

Alexander Hoehn-Saric, Chair  
Consumer Product Safety Commission  
4330 East West Highway  
Bethesda, MD 20814

**Docket No. CPSC-2023-0009**

Dear Chair Hoehn-Saric,

As physicians, nurses, and other health and public health professionals from across the nation, we are writing to voice support for the Consumer Product Safety Commission's plan to investigate and address the threats to health associated with gas-burning stoves.

Emissions of harmful air pollutants from gas stoves has been documented and studied for decades. Since at least 1976, more than four dozen peer-reviewed studies have connected gas stoves with unhealthy air quality in homes and with health harms like asthma. For example, a 2013 meta-analysis of 41 studies found children living in homes with gas stoves to be at a 42 percent increased risk of having current asthma and at a 24 percent increased risk of developing asthma over their lifetimes.<sup>1</sup>

This growing body of scientific evidence and medical studies indicates that gas stove pollution may expose tens of millions of people to harmful levels of air pollution in their homes. In response, major medical and health associations including the American Medical Association<sup>2</sup> and the American Public Health Association<sup>3</sup> have passed resolutions or proposed policy statements declaring gas cooking a public health concern.

Vulnerability to these air pollutants is widespread. About 35 percent of U.S. households—more than one-third—cook primarily with gas, according to US Energy Information Administration data from 2015.<sup>4</sup> The fuel burned in those stoves is methane, and its combustion produces pollutants known to harm human health, including nitrogen dioxide, carbon monoxide, and particle pollution, among others.

**Nitrogen dioxide** (NO<sub>2</sub>) is one of only six harmful pollutants for which the U.S. EPA is required to set National Ambient Air Quality Standards (NAAQS). In homes with gas stoves, short- and long-term concentrations of NO<sub>2</sub> can reach levels that exceed NAAQS standards.<sup>5</sup> Exposure to NO<sub>2</sub> can aggravate respiratory diseases, particularly asthma, leading to coughing, wheezing or difficulty breathing, hospital admissions, and emergency room visits. Longer exposures to elevated concentrations may contribute to the development of new cases of asthma.<sup>6</sup> Recent peer-reviewed research estimated that nearly 13 percent of childhood asthma cases in the United States can be linked to having a gas stove in the home.<sup>7</sup>

Besides asthma, nitrogen dioxide has been linked to severe illnesses such as chronic obstructive pulmonary disease (COPD).<sup>8,9</sup> Research also suggests that exposure to elevated levels of NO<sub>2</sub> may be linked to effects on other organ systems, including cardiovascular effects, diabetes, cancer, and reproductive effects.<sup>10</sup>

**Carbon monoxide** (CO) can be fatal at high levels of exposure. While levels in homes with gas stoves are likely to reach only low levels of CO, people with coronary heart disease are vulnerable to these low levels of CO exposure, which may leave them unable to provide an adequate flow of oxygenated blood to the tissues.<sup>11</sup>

**Particulate matter** can settle in the lungs and start a cascade of inflammatory reactions causing heart and/or lung disease. Fine particulate matter (PM<sub>2.5</sub>) is small enough to pass directly into the bloodstream and accumulate in blood vessels and brain tissue, increasing the risk of heart attack and stroke and impairing lung functioning. Older adults, babies, children, and people with heart or lung disease are most likely to experience health effects caused by particulate matter pollution.<sup>12</sup>

In addition to these combustion-related pollutants, gas stoves have been shown to pollute the air even when the stove is not in use:

**Methane** may leak from stoves when burners are turned off.<sup>13</sup> Because methane is a highly potent greenhouse gas, this contributes to climate change and its associated harmful effects, such as intense heat waves, extreme storms, flooding, expansion of vector-borne diseases and more.

**Benzene**, a carcinogen, also leaks from stoves, according to a study published in October 2022.<sup>14</sup> The lead author of the report compared the threat posed by leaks of benzene from gas stoves to those from secondhand smoke.<sup>15</sup> The Department of Health and Human Services (DHHS) has determined that benzene causes cancer in humans. Specifically, long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.<sup>16</sup>

Gas stove pollution is also an **Environmental Justice** issue. Many low-income households are at higher risk from gas stove pollution due to living in smaller, more crowded homes and may have inadequate or non-functioning stovetop ventilation. These factors contribute to elevated concentrations of NO<sub>2</sub> in lower-income, multifamily buildings.<sup>17</sup> In addition, children of color are disproportionately affected by asthma: More than twice as many African American non-Hispanic children have asthma (15.7 percent) than white non-Hispanic children (7.1 percent).<sup>18, 19</sup>

Given the widespread use of gas stoves, the severity of the health threats associated with them, and the large number of Americans potentially harmed by those health threats, we

call on the Consumer Product Safety Commission (CPSC) to take meaningful action. We applaud your study of gas stoves' health threats and urge you to inform the public of your findings and take strong action. Specifically, the Commission should consider taking the following actions:

1. Require explicit health-focused warning labels on gas cooking appliances;
2. Develop mandatory performance standards for new gas cooking appliances and range hoods that focus on reducing exposure to combustion pollutants (nitrogen dioxide, carbon dioxide and PM<sub>2.5</sub>) by increasing ventilation and alerting users to the potential for unsafe concentrations of pollutants in the absence of ventilation, and
3. Create accessible public education materials about the harmful air pollutants emitted from gas cooking appliances and effective ways to reduce or eliminate them.

Signed,

[health and public health professionals]

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<sup>1</sup> Lin W, Brunekreef B, Gehring U. Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children. August 2013. International Journal of Epidemiology, Volume 42, Issue 6. <https://doi.org/10.1093/ije/dyt150>

<sup>2</sup> American Medical Association. House of Delegates (A-22). A22-refcmte-d-repot-annotated. Page 16. <https://www.ama-assn.org/system/files/a22-refcmte-d-report-annotated.pdf>

<sup>3</sup> American Public Health Association. Proposed Policy Statements. <https://apha.org/Policies-and-Advocacy/Public-Health-Policy-Statements/Proposed-Policy-Statements>

<sup>4</sup> US Energy Information Administration. "Residential Energy Consumption Surveys (RECS)," May 2018. <https://www.eia.gov/consumption/residential/data/2015/hc/php/hc3.6.php>.

<sup>5</sup> US Environmental Protection Agency, Washington, DC. 2016. Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria (Final Report, 2016). <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879>

<sup>6</sup> US Environmental Protection Agency, Washington, DC. Basic Information about NO<sub>2</sub>. <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>

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<sup>7</sup> Gruenwald T, Seals B, Knibbs L, Hosgood HD. Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States. *Int J Environ Res Public Health*. 2022 Dec 21;20(1):75. doi: 10.3390/ijerph20010075.

<sup>8</sup> Health Canada. Residential Indoor Air Quality Guideline: Nitrogen Dioxide. 2015. <https://www.canada.ca/en/health-canada/services/publications/healthy-living/residential-indoor-air-quality-guideline-nitrogen-dioxide.html>

<sup>9</sup> US Environmental Protection Agency, Washington, DC. Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria (Final Report, 2016). <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879>

<sup>10</sup> US Environmental Protection Agency, Washington, DC. 2016. Integrated Science Assessment (ISA) For Oxides of Nitrogen – Health Criteria (Final Report, 2016). <https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=310879>

<sup>11</sup> US Environmental Protection Agency, Washington, DC. Quantitative Risk and Exposure Assessment for Carbon Monoxide – Amended. July 2010. <https://www.epa.gov/sites/default/files/2020-07/documents/co-rea-amended-july2010.pdf>

<sup>12</sup> Centers for Disease Control and Prevention. Particle Pollution. [https://www.cdc.gov/air/particulate\\_matter.html](https://www.cdc.gov/air/particulate_matter.html)

<sup>13</sup> Lebel E, Finnegan C, Ouyang Z, and Jackson B. Methane and NO<sub>x</sub> Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes. *Environmental Science & Technology* 2022 56. DOI: 10.1021/acs.est.1c04707

<sup>14</sup> Lebel E et al. Composition, Emissions, and Air Quality Impacts of Hazardous Air Pollutants in Unburned Natural Gas from Residential Stoves in California. October 2022. *Environmental Science & Technology* 2022 56. <https://pubs.acs.org/doi/full/10.1021/acs.est.2c02581>

<sup>15</sup> O'Mary, L. WebMD. October 21, 2022. "Gas Stoves Can Emit High Levels of Cancer-Causing Benzene: Study." <https://www.webmd.com/cancer/news/20221021/gas-stoves-can-emit-high-levels-of-cancer-causing-benzene#:~:text=Gas%20Stoves%20Can%20Emit%20High%20Levels%20of%20Cancer%2DCausing%20Benzene%3A%20Study,-Written%20by%20Lisa&text=Oct.,PhD%2C%20the%20lead%20study%20author.>

<sup>16</sup> Centers for Disease Control and Prevention. Emergency Preparedness and Response. Facts about Benzene. <https://emergency.cdc.gov/agent/benzene/basics/facts.asp>

<sup>17</sup> Adamkiewicz G et al., "Moving Environmental Justice Indoors: Understanding Structural Influences on Residential Exposure Patterns in Low-Income Communities." *American Journal of Public Health*. 2011, <https://www.ncbi.nlm.nih.gov/pubmed/21836112#>.

<sup>18</sup> Zahran H et al., Vital Signs: Asthma in Children – United States, 2001 – 2016. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report*. February 9, 2018. <http://dx.doi.org/10.15585/mmwr.mm6705e1>.

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<sup>19</sup> Centers for Disease Control and Prevention. 2017. Summary Health Statistics: National Health Interview Survey: 2015. Table C-1. [http:// www.cdc.gov/nchs/nhis/shs/tables.htm](http://www.cdc.gov/nchs/nhis/shs/tables.htm).