

LPG can help fight the war on smog

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Pollutants such as particulate matter, nitrogen oxide and ozone kill hundreds of thousands each year. One way to reduce these deadly emissions is to switch to LPG, argues Eric Johnson.



Across Europe, dirty, polluted air still prematurely kills around 400,000 people a year | Photo credit: Adobe Stock

Have you ever heard of the 'killer fog' that hit London in 1952? It was actually a man-made smog, not a natural water vapour fog, but a 'killer' it was. When, after four days, the smog lifted, around 12,000 people were dead and another 150,000 had been hospitalised.

Today across Europe, dirty air still prematurely kills approximately 400,000 people a year. It does so more gradually and less-obviously than the 1952 killer fog, out of the limelight, on the poor, the young, the old and the disadvantaged.

However the damage is the same as it was in 1952. Smog, primarily a mix of particulate matter (PM),

nitrogen oxide (NOx) and ozone, affects breathing and the body's circulation system, not just in people but in animals and plants as well.

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Although smog's peak concentrations in Europe are generally lower than they were in the mid-twentieth century, it still regularly exceeds regulatory and health limits. Indeed, nine EU countries (The Czech Republic, Germany, Spain, France, Italy, Hungary, Romania, Slovakia and the UK) currently face infringement procedures for exceeding such limits. In countries such as (China and India concentrations are even worse and 'killer fogs' are unfortunately quite common.

It's mainly a man-made problem. Exhaust emissions of burnt fuels are the main PM, NOx and ozone producing culprits. This can be solved in part by burning cleaner fuels in every boiler, stove and car.

When these are off-grid, the cleaner fuel of choice is LPG. Because it's stored and transported as a liquid, it suits those distributed, small-scale applications and because it burns like a gas, its PM emissions are negligible, and NOx and ozone-precursors can be controlled to low levels.

There is a common-sense question in comparing LPG's emissions to those of competing, off-grid fuels.

Would you use it indoors as an open-flame without a direct flue? Certainly with gasoline, heating oil and biomass you would not. By contrast, LPG is used every day in open-flame stoves.

"Although smog's peak concentrations in Europe are generally lower than they were in the mid-twentieth century, it still regularly exceeds regulatory and health limits"

In heating, LPG's soot and ozone-precursor emissions are lower than that of heating oil and wood (biomass). A study by the Italian research institute INNOVHUB showed that oil boilers generate more than twice the PM emissions of a comparable LPG boiler and that biomass appliances' PM emissions can be an astonishing 600 times higher than LPG fuelled ones.

In automobiles, LPG's particles and ozone-precursor emissions are lower than diesel. As highlighted in a 2016 European LPG Association road test and in several other studies, gasoline's particles emissions have climbed dramatically following the widespread introduction of direct-injection engines – yet LPG's are still negligible.

And what about electric cars? No exhaust emissions– yes. But as a recent, peer-reviewed study reports, from 'well to wheel' ozone-precursors can be emitted in far greater volume by the power plant than by a car using LPG.

This varies by country, depending on the electricity fuel-mix, but it probably applies to at least half of Europe.

LPG is not the only way to reduce smog across Europe, but it should be a clear part of the policy mix.

About the author

Eric Johnson is Managing Director of Atlantic Consulting, which focuses on the environmental and economic analysis and assessment of energy and chemicals

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