

Gas is the Past!

Natural gas carries risks to our health and our planet



Cooking with gas can harm children

Cooking with gas releases fumes into your kitchen. Both unburned gas and burned (combusted) gas release toxic chemicals into the air in your home.

These chemicals include lead, chromium, benzene, hexane, formaldehyde, and nitrogen dioxide (NO₂).¹ All of these are harmful to human health.

Many people think that the vent over their stove is just for removing cooking odors, but it's actually very important to turn on the fan whenever cooking with gas to remove the toxic chemicals from the air in your home.

Using gas to cook makes children more susceptible to respiratory infections and worsens asthma, especially in homes that aren't properly ventilated.

Here's the research:

A nationally-representative study of US children described an increased prevalence of asthma, chronic bronchitis, and wheezing among children whose parents reported using a gas stove without ventilation.²

A similar study found that the prevalence of pneumonia and coughing in younger children was higher in families who cooked and heated their homes with gas stoves.³

Another analysis of 41 studies found a 32% increased risk of asthma among children in homes where gas was used for cooking.⁴

Nitrogen dioxide is well studied, harmful to children, and significantly higher in homes with gas stoves.^{5,6} In a combined analysis of 11 pediatric studies, researchers concluded that a long-term increase of 15 parts per billion of NO₂ (about the difference between cooking with gas versus electric) increased the risk of respiratory illnesses such as asthma by 20%.⁷

In Massachusetts, researchers also found a "dose-response" relationship between the amount of NO₂ exposure (the "dose") and the asthma severity of children (the "response"). The more NO₂, the worse the asthma.⁸

Fracking contaminates air & water

In Massachusetts, more than half of the gas we use is mined through hydraulic fracturing, also known as fracking.⁹ Fracking contaminates local air and water.

Living near a fracking site is associated with higher rates of asthma as well as premature and low birth-weight babies¹⁰ who have long-term health risks and medical costs.

By reducing our consumption of gas, we can help protect these communities.

Why getting off of gas matters:

- Healthier kids
- Cleaner air and water
- A more livable, stable climate

“Natural” gas speeds up climate change

Here in New England, many of our homes use natural gas.¹¹ This gas is mostly methane, a potent greenhouse gas. Because a significant amount of that methane leaks into the atmosphere all along the system from where it’s produced to where it’s used, natural gas damages our climate more than coal.¹²

Switching from gas to electric appliances powered by clean, renewable energy is part of the solution!

Time to turn off the gas!

You can help make your home safer for your children, reduce air and water pollution from fracking, and be a part of the climate change solution.

- Always turn on your vent hood or open a window when you cook with gas.
- Use an inexpensive single or double burner induction cooktop instead of your gas stove. You can even place it on top of your gas burners, (but remove the knobs so no one accidentally turns on the gas and melts it.)
- Replace your gas stove with an electric or induction stove when you can.
- Plan to replace your gas or oil heat with an electric system when you can.

A well-designed study shows that replacing a gas stove with an electric one reduces indoor NO₂ levels.¹³ Using ventilation can help too, but the same study found that vents were not as helpful

at reducing NO₂ levels, probably because people tend to forget to turn on the vent.

Another Boston study found that replacing a gas stove with an electric one may mean healthcare savings by reducing asthma-related hospital visits.¹⁴

Is an Induction Stove Right for You?

If you love the control of gas cooking, try an induction stovetop instead.

- The temperature control of induction is just as fine as gas but more consistent.
- Food cooks up to twice as fast.
- The stovetop is easier to clean.
- It is harder to burn yourself.
- There are no explosive gasses or toxic chemicals from gas in your kitchen.

Induction cooking is powered by electricity, not gas. **In Massachusetts, using an induction stove instead of a gas one cuts carbon emissions in half.** As we speed up our transition to more renewable energy, your emissions will decrease faster.

Make a Plan

Switching your house to all electric is part of the transition to using only clean, renewable energy. It can take time to move from gas to electric but it’s worth the effort for your family’s health and our climate. Make a budget and a timeline for switching to an induction or electric stove and an electric heat source. Or be ready to make the switch when your old gas appliances break.

¹ Environmental Protection Agency (EPA). Natural Gas Combustion. www3.epa.gov/ttn/chieff/ap42/ch01/final/c01s04.pdf (Last accessed November, 2017).

² Kile ML, Coker ES, Smit E, Sudakin D, Molitor J, Harding AK. A cross-sectional study of the association between ventilation of gas stoves and chronic respiratory illness in U.S. children enrolled in NHANESIII. *Environmental Health*. 2014;13:71. doi:10.1186/1476-069X-13-71.

³ Coker ES, Smit E, Harding AK, Molitor J, Kile ML. A cross sectional analysis of behaviors related to operating gas stoves and pneumonia in U.S. children under the age of 5. *BMC Public Health*. 2015;15:77. doi:10.1186/s12889-015-1425-y.

⁴ Lin W, Brunekreef B, Gehring U. Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children. *International Journal of Epidemiology*, 2013; 42(6): 1724–1737. doi:10.1093/ije/dyt150

⁵ Belanger K, Gent JF, Triche EW, Bracken MB, Leaderer BP. Association of Indoor Nitrogen Dioxide Exposure with Respiratory Symptoms in Children with Asthma. *American Journal of Respiratory and Critical Care Medicine*. 2006;173(3):297-303. doi:10.1164/rccm.200408-1123OC.

⁶ Belanger K, Holford TR, Gent JF, Hill ME, Kezik JM, Leaderer BP. Household levels of nitrogen dioxide and pediatric asthma severity. *Epidemiology (Cambridge, Mass)*. 2013;24(2):320-330. doi:10.1097/EDE.0b013e318280e2ac.

⁷ Hasselblad VJ, Eddy DM, Kotchmar DJ. Synthesis of environmental evidence: nitrogen dioxide epidemiology studies. *J Air Waste Manage Assoc*. 1992 May;42(5):662-71.

⁸ Belanger K, Holford TR, Gent JF, Hill ME, Kezik JM, Leaderer BP. Household levels of nitrogen dioxide and pediatric asthma severity. *Epidemiology (Cambridge, Mass)*. 2013;24(2):320-330. doi:10.1097/EDE.0b013e318280e2ac.

⁹ The US Energy Administration. *Today in Energy*. <https://www.eia.gov/todayinenergy/detail.php?id=26112> Last accessed January, 2018.

¹⁰ Stone, J. Fracking Is Dangerous to Your Health — Here’s Why. *Forbes*, Feb. 23, 2017. <https://www.forbes.com/sites/judystone/2017/02/23/fracking-is-dangerous-to-your-health-heres-why/#41e5e41b5945> Last accessed November, 2017.

¹¹ Gas stoves are used by around 39% of US households. US Department of Housing and Urban Development and US Census Bureau, *American Housing Survey for the United States*. 2009. www.census.gov/prod/2011pubs/h150-09.pdf Gas is used more widely in Northeast compared to other regions. <https://www.eia.gov/todayinenergy/detail.php?id=18131>

¹² The Union of Concerned Scientists. *Environmental Impacts of Natural Gas*. <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/environmental-impacts-of-natural-gas#WfVf6Q-FBI>. Last accessed January, 2018

¹³ Paulin LM, Diette GB, Scott M, et al. Home interventions are effective at decreasing indoor nitrogen dioxide concentrations. *Indoor air*. 2014;24(4):416-424. doi:10.1111/ina.12085.

¹⁴ Fabian MP, Adamkiewicz G, Stout NK, Sandel M, Levy JI. A simulation model of building intervention impacts on indoor environmental quality, pediatric asthma, and costs. *The Journal of allergy and clinical immunology*. 2014;133(1):10.1016/j.jaci.2013.06.003. doi:10.1016/j.jaci.2013.06.003.