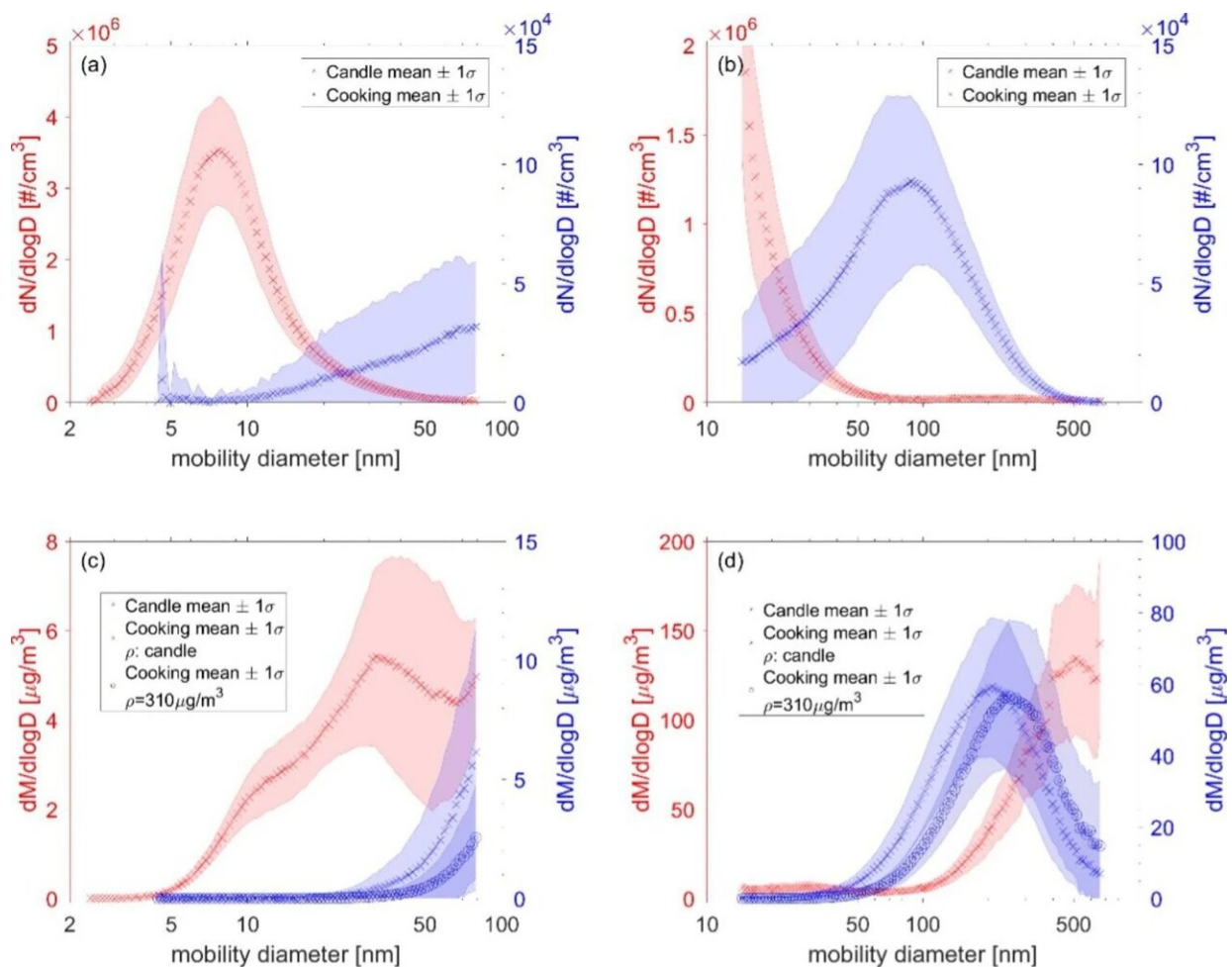


# Burning candles and fumes from cooking found to be harmful for people with mild asthma

August 31 2023



Mean particle size distributions recorded during cooking and candle exposure.

**Legend:** Cooking in blue; (right y-axis) and candle exposures in red (left y-axis). Values show means as calculated from three cooking experiments carried out on

07.05.21, 07.11.19, and 30.10.19 and four candle experiments carried out on 09.05.19, 13.05.19, 21.11.19 and 05.11.19, respectively, using SMPS. See [25] for examples of size distributions from individual experiments. (a) Particle number size distributions in the range 2.4 to 79.1 nm (nano DMA). (b) Particle number size distributions in the range 14.6 to 661.2 nm (long DMA). (c) Particle mass size distributions in range 2.4 to 79.1 nm (nano DMA). (d) Particle mass size distributions in range 14.6 to 661.2 nm (long DMA). The two different SMPS size intervals were measured in sequence. The particle mass size distributions from cooking experiments are plotted assuming two different densities: blue crosses denote results calculated using the density assumed for candle emissions, while spheres denote results calculated using a density of  $310 \mu\text{g}/\text{m}^3$ . Credit: *Particle and Fibre Toxicology* (2023). DOI: 10.1186/s12989-023-00537-7

A cozy set table, a nice steak in the pan, and romantic candlelight may sound like the start of a lovely evening. However, a new study from the Department of Public Health at Aarhus University suggests that you should be cautious about inhaling too much of the cozy atmosphere.

Karin Rosenkilde Laursen, a postdoc at the department and co-author of the study, says, "Our study shows that [indoor air pollution](#) caused by fumes from cooking and burning candles can lead to [adverse health effects](#) such as irritation and inflammation in [young individuals](#) with [mild asthma](#). Among other things, we've found indications of DNA damage and signs of inflammation in the blood."

When we turn on the oven, place a pan on the hob, or light candles, ultrafine particles and gases are produced, which we then inhale. Previous studies have shown that these particles and gases can be detrimental to health. What sets this study apart is that the researchers have focused on the effects on young individuals with mild asthma, aged between 18 and 25.

"In the study, we observed that even very young individuals with mild asthma can experience discomfort and adverse effects if the room is not adequately ventilated during cooking or when burning candles. Young people are generally fitter and more resilient than older and middle-aged individuals. Therefore, it is concerning that we observed a significant impact from the particles on this particularly young age group," says Laursen.

But not only people diagnosed with asthma need to keep an eye on the indoor climate, she says.

"Even though the study focused on young asthmatics, its findings are interesting and relevant for all of us. Winter is approaching, a time when we tend to light many candles and perhaps are less likely to open doors and windows while cooking. By prioritizing a healthier indoor climate, even when we're cozying up indoors, we may be able to help reduce the incidence of serious lung and cardiovascular diseases, as well as cancer."

The research is published in the journal *Particle and Fibre Toxicology*. Laursen plans to follow up this study with another examining how emissions from cooking and candles affect healthy adults.

**More information:** Karin Rosenkilde Laursen et al, Airway and systemic biomarkers of health effects after short-term exposure to indoor ultrafine particles from cooking and candles—A randomized controlled double-blind crossover study among mild asthmatic subjects, *Particle and Fibre Toxicology* (2023). [DOI: 10.1186/s12989-023-00537-7](https://doi.org/10.1186/s12989-023-00537-7)

Provided by Aarhus University

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