

Wood-Burning and Air Pollution - the Inconvenient Truth

- growing evidence that wood-burning is a big contributor to air pollution

On January 22nd [London had a major air pollution incident](#), with Camden, Westminster and The City hitting 10 out of 10 (worst) on the [Air Quality Index](#). "We think about half of the peak was from wood smoke" said Timothy Baker, air pollution expert at King's College London. Wood smoke pollution is most on cold evenings and weekends - this was a cold, still Sunday. Small smoke particles have the worst health effects, especially PM2.5 (smaller than 2.5 micro-meter), which get deep into your lungs. During that incident [Cambridge levels](#) of PM2.5 were 9/10 on the index. Domestic wood smoke contributes about a third of all UK PM2.5, which is [2.4 times more than traffic](#)

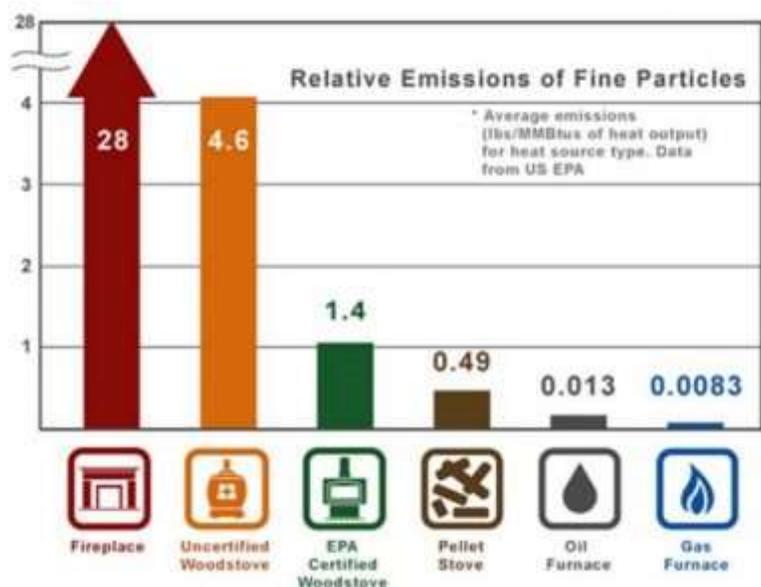


UK government's best estimate is that [29,000 extra deaths](#) a year are caused by PM2.5 [Public Health England](#) estimates that 5% of mortality of people aged 30+ in Cambridgeshire is due to PM2.5 pollution. So this really is a major health problem, with wood smoke a significant contributor.

This is an '**inconvenient truth**' for Anne & me, because we really enjoy our small woodstove, which provides over half our heating, burning scavenged wood. It's renewable fuel with much lower CO₂ emissions than gas or electricity. Carbon emissions from wood-burning vary depending on whether the trees are re-grown, how the land-use changes, if the wood is kiln-dried and its transport.

Our government is being dragged towards action on air pollution: [ClientEarth](#) won court rulings to make them produce realistic plans for meeting EU air pollution limits and now the EU has [issued a final warning](#). Sadiq Kahn's tougher action in London includes an [extra £10 charge for pre-2005 diesel cars](#) from October. In Cambridge a '[Clean air zone](#)' and [emission charging are on the cards](#), while an NGO coalition is calling for a [Clean Air Act for the 21st Century](#).

The Clean Air Act enabled local authorities to introduce smoke control areas, [like Cambridge's](#), where you're only allowed to burn [smokeless fuel](#) or, if you burn wood, only in a [DEFRA approved](#) stove. An EU directive, [ecodesign lot 20](#), requires more efficient woodstoves by 2022, with about 1/5 the particulate emissions. The UK Stove Industry Alliance already lists [ecodesign-ready stoves](#).



Burning wood on an **open fire** is about 6 times more polluting than in a simple stove and loses a lot of heat up the chimney when the fire is out.

Expect tighter regulation on wood burning before long, particularly in cities. Even [in rural Hampshire](#) woodstoves can cause dangerous air quality. I suggest you think twice about installing a woodstove in a city, while this becomes clearer.

In the meantime, if you use a woodstove, please **be neighbourly** by running it hot and efficient to reduce smoke, not lighting it when bad air pollution is forecast:

- **burn dry wood** 15-20% moisture is best. You can check with a [moisture meter](#).
- **get it hot quickly** by lighting your fire with dry kindling and then small pieces of wood. Keep it hot, burning gradually and efficiently.

A [flue thermometer](#) helps check this at a glance. No smoke should be visible emerging from the chimney or tar deposited on the stove window if it's burning well.

- **add more wood before the fire dwindles**, so it gets burning quickly too. Avoid burning big chunks which smoke while they gradually catch fire. Re-reading our stove's manual I found it recommends wood less than 10cm across - so we're now doing more wood-splitting.
- **don't shut off the air** or keep the stove burning overnight, as this causes more pollution
- **avoid producing other toxins**: don't burn plastics, cardboard or glossy paper. Avoid particle-board, plywood, salty, treated or painted wood.
- **check a [local air pollution forecast](#)** and avoid lighting your stove if high particulate PM10 or PM2.5 pollution is current or forecast the next day. If it's raining it's probably ok, as it washes particles down. [Air Visual's forecast app](#) is good.



If you notice wood smoke indoors, you may be exposed to dangerous levels if it persists - at levels you may not smell. Do you have a chimney problem? Ask a chimney sweep or stove installer. Fitting a [Carbon Monoxide alarm](#) is good for safety too.

People who bought diesel cars because of their lower carbon emissions are now joined by woodstove owners in facing the inconvenient truth of their bad health effects.

They're both relatively low carbon, but good health needs good air quality too. **It's time to re-think.**

Tom Bragg, March 2017

Sadiq Khan asks for Powers to Control Wood-burning

In the 13 months since Sadiq Khan was elected Mayor of London, there have been 7 'red alert' air pollution incidents, when Londoners were advised to stay indoors if possible.

Now [he has called for](#) only the least-polluting [ecodesign woodstoves](#) to be on sale after 2022 – and [asked for powers](#) in a revised Clean Air Act to restrict burning solid fuels from 2025.

If granted, this will probably enable any UK city to:

- ban all burning of wood or coal in "zero-emission zones" that suffer the worst air quality. These will probably be small areas in city centres.
- bring in further restrictions over wider areas when there's high air pollution.

"In an attempt to reassure the thousands of Londoners who bought the stoves in good faith, the focus will be on educating owners not to burn wood during bad air quality episodes."

Those of us with fires or stoves can be neighbourly and do the right thing now, as described above: If you plan to fit a new woodstove, buy one that's [ecodesign ready](#).

Woodstoves still provide low-carbon heating and create that cosy feeling. Let's use them cleanly

See: openecohomes.org/woodburning2 for Links

Tom Bragg, October 2017