January 31, 2022

Administrator Michael S. Regan
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington D.C. 20460

Re: American Thoracic Society (ATS) Comments on "Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review"; 86 *Federal Register*; 63110 (November 15, 2021).

Dear Administrator Regan,

The American Thoracic Society (ATS) is an international organization of physicians, research scientists, nurses, and allied healthcare professionals with more than 16,000 members. Our members are leaders in studying the adverse health effects of exposure to air pollution. Our mission is to advance respiratory health through scientific discovery, global innovation, and patient care. We provide comments on the "Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources: Oil and Natural Gas Sector Climate Review."

Under the Clean Air Act (CAA), the EPA has the authority to regulate greenhouse gas (GHG) emissions and volatile organic compounds (VOCs), which is critical to protecting public health and mitigating the harmful impacts of climate change. **Given the urgent need to tackle climate change's health and environmental impacts, we strongly support the actions to reduce fugitive methane emissions from the oil and natural gas industry that will be achieved through this rulemaking.** Such reduction is one of the most effective policies the US can implement to reduce GHG emissions, given that methane is the second most potent anthropogenic climate forcer after carbon dioxide, and the oil and natural gas industry is responsible for 30 percent of U.S. methane emissions[1,2]. In addition, the social cost of methane is substantial, up to 100 times the estimated social cost of carbon, and abatement of methane production through regulation and application of innovative technologies as described in this proposed rule will provide societal benefits that are likely to outweigh the implementation costs[3]. Herein we provide further recommendations to maximize this proposed rulemaking's impact and public health benefits.

ATS strongly supports the reduction of methane, volatile organic compounds (VOCs), and toxic air emissions from oil and natural gas extraction operations to protect public health. The adverse health effects of methane occur via its reaction with VOCs to form tropospheric (ground level) ozone [4]. Ground-level ozone is responsible for substantial excess global and national morbidity and mortality[5]. Acting as a respiratory irritant with oxidative potential, ozone can trigger cough in healthy individuals, lead to exacerbations of pre-existing respiratory diseases (COPD and asthma), and is even a risk factor for the development of asthma and decreases in lung growth and function in children[6–8]. Pulmonary inflammation caused by long-term ozone exposure leading to systemic inflammation is one underlying cause of the increased mortality risk from cardiac and pulmonary diseases[9]. In addition to the decades of ozone research on cardiopulmonary disease, emerging research on the association between ozone exposure and an increased risk of Alzheimer's disease has raised concern for the neurocognitive risks of ozone[10]. There is also emerging data linking increased ground-level ozone with increased mortality in COVID infection[11,12], which may be related to upregulation of genes and molecular pathways associated with severe COVID-19[13]. Overall, the contribution of methane and VOC emissions to increased ozone concentrations can cause serious health consequences nationwide.

The proposed rule will be of particular benefit in rural communities that struggle with elevated wintertime ozone levels. The VOC reductions that will accompany actions taken under the proposed rule will result in meaningful improvements in ambient ozone concentrations in communities with few other policy options to address this health risk.

ATS urges the EPA consider environmental justice in this proposed rulemaking. Minoritized, low-income, and other underrepresented communities bear disproportionate pollution, climate, and environmental burdens related to oil and natural gas production. A disproportionate amount of methane emissions come from a relatively small number of facilities, sometimes termed "super-emitters"[14]. In California, each 10 percent increase in census block group proportion of Black residents is associated with a 10 percent increased odds of exposure to methane "super-emitter" facilities[15]. Across Colorado, Oklahoma, Pennsylvania, and Texas, minoritized communities, especially those with predominately Black residents, are much more likely to be close to oil and natural gas fracking wells[16]. Furthermore, low-income residents in Pennsylvania are disproportionately exposed to harmful air toxins and pollutants released from fracking operations[17]. Community-based participatory research (CBPR) initiatives can help to engage communities affected by nearby oil and natural gas production facilities[18]. Such work from Los Angeles has demonstrated that individuals living nearby such sites, which have a higher proportion of low-income and minoritized residents, experience increases in asthmatic symptoms and lower lung function[19,20]. Historical practices of redlining and housing segregation in California contributed substantially to minoritized individuals only securing nearby housing oil and natural gas extractive areas[21]. ATS recommends that EPA outlines clear recommendations to ensure that oil and natural gas producers engage local communities to participate in decisions regarding new extraction and refining operations and to participate in local monitoring strategies. Furthermore, funds should be allocated to ensure that CBPR initiatives can monitor the community health and environmental impacts of nearby oil and natural gas facilities.

In this proposed rulemaking, ATS strongly supports the EPA's coverage of new and existing oil and natural gas extraction and refining operations. The production, gathering, and processing of oil and natural gas is estimated to be responsible for approximately 85 percent of U.S. methane produced by the industry per year and is also a significant contributor to non-methane VOCs[1]. If left unchecked, the enormous quantities of methane and VOCs from existing oil and natural gas operations will continue to exert substantial climate forcing impacts and harm public health. This proposed rule will considerably cut the fugitive emissions of methane and VOCs from existing and future operations, thereby reducing these harms.

ATS strongly urges the EPA to ensure that all aspects of the final rule cover all oil and natural gas extraction operations, including from smaller companies. Recent data indicates that smaller companies emit more than double the proportion of methane emissions compared to their proportion of oil and gas production[22]. As even small companies can be "super-emitters," it is crucial that their emissions are covered by the same restrictions on venting and monitoring requirements that larger companies must adhere to. Moreover, beyond their contributions to overall methane emissions, small companies may benefit from the proposed rule by capturing and utilizing fugitive emissions.

ATS recommends careful consideration for monitoring methane emissions. The ATS encourages the EPA to monitor methane emissions from extraction operations continuously. Every year, roughly 9 million tons of methane-containing natural gas spill into the atmosphere due in part to challenges in monitoring methane gas. Methane is naturally invisible and odorless, requiring specialized technology for monitoring leaks[23]. Infrared (IR) cameras can detect 80 percent of total methane emissions under ideal conditions, low wind, warm weather, and clear skies at 10 meters. However, their effectiveness diminishes under less ideal weather conditions and cannot detect leaks smaller than 10,000 ppm. In contrast, laser-based sensors can detect leaks as small as five ppm from 50 m away; however, their high cost impedes their wide-scale implementation. Therefore, the development of inexpensive and sensitive monitoring systems is essential for reducing methane leaks, especially for smaller oil and gas operations that may have difficulty affording more expensive solutions.

Operational facilities are often built-in remote areas with pipelines covering large distances, making continuous monitoring across the entire system difficult. Satellite monitoring can be used for regional measurements of methane emissions and targeted quantification of methane released during leakages[24–26]. Furthermore, new technologies for mobile leak-detection platforms are currently in development which could improve leak detection speed with better cost-effectiveness than standard technologies[27]. These technologies are still in development. There is a critical need for continued investment in this area, which will also provide cost savings for the country in property and environmental damage and cost savings for companies by minimizing product loss and remediation costs.

The ATS Recommends Public Reporting of Methane Emissions Data

The ATS recommends EPA require sharing methane and other air pollutant emissions data with the public. Sharing the emissions data with the public will ensure communities have accurate information about potential exposures in their neighborhood, provide researchers with access to local, regional, and national data to better understand health risks from emissions associated with

oil and natural gas industry policy, and provide policymakers with important information to develop further climate policy.

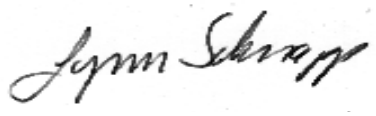
While not addressed in the EPA proposed methane rule, there is an urgent need for the Biden Administration to curb emissions from abandoned wells and mines and ban routine flaring. Recent work indicates that there are approximately 4,000,000 abandoned oil and gas wells throughout the U.S., with these sites increasing over time[28]. The EPA may underestimate annual methane emissions from these sites by 20 percent[28]. ATS recommends that in a future version of this rule or in a separate rulemaking that the EPA outline steps to ensure that companies are liable for the costs of plugging new and existing wells and mines. These protections must be built into the cost of new projects, and regulatory approvals should not proceed without clear allocation of funds for this purpose. ATS commends the Biden Administration for allocating $4.7 billion in their infrastructure legislation to plug existing abandoned wells and mines. Future regulations and legislation must outline mechanisms for industrial responsibility that curbs the ongoing proliferation of these polluting and dangerous sites across the country.

Ban Routine Flaring in Oil and Natural Gas Operations

In addition to allocating significant funds for the plugging of abandoned wells and mines, the EPA must take significant action to ban routine flaring. Shale fracking has become a primary production method of oil and natural gas, and along with it, flaring of associated gas has proliferated[29]. Flaring contributes to significant releases of VOCs, carbon monoxide, sulfur dioxide, polycyclic aromatic hydrocarbons, nitrogen oxides, and black carbon, all of which have significant adverse human health impacts, and carbon dioxide contributes to climate forcing[30]. Recent findings indicate that flaring contributes to 0.12 percent of global total disability-adjusted life years (DALYs) attributable to $PM_{2.5}$ air pollution and 6.51 percent of total DALYs attributable to climate change[31]. Hispanic communities in the Eagle Ford shale region of Texas are exposed to substantially higher number of nearby flaring events, highlighting how environmental injustice contributes to the health burdens of flaring[32]. In this same region, flaring is associated with an increased risk of preterm birth[33], the second-highest cause of infant mortality[34]. Increased regulation of routine flaring with plans for an eventual ban on this practice would benefit human health, reductions in GHG emissions, and improved economic outputs from oil and natural gas production sites.

In summary, ATS supports the proposed rulemaking as it will reduce GHG emissions and produce harmful airborne pollutants that pose critical threats to human health and the environment. However, we believe that the EPA needs to go further on this rulemaking to tackle environmental injustice, mitigate the disproportionate emissions from small companies, “super-emitters,” abandoned wells and mines, and flaring, and increase monitoring networks and citizen science initiatives.

Sincerely,



Lynn Schnapp, MD, ATSF
President
American Thoracic Society

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