

Webisode 57DHYAFZZFLWED April 21 2026 Measurement of PM 2 point 5 in yards of near neighbors

In this Webisode [1](#) United Kingdom [RAWSEP View](#) The headline in a Guardian Article found at the end of this Webisode is The Burning of wood for power worse for climate than gas equivalent a report finds [2](#) United Kingdom Cornwall England [RAWSEP View](#) Measurement of PM 2 point 5 in yards of near neighbors should be used to measure air pollution from indoor residential wood burners [3](#) World [4](#) United States [5](#) California [6](#) Colorado [7](#) Florida [8](#) Iowa [9](#) Maryland [10](#) Michigan [11](#) New York [12](#) North Carolina [13](#) Texas [14](#) Vermont [15](#) Canada [16](#) United Kingdom [17](#) China [18](#) Korea [19](#) The Philippines [20](#) United Kingdom [20A](#) United Kingdom wood smoke wood burning The [Burning of wood for power worse for climate than gas equivalent report finds](#) [20B](#) United Kingdom England Cornwall wood burning [Homes with wood burners issued warning by doctor even small amounts](#) [20C](#) United Kingdom wood smoke [Is my wood burner damaging my health? I tracked pollution in my home to find out Which?](#) Main Content

[1](#) United Kingdom [RAWSEP View](#) The headline in a Guardian Article found at the end of this Webisode is The Burning of wood for power worse for climate than gas equivalent a report finds

[2](#) United Kingdom Cornwall England [RAWSEP View](#) Measurement of PM 2 point 5 in yards of near neighbors should be used to measure air pollution from indoor residential wood burners Why is there an exhaust system for wood burning? For simple wood Burning stoves it can be a stovepipe sticking out of the roof or even sticking out from the side of a house For wood burning fireplaces it can be a brick or metal chimney The PM 2 point 5 that exits a residence is the exhaust from the wood burning if the exhaust system is efficient An efficient exhaust system ensures that most of the air pollution from indoor residential wood burning ends up in the yards and infiltrating the homes of near neighbors and ensures that most of the air pollution from indoor residential wood burning contributes incrementally to hastening climate change That is why PurpleAir PM 2 point 5 monitors hanging from the eaves of homes of near neighbors should be used to measure the real impact of air pollution from nearby indoor residential wood burners Those PurpleAir readings downloadable by any member of the public including Health Departments should be used to shut down each air polluting indoor residential wood burning appliance one appliance at a time if necessary In the Google Alerts this week is a study using an indoor air quality monitor in the home of wood burners The researcher is the daughter in a family that uses a wood burning stove for heat and the daughter has read the research on the adverse health effects of PM 2 point 5 emitted by wood burning The daughter collected indoor residential air monitor readings every 2 minutes over 5 days for periods when a fire was lit in the wood stove She noted that when no fire was lit, and presumably when the house had been aired out from wood smoke, the readings were around 2 point 5 micrograms per cubic meter PM 2 point 5 which is normal rural readings in the area of Cornwall England when no wood fire is burning nearby apparently In the five days when the daughter visited her family the fire was lit for 3 to 6 hours per day apparently only in the evenings and possibly only for aesthetic reasons to create a cozy ambience Despite reading some research on the health effects of wood burning PM 2 point 5 the researcher felt comfortable lighting fires and adding logs to the fire and living in the house during the wood stove PM 2 point 5 emission heights rather like a guinea pig in the experiment herself although she does not describe any discomfort in breathing in the apparently unnecessary PM 2 point 5 The readings for those 5 days of wood burning inside her family home peaked at 24 point 46 micrograms per cubic meter when burning wood and peaked when no wood was burned at 3 point 59 micrograms per cubic meter PM 2 point 5 Peak and daily hourly averages of PM2 POINT 5 from February 27 to March 3 2026

PM2 POINT 5 Peak hourly average	micrograms per cubic meter	February 27	February 28	March 1	March 2	March 3
9 point 13	24 point 27	16 point 24	19 point 49	24 point 46	0 point 62	3 point 31

The readings when there was no wood burning in the house PM2 POINT 5 Daily hourly average micrograms per cubic meter

February 27	February 28	March 1	March 2	March 3
1 point 51	3 point 59	3 point 59	3 point 59	4 point 20

An edited version of the article is at the

end of this Web Video The article is not concerned with the health effects of PM 2 point 5 from indoor residential wood burning on for instance the near neighbors of her family nor the health effects of the incremental addition to air pollution and health effects and hastening of climate change of wood burning by her family There are apparently no laws against wood burning air pollution in the rural area in which her family live because the only changes after learning in real time that wood burning is air polluting inside her family home is to decide to burn wood only on certain days Perhaps it is too much to ask her parents to just not burn wood to begin with Pool family funds to get her parents a clean energy source for home heating or an ornamental mantelpiece with a TV under it projecting a video of a fire continuously if that is needed A family who confronts a parent to urge them to stop cigarette smoking does not usually compromise on their request that the parent stop cigarette smoking if they really care about the health of their relative The bargaining of agreeing to only a cigarette before breakfast and after dinner does not really help the relative And cigarette smoking within a home does not usually measurably affect near neighbors nor usually in a measurable way contribute to climate change Operating a wood burning appliance with exhaust into a neighborhood is more analogous to a cigarette smoker endangering the lives of co workers in a shared workspace A survey of the rural areas around the home of her parents would probably also show neighbors either wood burning themselves even if they have cleaner methods of home heating available and affordable such as heat pumps that work down to 40 degrees below zero and double as air conditioners in these global warming times Or the survey could show that near neighbors are bothered by the smoke from her family home but have no legal recourse and there is no interest by local authorities in enforcing any nuisance ordinances that exist If near neighbors did use PurpleAir PM 2 point 5 monitors in the hyperlocalized area of the neighborhood the prospects of local authorities acting to rein in the wood burning of her family for Public Health reasons might have more of a chance

3 World heat pump Global Heat Pump Market Outlook 2026-2036 Electrification Smart Controls and Yahoo Finance According to the latest analysis by Future Market Insights the global heat pump market increasingly integrated within industrial automation and MarketWatch NEWARK Delaware April 14 2026 PRNewswire According to the latest analysis by Future Market Insights the global heat pump market increasingly

4A United States heat pump As utility bills skyrocket heat pumps gain popularity as an efficient money saving solution The Cool Down Heat pumps have simply come a long way making them appealing to homeowners and technicians alike

4B United States PM2 POINT 5 Characteristics of functional bacteria involved in carbon nitrogen and sulfur cycles in PM2 POINT 5 Nature Relative humidity RH PM2 POINT 5 and ammonium NH4+ were significantly correlated with the functional bacteria Overall this study discusses the

4C United States Heat pump Comfort should not cost the climate Heat Pump Week April 11 19 x dot com Performance Analysis of a Solar Assisted Air Source Heat Pump with Cascaded Latent MDPI Full Coverage

4D United States heat pump rebate DOE Chief Efficiency Rebate Money on the Way ACHR News Federal money to encourage residential energy efficiency measures — including the installation of heat pumps — may start flowing again soon after

4E United States Idiot Corner wood burning Firewood banks Investing to reduce wildfire risk and heat homes US Forest Service A basket of firewood sits on a chair next to a wood burning stove Many American homes still rely on wood as their primary heat source—in many

4F United States Idiot Corner wood burning The hidden breathing mistake that could be ruining your winter firewood MSN A lit matchstick could reveal that instead of a blazing fire there is only hissing and crackling coming from the wood Side Sleepers Get Achy

4G United States heat pump HVAC tech breaks down common misconception about modern heat pumps It is hard to believe Yahoo Shopping These units are designed to handle about minus 10 degrees Fahrenheit and still maintain about full heating capacity In fact modern winter rated

4H United States heat pump rebate Major utility company launches lucrative matching rebate program to help homeowners MSN heat pump is one of the best ways to lower those bills and reduce pollution at the same time Heat pumps work year round providing both heating and

4I United States PM2 POINT 5 Exposure Linked to Recalcitrant Chronic Rhinosinusitis Endotype Pulmonology Advisor A putative new chronic rhinosinusitis CRS endotype associated with exposure to particulate matter with a diameter less than 2 point 5 microgram PM2 POINT 5

4J United States heat pump rebate Rinnai Electric Heat Pump Wins 2026 Green GOOD DESIGN Award Clean Technica And it does that very well Here is a bullet list of highlights Meets the highest level of efficiency standards and rebate requirements Exceptional

4K United States wood smoke Traeger Launches Value Wood Fire Grills Meet the Westwood Line Gear Junkie wood pellet burning grills priced from Nine Hundred Dollars up to Four Thousand Dollars They are app controlled multifunction for grilling smoking and even baking and

5 California Palo Alto heat pump How do heat pumps affect your utility bill? Palo Alto Online If you switch to a heat pump your home will use more electricity and less gas What does that mean for your utility bills?

6A Colorado Denver heat pump Faced with One Thousand Five Hundred Dollars power bill church turns to heat pumps and saves Six Thousand Dollars Yahoo Shopping heat pump system According to the City of Denver the New Hope Baptist Church began the HVAC upgrade process after learning about the city

6B Colorado heat pump rebate Zero Homes Selected by Xcel Energy to Lead Neighborhood Retrofit Program Bringing PR Newswire Xcel Energy heat pump rebates are among the largest utility rebates in the country The Colorado State Heat Pump Tax Credit provides an additional

7A Florida Collier County wood smoke Brushfire smoke impacting parts of southwest Florida this morning YouTube threatens Collier County Gulf Coast News

7B Florida wood smoke Massive wildfire burning in Southwest Florida sends smoke billowing into the sky YouTube Massive wildfire burning in Southwest Florida sends smoke billowing into the sky

7C Florida ordinance and wood burning Panama City Beach may allow propane beach bonfires during burn bans Panama City News Herald The ordinance would not apply to traditional wood burning bonfires only those using propane PANAMA CITY BEACH Beach officials agree that burn

7D Florida Collier County Picayune Strand State Forest I 75 Highway runs from Great Lakes to Florida wood burning Tuesday afternoon update on wildfire burning along I 75 YouTube As of Tuesday afternoon the 1500 acre brush fire in Picayune Strand State Forest in Collier County

8 Iowa Cedar Rapids ordinance and wood burning Outdoor wood boiler owners followed the law Letters to the Editor the gazette dot com The Gazette Owners of outdoor wood

boilers OWB are conservationists by nature We burn wood felled by storms or cut down for construction and road projects

9 Maryland wood burning Maryland Forest Service Offers Safety Rules and Tips for Spring Wildfire Season Maryland News Maryland dot gov A person may not engage in open air burning unless There is a natural or constructed fire break at least 10 feet wide completely around the material

10 Michigan wood smoke Michigan offering free air quality alerts as summer approaches Health abc12 dot com ABC12 People can help reduce air pollution by limiting outdoor burning avoiding use of residential wood burning devices and reducing gasoline powered lawn

11 New York heat pump Governor Hochul Announces Up to One Hundred Fifty Million Dollars to Expand Heat Pump Installations for Homes and Community Renewal NY dot Gov By investing in modern energy efficient heat pump technology for homeowners and small buildings we are lowering utility costs reducing harmful

12 North Carolina wood burning 30 acre woods fire in Randolph County now under control NC Forest Service officials say YouTube

13 Texas PM2 POINT 5 Mobile lab surveys Fort Bend streets in the first air quality initiative in the County Houston Public Media Fine particulate matter PM2 POINT 5 Nitrogen oxides Carbon monoxide Sulfur dioxide Volatile organic compounds In 2024 the U S Environmental

14 Vermont Idiot Corner wood smoke How to season firewood and cut costs smoke and fuel use State Brattleboro Reformer Unlike wet wood seasoned wood burns hotter and cleaner and does not create as much smoke said DEC Commissioner Misty Sinsigalli in a news release wood burning How to season firewood and cut costs smoke and fuel use burn the right wood the right way To season wood for safer cleaner burning follow these tips as well Split wood into various sizes no

15A Canada Manitoba Steinbach wood smoke The smoke filled sky draws attention of Steinbach residents Steinbach Online dot com Passersby driving along Hwy 12 say that it appeared that a farmer in the area was burning what looked like piles of wood possibly a structure in the

15B Canada Prince Edward Island heat pump rebate Point of Sale Heat Pump Rebates Government of Prince Edward Island Each heat pump you install in your home may be eligible for a Nine Hundred Dollar point of sale heat pump rebate provided it meets all eligibility criteria

15C Canada Prince Edward Island heat pump rebate The latest budget of the PRINCE EDWARD ISLAND government signals less focus on climate action energy savings expert CBC heat pump initiative as well as EV incentives and rebates We speak Bicycle Rebate Program E bike Rebate Program Electric Vehicle

15D Canada Prince Edward Island heat pump rebate PRINCE EDWARD ISLAND is no longer accepting heat pump rebate applications CBC Islanders can no longer apply for heat pump rebates through the provincial incentive program Applications for the popular program have been paused

15E Canada Yukon heat pump rebate New Dependable Grid Program rebates aim to reduce peak electric heating demand Yukon dot ca Dual fuel heating systems such as those with a heat pump plus a nonelectric backup heat source to cut peak demand and improve energy affordability

15F Canada Yukon heat pump rebate Yukon rolls out heating rebates to curb winter electricity demand Yukon News Under the Dependable Grid Program dual-fuel systems that pair a heat pump with a non-electric backup heat source are eligible for 50 per cent of

16A United Kingdom PM2 POINT 5 The composite effects of air pollution on yield npj Sustainable Agriculture Nature Tropospheric ozone O3 and fine particulate matter PM2 POINT 5 harm crops by inducing oxidative stress reducing photosynthesis and blocking

16B United Kingdom Idiot Corner wood burning Has the wood burner had its final winter? Middle classes flocking to buy ecofriendly ceramic stoves MSN As DEFRA introduces ever stricter rules for traditional wood burners those seeking a statement fire without the side portion of eco guilt are

16C United Kingdom England heat pump One of the surprising benefits of switching to a heat pump? It barely makes a sound The Cool Down A new homeowner in England shared details on replacing an electric boiler with a modern heat pump heat pump One of the surprising benefits of switching to a heat pump? It barely makes a sound Yahoo Shopping They explored different home heating options but decided to go with a heat pump installed by Aira

16D United Kingdom PM2 POINT 5 as a proxy for aerosol optical depth in night sky brightness models Oxford Academic Oxford University Press Fine particulate matter PM2 POINT 5 is routinely monitored at dense networks of air quality stations worldwide whereas aerosol optical depth AOD τ

17A China PM2 POINT 5 The Incheon Islands Ultrafine Dust Traced to Overseas Winds chosun dot com Study links high PM2 POINT 5 concentrations to transboundary transport from Chinese regions including Inner Mongolia Hebei

17B China PM2 POINT 5 A skillful hybrid framework for seamless sub seasonal PM2 POINT 5 prediction over North China Nature Severe PM2 POINT 5 pollution in North China persists despite substantial emission controls underscoring the pivotal role of sub seasonal meteorology and

17C China heat pump Technology Heat pumps Global Energy Review 2026 Analysis IEA International Energy Agency In China1 heat pump sales stayed broadly stable Reversible air conditioners used as primary heating equipment make up about half the Chinese heat

18 Korea PM2 POINT 5 Incheon Institute Ultrafine Dust on Incheon Islands Confirmed to Be Influenced by Overseas Inflow asiae co kr A research study has found that ultrafine particulate matter PM 2 point 5 in the island regions of Incheon which have almost no sources of local

19 The Philippines PM2 POINT 5 24 HOUR PUBLIC WEATHER FORECAST Issued at 400 PM 17 April 2026 SYNOPSIS Facebook 2 point 5 meters Area The eastern sections of Northern and Central Luzon Wind Speed Moderate Wind Direction East to Southeast Coastal Waters

20A United Kingdom wood smoke wood burning The **Burning of wood for power worse for climate than gas equivalent report finds** The Guardian Governments should reform laws that declare the carbon emitted from smokestacks by burning wood somehow does not count in other words does not add Burning wood from existing forests especially old growth areas was also found to be problematic but even when half of the wood was judged to come Burning wood for power worse for climate than gas equivalent report finds Research casts doubt on plans by UK government to offer subsidies for carbon capture attached to the power source **Excerpts edited by Residents Against Wood Smoke Emission Particulates a 501C3 nonprofit organization** The Guardian April 20 2026 Burning wood for power generation can be worse for the climate than burning gas even

when the resulting carbon dioxide emissions are captured and stored new research has shown. The findings cast doubt on plans by several governments including the UK to offer subsidies or other financial support for carbon capture attached to wood burning power. Bio energy with carbon capture and storage BECCS has been touted as a clean way of producing baseload power substituting for gas and coal which could even result in negative emissions as when replacement forests are grown they take up CO2 from the air. But such systems could take 150 years to be carbon negative researchers from the US, UK and China have found in part because of the long time it takes to regrow forests and because of the damage done when existing savannah pasture or cropland is converted to grow biomass for burning uses. Burning wood from existing forests especially old growth areas was also found to be problematic but even when half of the wood was judged to come from waste sources and half from fast growing plantations the models found it could take decades to reach negative emissions. The scientists who describe their work in the peer reviewed journal Nature Sustainability used data modelling techniques to show that most of the emissions from burning wood were generated before it reaches the power plant and therefore could not be captured. Wood can emit twice as much carbon per unit of energy produced as fossil gas and is far less efficient in generating energy. Climate protesters hold up a Drax kills banner. Climate activists demonstrate outside the venue of the Drax AGM in Paternoster Square London last year. Tim Searchinger a senior research scholar at Princeton University who led the study said Governments should not subsidize burning wood from existing forests with or without carbon capture and storage. Doing so will increase carbon emissions for decades even compared with doing nothing and greatly raise the energy prices for people. Governments should reform laws that declare the carbon emitted from smokestacks by burning wood somehow does not count in other words does not add to global warming. It does. Campaigners said governments should halt the generation of power from wood. In the UK the main generator of biomass electricity is the Drax power station the biggest single source of CO2 emissions in the UK. Drax took nearly One Billion Pounds in subsidies last year from burning wood according estimates of a thinktank this week. Douglas Parr the chief scientist at Greenpeace UK said Common sense tells you that cutting down trees to burn them and then burying the resulting carbon emissions is a bad idea. This scientific study confirms that. Removing trees from one country to balance our carbon budget in the UK leaves the whole world poorer. Matt Williams a senior forest advocate at the Natural Resources Defense Council said the new findings backed up research he and others conducted last year. The UK is better off without BECCS he said. We need to find other genuinely clean sources of power that do not rely on imported fuels. Drax has paused its investment in BECCS citing a lack of certainty on government subsidies for the technology. A Drax spokesperson said We agree that biomass for BECCS and bioenergy should not be sourced in the way described in the paper which assumes all of the harvest is used for BECCS or bioenergy. We only source from well managed sustainable forests including sawmill residues low grade roundwood and forest residues. We also recognize the need for our biomass to deliver positive outcomes for climate and nature which is why we monitor the forests we source from and invest in tools to enhance supply chain transparency such as our biomass tracker. They added We are not aware of any managed forest areas where the type of harvesting described in the paper would be economically viable for land managers much less the BECCS and bioenergy industry. Existing BECCS methodologies including our own have strict sustainability requirements in place which would not allow material harvested in the manner described to be used for the generation of verified carbon removal credits. Three towers of the Drax power station. Drax insiders privately raised concerns over its sustainability claims court papers show. Trevor Hutchings the chief executive of the Renewable Energy Association a trade body whose members include the biomass industry noted that the UK government plans to reach net zero by 2050 relied on BECCS and other forms of carbon capture. The paper highlights many of the complexities and risks around BECCS yet it is important to recognize that without BECCS and other forms of negative emissions we will not achieve our legally binding net zero targets Hutchings said. He added It is clear that BECCS lifecycle emissions depend heavily on feedstock choice with wastes residues and other biogenic sources offering

materially different outcomes. The focus should be on deploying BECCS sustainably within a wider renewable energy system that delivers emissions reductions, energy security and affordability. A spokesperson for the Department for Energy Security and Net Zero rejected the findings of the report. We do not recognize these claims, they said. No final decisions around the deployment of large-scale bioenergy with carbon capture and storage projects have been made and any support would need to provide value for money for taxpayers and meet our sustainability criteria.

20B United Kingdom, England, Cornwall, wood burning, Homes with wood burners, issued warning by doctor, even small amounts, Express dot co dot uk, Excerpts edited by Residents Against Wood Smoke Emission Particulates a 501C3 nonprofit organization, April 21 2026, Daily Express. Brits with wood-burning stoves have been warned about the impact it could be having on their health by a doctor. Wood burning is a source of air pollution called particulate matter (PM), tiny solid particles that are suspended in the air. Dirt, dust and soot can be inhaled and make their way into your lungs, even crossing into the bloodstream. PM_{2.5} pollution of 2.5 micrometers exposure has been linked to conditions from heart disease to bladder cancer. A University of Cambridge study linked long-term air pollution exposure to dementia through resulting inflammation. Hannah Healey at Which? tracked air quality while using a wood-burning stove over five days and found that PM_{2.5} in the air increased from an average of zero point sixty five micrograms per cubic meter when the fire was not burning to an average of nine point zero one micrograms per cubic meter when it was an increase of one thousand two hundred eighty six percent. James Allan, professor of Air Pollution Measurement at the University of Manchester, told Which? Even studies of relatively low levels of air pollution have found adverse health effects. In addition, it seems that particulate matter from wood burning is a particularly harmful form of pollutant. The amount of indoor air pollution produced by wood-burning stoves can vary a lot. It depends on factors such as the type of stove, the way it is used and the level of ventilation in the home. Doctor James Heydon, associate professor at the School of Sociology and Social Policy at the University of Nottingham, concurred saying research suggests that PM_{2.5} is especially damaging to your health because it can enter your bloodstream, which means it can cause inflammatory responses throughout the body. Even small amounts of air pollution can detrimentally impact your health. Decreasing exposure will yield health benefits across the board. Even activities like cooking and cleaning can influence indoor air pollution, which makes it harder to interpret results. But studies have consistently identified intense bursts of pollution during stove use. According to the World Health Organization, the recommended limit for average PM_{2.5} exposure over a 24-hour period is 15 micrograms per cubic meter. However, both the UK Government and the European Public Health Alliance report that there is no evidence of a safe level of air pollution.

20C United Kingdom, wood smoke, Is my wood burner damaging my health? I tracked pollution in my home to find out, Which?, Which dot co dot uk, Is my wood burner damaging my health? I tracked pollution in my home to find out. A growing body of evidence suggests that wood burners could be bad for our health. I tracked pollution from my stove to investigate its impact. Excerpts edited by Residents Against Wood Smoke Emission Particulates a 501C3 nonprofit organization, Which?, April 21 2026, Name of Daughter of Wood Burning Family, Senior researcher and writer, Name of Daughter of Wood Burning Family, has three years of experience overseeing investigations around health, pet care and home improvements. Modern wood-burning stove. Recently, I have been increasingly concerned about the impact of wood burning on my health. My parents live in rural Cornwall and when I visit them in the winter months, we typically light their wood burner every evening. However, a growing body of evidence suggests that wood burning is a key source of a type of air pollution called particulate matter (PM), which has been linked to conditions ranging from dementia to stomach cancer. To find out whether our stove use could be negatively impacting the health of my family, I used a monitor to track air pollution in the living room of my parents for a week. My findings broadly aligned with existing literature and inspired us to change the way we use the stove. For a detailed look at the health impacts

see our guide to the pollution and health impacts of wood burning stoves What is particulate matter? it is long been established that wood burning creates particulate matter PM which are tiny solid particles that are suspended in the air These include dirt dust and soot Research into the health impacts of wood burning stoves has focused on PM_{2.5} and PM₁₀ 2.5 and 10 refer to the diameter in micrometers of the particles making up the particulate matter Due to the size of these particles they are small enough to make their way into your lungs when they are inhaled and then in some cases cross into your bloodstream This means they can be carried around the body and reach other organs A 2019 review of research linked PM exposure to conditions ranging from heart disease to bladder cancer In 2025 the University of Cambridge published a report linking long term exposure to air pollution to dementia It suggests that exposure to air pollution can be linked to inflammation and oxidative stress in the body and brain both of which play a well established role in the onset and progression of dementia Tracking my PM exposure while using a wood burning stove At the end of February 2026 I used the wood burning stove at the home of my parents in Cornwall every evening for five nights for several hours To track air pollution I ran an air quality monitor continuously in the living room near the stove for the entire study period It measured the level of PM_{2.5} in the room every two minutes I noted down whenever the stove was lit and whenever more wood was added Find out about wood burning stove fines and regulations 1 Air pollution was higher when the stove was in use To see whether PM_{2.5} concentrations were higher when the stove was lit I averaged readings from the air pollution monitor during the times when the stove was in use burning period and when it was not non burning period

Average PM_{2.5} concentrations during burning and nonburning periods February 27 to March 3 2026

PM_{2.5} Burning period micrograms per cubic meter February 27 is 4.91 February 28 is 11.1 March 1 is 80.4 March 2 is 11.43 March 3 is 11.94

PM_{2.5} Non burning period micrograms per cubic meter February 27 is 0.01 February 28 is 0.67 March 1 is 0.20 March 2 is 0.63 March 3 is 1.74

Table notes Based on PM_{2.5} readings collected between February 27 2026 and March 3 2026 Burning periods ran from the time the stove was lit to three hours past the last time fuel was added Where burning periods extended past midnight I included those readings in the burning period of the previous day and not the day they were taken During non burning periods recorded levels of air pollution were consistently low average PM concentrations never exceeded 2.5 micrograms per cubic meter This is typical for a rural area In contrast average PM concentrations were greater than 10 micrograms per cubic meter during three of the five burning periods Looking across all days the average PM concentration during non burning periods was 0.64 micrograms per cubic meter and during burning periods was 9.34 micrograms per cubic meter This was a statistically significant difference I observed spikes in air pollution after the stove was lit During my analysis I noticed that air pollution rose sharply after the stove was lit before gradually tapering back down The graph below shows an example of PM_{2.5} concentrations over the course of an evening Average hourly PM_{2.5} concentrations between 12 pm and 11 59 pm on March 1 2026 Table notes Based on average hourly PM_{2.5} readings collected on March 1 2026 Each data point corresponds to the average for the following hour For example the data point at 7pm is the average of readings taken between 7 and 8pm On this day before lighting the stove PM_{2.5} concentrations ranged from roughly 0 micrograms per cubic meter to 1 micrograms per cubic meter I lit the stove at 7 10pm In the hour following between 8pm and 9pm the average PM_{2.5} concentration was 16.24 micrograms per cubic meter and between 9pm and 10pm it was 10.07 micrograms per cubic meter I added one log to the stove at 11pm when it was smoldering at a low level PM levels remained raised but did not

spike again 3 Spikes in pollution were significantly greater than average levels of pollution To determine if the spikes in pollution after the stove was lit were significantly greater than average levels of pollution I replicated the statistical analysis used in a paper by Chakraborty et al 2020 Their study which tracked pollution across four homes with wood burners found statistically significant spikes in pollution during stove use To replicate their analysis I calculated the average concentrations of PM2 POINT 5 for each hour across all the study days Then I identified the hour in each day with the greatest concentration called the peak hourly average and averaged across all the hourly averages in each day to find the daily hourly average

Peak and daily hourly averages of PM2 POINT 5 from February 27 to March 3 2026

PM2 POINT 5 Peak hourly average micrograms per cubic meter February 27 is 9 point 13 February 28 is 24 point 27 March 1 is 16 point 24 March 2 is 19 point 49 March 3 is 24 point 46

PM2 POINT 5 Daily hourly average micrograms per cubic meter February 27 is 0 point 62 February 28 is 3 point 31 March 1 is 1 point 51 March 2 is 3 point 59 March 3 is 4 point 20

Table notes Based on PM2 POINT 5 readings collected between February 27 2026 and March 4 2026 Burning periods ran from the time the stove was lit to three hours past the last time fuel was added Where burning periods extended past midnight I included those readings in the burning period of the previous day and not the day they were taken While daily hourly averages were never greater than 5 micrograms per cubic meter peak hourly averages reached more than 15 micrograms per cubic meter on four of the five days All of these peaks occurred while the stove was lit The highest concentration of PM2 POINT 5 was on March 3 when levels reached 24 point 46 micrograms per cubic meter I checked if these differences were statistically significant using confidence intervals I found that the mean peak hourly average of PM2 POINT 5 was significantly higher than the mean daily hourly average Authors years and key findings from three major studies of wood burning stoves Researchers Year Findings Chakraborty et al 2020 Across 4 homes observed a one hundred ninety six point twenty three percent increase in PM2 POINT 5 concentrations when stoves were in use Vicente et al 2020 Examined one stove in an unoccupied rural home and found 1 one hundred percent increase in PM10 during stove operation Kuye and Kumar 2025 Across four homes with Ecodesign stoves found a two hundred percent increase in PM10 during stove operation Table notes Collected March 18 2025 PM2 POINT 5 concentrations during non burning periods were a lot lower in my study which means the increases I saw were more dramatic However like my investigation all the above studies reported statistically significant increases in PM exposure during burning Be inspired to make home improvements Is my wood burner impacting my health? Given my air monitor assessment it appears that the wood burning stove of my family does cause pollution spikes during use But the key question is does this pose a danger to our health? According to the World Health Organization the recommended limit for average PM2 point 5 exposure over a 24 hour period is 15 micrograms per cubic meter The daily averages in this study fall comfortably below these guidelines However both the UK government and the European Public Health Alliance report that there is no evidence of a safe level of air pollution i e an amount of exposure that will not cause adverse health effects To find out more I spoke with Professor James Allan professor of Air Pollution Measurement at the University of Manchester and Doctor James Heydon associate professor at the School of Sociology and Social Policy at the University of Nottingham Even studies of relatively low levels of air pollution have found adverse health effects said Professor Allan In addition it seems that particulate matter from wood burning is a particularly harmful form of pollutant Doctor Heydon concurred Research suggests that PM2 POINT 5 is especially damaging to your health because it can enter your bloodstream which means it can cause inflammatory responses throughout the body Growing evidence suggests that both long term exposure to low levels of PM and brief exposure to high levels of PM can have detrimental health effects A 2021 study found exposure to an

annual average of less than 10 micrograms per cubic meter of PM2 POINT 5 was associated with an increased risk of mortality Three months of exposure to similar levels of pollution induced neuroinflammation and cell death in mice In addition a 2012 study found that people exposed to bigger hourly peaks of PM2 POINT 5 had an increased risk of mortality even after controlling for average daily exposure Doctor Heydon said Even small amounts of air pollution can detrimentally impact your health Decreasing exposure will yield health benefits across the board Although the exact amount of pollution from the wood burning stove of my family and by extension the specific health impact of my stove is not completely clear we have decided we will not continue to use it every single night as we do not feel it is worth the potential health risks of even low levels of daily PM exposure We will not stop using it altogether but will consider it to be a treat for special occasions rather than something to do every day See our advice on gas and electric fires What does this mean for your wood burner? Cozy interior featuring a wood burning stove two wicker baskets a small table with a lamp and a plush armchair it is difficult to generalize results across studies of wood burners Scientific studies find varying levels of pollution during stove usage across homes I found that PM concentrations in my home varied from day to day Doctor Allan explained The amount of indoor air pollution produced by wood burning stoves can vary a lot It depends on factors such as the type of stove the way it is used and the level of ventilation in the home Doctor Heydon concurred Even activities like cooking and cleaning can influence indoor air pollution which makes it harder to interpret results But studies have consistently identified intense bursts of pollution during stove use The key takeaway from the scientific literature is that stoves likely emit some PM pollution during normal use and that this can contribute to a variety of health conditions When considering your stove usage it is important to balance your enjoyment of using your stove and your heating needs with the potential health impacts of wood burning How to reduce the air pollution impacts of a wood burning stove Limitations of the study These results are based on just five days of monitoring in one home so are not generalizable beyond that time period or location How I used the stove The stove was used every day during the recording period All doors and windows were kept shut during this time The stove was used in the same way on all recording days it was initially loaded with approximately eight logs and half a firelighter was used as kindling The stove was refueled in accordance with the HETAS recommendations and only one log was added during refueling Stove and room details Stove location Living room The Room size L x W x H 68 x 4 point 5 x 2 point 1 meters Fuel type Kiln dried logs Sampling period February 26 2026 to March 4 2026 Stove type Defra exempt assumed not to be Ecodesign compliant as it is an old stove that is now discontinued Stove purchase date February 2010 Date of last chimney sweep and stove service December 2024

Burning period dates and timings

Date	Non burning period times	Burning period times	Number refuels	Total burn time minutes
27 February	Non Burning 000 2105	Burning 2106 0005	0	Total Burn Time Minutes 180 or 3 hours
28 February	Non Burning 0006 1840	Burning 1841 0030	1	Total Burn Time Minutes 350 or 5 hours 50 minutes
1 March	Non Burning 0031 1910	Burning 1911 0200	1	Total Burn Time Minutes 410 or 6 hours 50 minutes
2 March	Non Burning 0201 1850	Burning 1851 0115	1	Total Burn Time Minutes 385 or 6 hours 25 minutes
3 March	Non Burning 0116 2000	Burning 2001 0150	1	Total Burn Time Minutes 350 or 5 hours 50 minutes

I defined a burning period as the time at which the stove was lit until three hours after the last log was added I chose this endpoint because I refueled on average three hours after lighting the stove suggesting that this is when it begins to cool noticeably