

# Residential Gas Stoves

## GAS EMISSIONS AND PROTECTING HEALTH

### Natural gas stoves

Many Minnesotans use natural gas stoves for cooking at home. Across the United States, over one third of households use gas for cooking.<sup>1</sup> Gas stoves emit methane, a greenhouse gas that contributes to changes in climate with consequential effects to the environment and human health.

Exposure to methane can impact everyone's health, but it's not the only risk from gas stoves. The burning of natural gas by gas stoves also emits fine particulate matter (PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>), and other oxides of nitrogen (NO<sub>x</sub>). These by-products of natural gas combustion contribute to poor indoor air quality and may increase the risk of asthma exacerbations, wheezing, and other trouble with breathing.

By reducing the use of gas stoves, Minnesotans can work towards improving indoor air quality, reducing the risks of exposure to indoor air pollutants, and protecting overall health.

### Gas stoves and respiratory illnesses

Cooking with gas produces indoor air pollutants that irritate the respiratory system and cause inflammation in the lungs. This inflammation can lead to asthma symptoms such as wheezing, coughing, shortness of breath, chest tightness, and trouble breathing.<sup>2</sup> This is also concerning for people with other chronic health conditions such as COPD and other lung and heart conditions.

- Oxides of nitrogen are irritating to the lungs even at low concentrations and, over time, can cause damage from gas cooking.<sup>3</sup>
- Breathing air with a high concentration of nitrogen dioxide can aggravate asthma and asthma symptoms, and can lead to hospitalizations and emergency department visits.<sup>4</sup>

### Gas stoves and childhood asthma

It's important that people with asthma know the triggers that cause their asthma to flare up and learn ways to reduce, eliminate, or avoid triggers as much as possible. Triggers are very specific to each individual and some of the more challenging asthma triggers are often inside the home.<sup>5</sup>

#### Why the concern?

Children living in households that use indoor gas stoves for cooking may be at a higher risk of experiencing asthma symptoms from exposure to air pollutants.

- Over 12% of current childhood asthma nationwide is attributed to gas stove use, which is similar to the percentage of childhood asthma attributed to secondhand smoke exposure.<sup>6</sup>

- The higher the emissions from gas stoves in homes, the more severe asthma symptoms in children may be.<sup>7</sup>
- Children exposed to the same levels of indoor air pollutants as adults may experience a more harmful effect to their health. This is because children's lungs are still growing and developing and their airways are relatively smaller, which increases the risk of asthma symptoms.<sup>3</sup>

## Reduce your risk when using a gas stove

**When cooking with a gas stove, consider ways to help reduce exposure to indoor air pollutants.**

- Properly install, monitor, and maintain gas stoves.<sup>8</sup>
- Vent gas stoves to the outdoors.
- Use proper ventilation daily, such as range hoods, and turn exhaust fans on when cooking.
- Cook on back-burners. Range hoods are more effective in ventilating emissions from back-burners than front burners.<sup>9</sup>
- Don't allow children to play near gas stoves.
- Increase outdoor air coming into your home.<sup>10</sup>
  - Open windows and doors, turn on ceiling fans, or run a window air conditioner in warmer seasons.
  - Use exhaust fans in bathrooms and kitchen/food prep areas.
  - Use air exchangers as available.

## Safer alternatives

**Switch to the use of electric appliances instead of gas.**

To help reduce air pollutants, switch out gas cooking appliances for electric, including stoves, ranges, and cooktops. If you're looking for a cooktop, consider an induction cooktop as a way to help reduce by-products of combustion. Induction is an option that has responsiveness similar to gas when adjusting the heat level, but doesn't have gas emissions.

- Tax credits and rebates may be available to homeowners. The rebate amount you'll qualify for will depend on how your income compares to the Area Median Income in your area.
- Find incentives for homeowners and more information on savings when switching to electric appliances through the [U.S. Department of Energy's homeowner's webpage \(www.energy.gov/save/homeowners\)](http://www.energy.gov/save/homeowners).

**Consider the use of other electric appliances.**

Substituting other electric appliances for gas stoves will also help protect your health. Safer alternatives may include using an electric crockpot, slow cooker, microwave, rice cooker, or toaster oven.

## Additional ways to reduce asthma triggers in the home

In addition to gas stove use, other things in the home can contribute to asthma and respiratory conditions. **Here are some steps that can further improve indoor air:**

- Work to reduce indoor allergens, such as pet dander, dust mites, pests such as cockroaches and mice, mold, and other irritants.
- Don't allow smoking or vaping in the home or near air intakes for the home.
- Limit wood fires in and around the home.
- Limit the use of candles, incense, and air fresheners, which can contribute to poor air quality and symptoms of asthma.
- Conduct renovations when it's possible to ventilate the home, such as in the late spring or early fall.
- Limit chemicals used for hobbies, personal care products, and chemical cleaning products, etc. If possible, substitute with less harmful, fragrance-free products, and create natural homemade cleaning products.

### Find more information on asthma triggers

- Know your asthma triggers. This information sheet identifies asthma triggers and what a person with asthma can do to reduce those triggers:
  - [Asthma Triggers Sheet - English \(PDF\)](http://www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerenglish.pdf)  
([www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerenglish.pdf](http://www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerenglish.pdf))
  - [Asthma Triggers Sheet – Spanish \(PDF\)](http://www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerespanish.pdf)  
([www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerespanish.pdf](http://www.health.state.mn.us/diseases/asthma/managing/documents/asthmatriggerespanish.pdf))
- Use an Asthma Home Environment Checklist to identify triggers and how to approach removal or reducing exposure to that specific asthma trigger.
  - [Asthma Home Environment Checklist \(PDF\)](http://www.epa.gov/sites/default/files/2018-05/documents/asthma_home_environment_checklist.pdf) ([www.epa.gov/sites/default/files/2018-05/documents/asthma\\_home\\_environment\\_checklist.pdf](http://www.epa.gov/sites/default/files/2018-05/documents/asthma_home_environment_checklist.pdf)).

## Federal legislation

The widespread use of indoor gas stoves is a considerable public health issue. While no legislation has been introduced at the federal level to ban gas stoves, this has been discussed. U.S. Regulators, State Lawmakers, and the U.S. Consumer Product Safety Commission are considering a ban on gas stoves. Minnesota's Climate Action Framework is actively addressing greenhouse gas emissions and changes in climate throughout the state.

- Minnesota's Climate Action Framework sets a vision for Minnesota will address and prepare for climate change.
- Read the Minnesota Climate Action Framework:
  - [Minnesota Climate Action Framework \(PDF\)](http://climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf) ([climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf](http://climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf)).

## References

1. [ACS Publications. Methane and NO<sub>x</sub> Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes \(pubs.acs.org/doi/10.1021/acs.est.1c04707\)](https://pubs.acs.org/doi/10.1021/acs.est.1c04707)
2. [Environmental Health Journal. The effects of indoor environmental exposures on pediatric asthma: a discrete event simulation model \(ehjournal.biomedcentral.com/articles/10.1186/1476-069X-11-66\)](https://ehjournal.biomedcentral.com/articles/10.1186/1476-069X-11-66)
3. [Centers for Disease Control and Prevention. Medical Management Guidelines for Nitrogen Oxides \(wwwn.cdc.gov/TSP/MMG/MMGDetails.aspx?mmgid=394&toxid=69\)](https://wwwn.cdc.gov/TSP/MMG/MMGDetails.aspx?mmgid=394&toxid=69)
4. [United States Environmental Protection Agency. Nitrogen Dioxide \(NO<sub>2</sub>\) Pollution \(www.epa.gov/no2-pollution/basic-information-about-no2\)](https://www.epa.gov/no2-pollution/basic-information-about-no2)
5. [Minnesota Department of Health. Asthma Home-Based Services \(www.health.state.mn.us/diseases/asthma/professionals/home-basedservices.html\)](https://www.health.state.mn.us/diseases/asthma/professionals/home-basedservices.html)
6. [National Institute of Health. Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States \(www.ncbi.nlm.nih.gov/pmc/articles/PMC9819315/\)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9819315/)
7. [Harvard Medical School. Have a gas stove? How to reduce pollution that may harm health \(www.health.harvard.edu/blog/have-a-gas-stove-how-to-reduce-pollution-that-may-harm-health-202209072811\)](https://www.health.harvard.edu/blog/have-a-gas-stove-how-to-reduce-pollution-that-may-harm-health-202209072811)
8. [Minnesota Department of Labor and Industry. 2020 Minnesota State Mechanical Code MN rule chapter 1346 \(www.dli.mn.gov/sites/default/files/pdf/BOL\\_Mechanical\\_Fuel\\_Gas\\_Code.pdf\)](https://www.dli.mn.gov/sites/default/files/pdf/BOL_Mechanical_Fuel_Gas_Code.pdf)
9. [The New York Times. Worried About Your Gas Stove? Here's What to Do. \(www.nytimes.com/wirecutter/blog/worried-about-your-gas-stove/\)](https://www.nytimes.com/wirecutter/blog/worried-about-your-gas-stove/)
10. [United States Environmental Protection Agency. Improving Indoor Air Quality \(www.epa.gov/indoor-air-quality-iaq/improving-indoor-air-quality\)](https://www.epa.gov/indoor-air-quality-iaq/improving-indoor-air-quality)

## Contact the Asthma Program

[health.asthma@state.mn.us](mailto:health.asthma@state.mn.us) | 651-201-5909 | [www.health.state.mn.us/asthma](http://www.health.state.mn.us/asthma)

### **Asthma Program**

Minnesota Department of Health  
Golden Rule Building  
85 E. 7th Place, Suite 220  
PO Box 64882  
St. Paul, MN 55164-0882