

PRESS RELEASE

Gas Cookers Cause Pollution Breaches in Most UK Homes

Pollution twice as strong as homes using electric cookers, largest ever study shows

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Cooking on gas regularly fills British kitchens with air pollution above recommended levels, the largest ever home monitoring [study](#) in Europe has found.

The World Health Organisation (WHO) daily limit value for nitrogen dioxide (NO₂) exposure was broken in most (55%) of the homes using gas hobs and/or gas ovens that were tested under normal living conditions by leading scientific researchers.

NO₂ levels were found to be around twice as high in kitchens and living rooms using gas appliances compared to those using electric appliances, on average, and significantly higher in bedrooms. No breaches in homes using electric appliances were recorded.

The research, commissioned by non-profit energy efficiency group [CLASP, was conducted by](#) the Netherlands Organisation for Applied Scientific Research ([TNO](#)). Sensors were placed in 35 British homes, as well as hundreds more [1] in other countries that also have large populations cooking on [gas](#) and childhood asthma cases [linked](#) to cooking on gas.

Breaching limit values increases health risks. NO₂ can cause inflammation of human airways, coughing and wheezing, reduced lung function and increased asthma attacks, especially in children. Children in homes with a gas cooking appliance have a 20% increased risk of suffering a lower respiratory illness, the WHO [estimates](#). An estimated 557,326 British children have self-reported asthma symptoms linked to domestic gas cookers, past TNO [research](#) found.

Pollution spikes in British homes cooking on gas could last several hours and were more intense the longer the cooking time, the researchers said today. The WHO daily limit was breached for 1.9 of the 13 test days, on average. Where kitchens had fans to extract fumes outdoors, they did not clear much pollution. This is partly due to improper use, the researchers think.

Extrapolating to a year, the data shows that around a quarter (25%) of British homes cooking on gas breached UK hourly NO₂ limits for outside air quality. Authorities have taken major [steps](#) to address this breach when it occurs outside, but have not set limits for indoor air pollution.

There are no UK policies to tackle the health risks of gas cooking. Binding limits exist only for outdoor air pollution, under the Air Quality Standards Regulations 2010. A government funded [assessment](#) last year

recognised that decarbonising homes can make significant improvements to indoor air quality, including NO₂. The Chief Medical Officer last year also [stated](#) how important regulation is to cut pollution from indoor appliances. It should be on manufacturers to clean up their products, CLASP [said](#).

Government should consider efforts to support a longer-term transition to cleaner electric cooking appliances, including offering financial incentives to support the switch from gas to electric in existing and new homes, CLASP said. To mitigate the impact of increased air pollution in gas-cooking homes, CLASP recommends always ventilating the kitchen while cooking and using small plug-in appliances as cleaner alternatives for meal preparation. Kettles can be used for fast water boiling, while slow cookers, air fryers, and budget-friendly plug-in induction hobs offer efficient cooking solutions, it said.

Just over half (53.9%) of British homes cook on gas. But few are aware of the risks from gas cooking due to the invisible nature of the pollution, according to a recent opinion [poll](#) by Opinium for CLASP. If made aware, up to three quarters of respondents (74%) say they would consider getting rid of their gas appliances.

Nicole Kearney, CLASP Europe Director, said: *“Our research reveals the severity of air pollution caused by gas cooking appliances in homes across Europe. Empowering people with knowledge on the health risks of these products is essential, and they need resources to upgrade to cleaner and healthier hobs and ovens. In turn, governments must protect public health, tackling air pollution at the source and supporting the transition to cleaner cooking.”*

TNO senior scientist, Piet Jacobs, said: *“We have measured in our field study that in 25% of the selected British households cooking on gas the EU NO₂ limit value for 1 hour exposure was exceeded, where outside levels were below these values. Changing to electric cooking, preferably combined with use of well-designed ventilation hoods to reduce exposure to high levels of particulate matter from cooking, can bring these values down to below recommended levels.”*

Professor [Frank Kelly](#) of Imperial College London said: *“Gas hobs and ovens are a major source of indoor air pollution, including NO₂, which can both exacerbate existing health conditions and potentially lead to new respiratory illnesses. For children with asthma, the presence of gas cooking appliances can intensify their symptoms. Removing these appliances from our homes will improve indoor air quality and mitigate potential risks to public health.”*

Larissa Lockwood, Director of Clean Air at Global Action Plan: *“Gas cookers are a major source of indoor air pollution, posing a significant risk to health – especially for children or poorer households that are less able to afford proper maintenance and are more likely to be renting or living in homes with old gas appliances. Despite this, there are currently no regulations or policies in place to directly mitigate the health and environmental risks of gas cooking in UK households, and awareness of these harms remains low among the public. We need a plan from government to support the switch to greener and cleaner methods of cooking.”*



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The scientists also measured for fine particulate matter. In kitchens, this is caused by outdoor pollution blowing in and food cooking, rather than the appliance fuel source. The scientists found no significant difference in emissions between homes cooking on gas and electric.

Ends

CLASP's report is available here: www.clasp.ngo/research/all/cooking-with-gas-findings-from-a-pan-european-indoor-air-quality-field-study

The TNO report will be published here: <https://publications.tno.nl/publication/34641471/zD0Xiz/TNO-2023-R11809.pdf>

Notes

[1] Market research firm [Opinium](#) selected 40 homes each in France, Spain, UK, Italy, Slovakia, the Netherlands and Romania where residents cook at least 3 days a week, are non-smokers and are not near busy main roads or industrial plants. More than 40% of homes include children. One in 5 cook purely on electric, while 4 in 5 cook purely on gas, either ovens, hobs or both. In all homes, sensors were placed in the kitchen, living room and a bedroom to measure NO₂, PM and carbon monoxide. Outdoor sensors detected NO₂. Participants were told to cook and behave normally. Each was paid €100. Only data from 247 homes that successfully followed instructions over a 13 day period in 2023 were included. The previous largest EU [study](#) of NO₂ exposure based on continuous sensor data took readings from 16 homes.

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About CLASP: [CLASP](#) is an international nonprofit leading the research and promotion of appliance efficiency and energy access to improve the lives of people and the planet. CLASP works with governments, industry, communities, and others to propel policies and markets toward the highest-quality, lowest resource-intensive products possible.