effective effort to significantly reduce emissions of methane and harmful air pollutants from oil and gas wells and infrastructure.

Methane Drives Climate Change

Methane, a significant component of what is often referred to as "natural" gas, "fossil" gas and "fracked" gas, is a fossil fuel widely used in electricity production. Methane is a known and powerful accelerator of climate change; its heat-trapping capacity is more than 80 times that of carbon dioxide over its first 20 years in the atmosphere.[1] While methane degrades in the atmosphere over time, the 20-year time frame is key: it corresponds roughly to the time during which the United States needs to slash its greenhouse gas emissions.[i] Without a dramatic reduction in greenhouse gas levels, we are in danger of surpassing the critical threshold of a greater-than-2°C temperature increase and triggering catastrophic tipping points in the climate system. Preventing a worsening of the climate crisis requires that we account for methane's powerful impact on our climate.

A study recently published in the journal *Environmental Research Letters* found that rapid scale-up and deployment of mitigation measures currently available could immediately slow global warming, helping to keep world temperature rise below 2 degrees Celsius compared to preindustrial levels — a central aim of the Paris climate accord.[2]

Methane and Associated Emissions Cause Severe Health Effects

Methane is associated with serious health effects through its contributions to climate change. Climate-related health impacts already being felt in the United States include death from heat stroke; damage to lung function; increased hospitalization for asthma aggravations, respiratory infections, bronchitis and chronic obstructive pulmonary disease (COPD); outbreaks of waterborne and diarrheal diseases; possible exposure to vector-borne diseases including Lyme, dengue fever, West Nile Virus, and Rocky Mountain spotted fever; food insecurity, and high levels of anxiety and post-traumatic stress disorder (PTSD).[3] Climate health effects are felt most severely by vulnerable populations, which include those with low income, communities of color, immigrant groups, Indigenous peoples, children, pregnant people, older adults, vulnerable occupational groups, persons with disabilities, and persons with preexisting or chronic medical conditions.[4]

[i] We urge EPA to adopt the 20-year timeframe in referencing methane's radiative forcing, rather than the 100-year timeframe it cites on its EPA website. Cf. https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane.

Extraction of methane also leads to the release of other forms of pollution. Most notable are volatile organic compounds, or VOCs. Some VOCs, those known as hazardous air pollutants (HAPs), can cause cancer, affect the nervous system, or cause birth defects. A study by the University of Colorado Denver School of Public Health documented dangerous airborne levels of the VOC benzene near hydraulic fracturing operations as well as elevated risks of cancer for residents living within a half-mile of a drilling site.[5]

In addition to being toxic, VOCs contribute to the formation of ground-level ozone when they mix with the nitrogen oxides from diesel-fueled trucks and equipment at fracking sites. Exposure to ground-level ozone, also known as smog, can cause irreversible damage to the lungs and significantly increase the chance of premature death. It contributes to asthma attacks and aggravates other chronic lung diseases and pre-existing heart problems. Ozone is also linked to premature birth, which with low birth weight is a leading cause of infant death. Children are particularly vulnerable to both ozone and VOC pollution due to their faster breathing rate, proportion of time spent outside, and developing lungs. Reducing the levels of VOCs and ozone would make an important contribution to children's respiratory development and health.[6]

Methane Leakage is Extensive across the Supply Chain

A growing body of evidence indicates that methane leaks into the atmosphere during every phase of the natural gas supply chain: during the production phase at drilling sites, processing, and transport from pipelines, compressor stations and distribution lines. The sources of methane emissions are more numerous than was previously recognized. Aerial data collected in 2019 confirmed other research showing that 1.1 to 2.5 times as much methane is being emitted by oil and gas activities than is estimated by inventories collected on the ground, such as those compiled by EPA.[7]

Natural gas is also emitted during transport, from long-distance transmission pipelines, compressor stations that keep gas in pipelines pressurized, and from the distribution lines that carry gas to buildings and homes. According to a report by the EPA's Office of Inspector General, EPA acknowledged in 2012 that transmission pipeline leaks "accounted for more than 13 million metric tons of carbon dioxide equivalent emissions" – at that time, more than 10 percent of total methane emissions from natural gas systems in the U.S.[8] Besides accidental leaks, pipelines also emit gas during "blowdowns," which involve venting of the gases in a pipeline or compressor in order to control pressure levels. Blowdowns, which be accidental or a scheduled part of maintenance, typically emit pipeline contents at much higher concentrations than annual emissions data would suggest.[9] Thus, they hold the potential for large amounts of methane and other pollutants to be released, exposing nearby residents to greater concentrations of toxic substances than are reflected in the estimates of exposure used in permitting decisions.

Compressor stations operate 24 hours a day, year after year, unlike drilling and fracturing activities. Compressor stations emit methane and other pollutants through compressor seals, equipment, valves and connections as well as the deliberate venting mentioned above. A study in Texas' Barnett Shale found that methane emissions from compressor stations were substantially higher than from well pads.[10] Another study of the Barnett Shale found methane emissions from natural gas processing plants and a compressor station in the field were 3.2 to 5.8 times higher

than the estimates based on the U.S. EPA Greenhouse Gas Reporting Program, where large-scale industry sources are required to self-report emissions.[11]

Methane emissions have also been documented to take place from urban distribution lines that deliver natural gas to homes and businesses. A study conducted in the Boston area in 2015 found that methane emissions from distribution pipelines were two to three times greater than previously predicted. In a separate study conducted in Boston in 2016, scientists measuring methane from distribution pipes under the city streets noted that of 100 natural gas leaks surveyed, 15 percent qualified as "potentially explosive," adding, "All leaks must be addressed, as even small leaks cannot be disregarded as 'safely leaking.'"[12]

Conclusion: A Call for Action

Methane, along with other toxic gases, can be released during extraction, processing, transport, and delivery. These emissions can not only cause an acceleration of climate change due to methane's highly potent warming potential, but the toxic exposures to additional released gases can cause significant harm to human health. Thus, it is an urgent health need that the oil and gas industry be required to take the most effective steps possible to prevent fugitive emissions of methane and other gases from their operations and to capture those gases that do escape.

We urge EPA to strengthen the protections established by the 2016 New Source Performance Standards to prevent or capture emissions of methane and volatile organic compounds from their operations. EPA must build on the 2016 standards by strengthening requirements for new, reconstructed and modified wells and equipment and by setting strong standards for existing sources, including increased frequency for leak detection and repair surveys and modern/zero-emitting equipment.

Given that technologies and means to reduce or prevent methane emissions from wells, compressors, and related infrastructure are available and highly cost-effective, standards should be established as soon as feasible.

These measures would be valuable in slowing climate change and would convey significant benefits to health, both immediate and long-term, by reducing pollution of the air, land and water. Thank you.

Sincerely,

Academic Pediatric Association

Academy of Integrative Health & Medicine

Allergy & Asthma Network

Alliance of Nurses for Healthy Environments

American Academy of Pediatrics

American Lung Association

American Medical Women’s Association

American Psychological Association

American Public Health Association

American Thoracic Society

Association for Humanistic Psychology

Association of Schools and Programs of Public Health

Asthma and Allergy Foundation of America

Center for Climate Change and Health, Public Health Institute

Children's Environmental Health Network

Climate for Health

Climate Health Now

Climate Psychiatry Alliance

Health Care Without Harm

Integrative Psychiatry

International Society for Environmental Epidemiology, North American Chapter

Medical Society Consortium on Climate & Health

Medical Students for a Sustainable Future

MI Air MI Health

Michigan Clinicians for Climate Action

National Association of Pediatric Nurse Practitioners

National League for Nursing

Physicians for Social Responsibility, National Office

Arizona Physicians for Social Responsibility

Greater Boston Physicians for Social Responsibility

Maine Physicians for Social Responsibility

New Mexico Physicians for Social Responsibility

Oregon Physicians for Social Responsibility

Pennsylvania Physicians for Social Responsibility

San Francisco Bay Physicians for Social Responsibility

Texas Physicians for Social Responsibility

Washington Physicians for Social Responsibility

Virginia Clinicians for Climate Action

Wisconsin Health Professionals for Climate Action

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[1] Myhre, G., et al, 2013: Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

[2] Ilissa Bonnie Ocko et al 2021. Acting rapidly to deploy readily available methane mitigation measures by sector can immediately slow global warming
Environ. Res. Lett. in press https://doi.org/10.1088/1748-9326/abf9c8

[3] USGCRP, 2016: The Impacts of Climate change on Human Health in the United States: A Scientific Assessment. Crimmins, A., et al. U.S. Global Change Research Program, Washington DC. http://dx.doi.org/10.7930/J0R49NQX.

[4] USGCRP, 2016: The Impacts of Climate change on Human Health in the United States: A Scientific Assessment. Crimmins, A., et al. U.S. Global Change Researach Program, Washington DC. http://dx.doi.org/10.7930/J0R49NQX.

[5] McKenzie L.M., et al., "Human health risk assessment of air emissions from development of unconventional natural gas resources," Sci Total Environ. (2012). doi:10.1016/j.scitotenv.2012.02.018

[6] Brumberg H.L., Karr C.J., and Council on Environmental Health, "Ambient Air Pollution: Health Hazards to Children." Pediatrics May 2021, e2021051484; DOI: https://doi.org/10.1542/peds.2021-051484.

[7] Barkley, Z. R., et al, 2019: Forward modeling and optimization of methane emissions in the south central United States using aircraft transects across frontal boundaries. Geophysical Research Letters, 46, 13,564-13,573. doi: 10.1029/2019GL084495

[8] U.S. Environmental Protection Agency Office of Inspector General. (2014, July 25). Improvements needed in EPA efforts to address methane emissions from natural gas distribution pipelines. Report No. 14-P-0324. Retrieved from http://www.epa.gov/oig/reports/2014/20140725-14-P-0324.pdfdata

[9] New York State Madison County Health Department (2014). Comments to the Federal Energy Regulatory Committee concerning docket no. CP14-497-000, Dominion Transmission, Inc. https://www.madisoncounty.ny.gov/sites/default/ files/publicinformation/madison_county_doh_comments_-_docket_no._cp14-than f497-000.pdf

[10] Lan, X., Talbot, R., Laine, P., & Torres, A. (2015). Characterizing fugitive methane emissions in the Barnett Shale area using a mobile laboratory. Environmental Science & Technology, 49, 8139-46. doi: 10.1021/es5063055

[11] Lavoie, Tegan N. et al. (July 7, 2015) "Aircraft-Based Measurements of Point Source Methane Emissions in the Barnett Shale Basin." Environmental Science & Technology, Vol 9 issue 13. http://pubs.acs.org/doi/full/10.1021/acs.est.5b00410

[12] Hendrick, M. F., Ackley, R., Sanaie-Movahed, B., Tang, X., & Phillips, N. G. (2016). Fugitive methane emissions from leak-prone natural gas distribution infrastructure in urban environments. Environmental Pollution, 213, 710-716. doi: 10.1016/j. envpol.2016.01.094