

## Field research brief

### **Particulate pollution from ovens under cooker hoods**

This field research brief deals with particle pollution from ovens under cooker hoods (*hoods* below) in kitchens. The purpose is to provide information on pollution and health damage, Danish rules for kitchen ventilation, and simple solutions to reduce the pollution.

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#### **Solutions**

You can effectively reduce the harmful particle pollution in your home from the oven in your kitchen by:

- 1) Keeping the oven and baking sheets, oven racks, etc. clean.
- 2) Avoiding burning food and keep overcooked food to a minimum.
- 3) Keeping the door to the kitchen closed so particles from the kitchen do not spread to the rest of the home.
- 4) Buying a stove where fumes from the oven are discharged at the back against the wall and rise into a hood.
- 5) Using an efficient hood (high ventilation rate) exhausting to the outside. Do it every time you use the oven.
- 6) Turning off the hot air function a minute before opening the oven door and opening the door slowly.
- 7) Closing the oven door and ventilate for 5-10 minutes after all the food has been cooked.
- 8) Installing mechanical ventilation balanced with the hood (supporting the function of the hood).

If you cannot get a hood with an outdoor exhaust (e.g. due to conservation regulations for the property), it is important to keep the kitchen window wide open while you are preparing hot food in the oven.

#### **Background**

According to the Danish Health Authority, air pollution with particles is the third most important risk factor in terms of mortality and contributes significantly to several major public diseases. Particle pollution increases the risk of cardiovascular diseases, blood clots, cancer, lung diseases and other serious diseases.

Danes spend a large share of their lives indoors, where smoke from cooking is a significant source of particle pollution, which can reach much higher levels than on the most polluted streets in Copenhagen during rush hours. Particles inside residences can be just as harmful as particles in outdoor air. But unlike outdoor air pollution, it is often the residents who are in control of the pollution in their residences. Good habits and the correct use of efficient hoods exhausting outside the building combined with good ventilation are easy ways to achieve better indoor air quality and thus better public health. Surprisingly, there is very little focus on - and regulation of - indoor air quality in Denmark and abroad.

However, a YouGov survey conducted for Bolius in December 2024 showed that just over one in three Danes never turn on the hood when cooking in the oven, while only 12 percent always turn on the hood when cooking in the oven.

There is an urgent need for information on pollution and health damage from particles from cooking food in ovens, and how pollution can be effectively reduced through improved habits and technical kitchen solutions. This brief focuses on air pollution from ovens under hoods, while the next field research brief focuses on cabinet and table ovens that are not located under hoods and could therefore pose a particular pollution risk.

## Test participants

Test participants for studies of particle pollution from ovens under hoods in kitchens in connection with this brief were found among 44 respondents in a Survey Monkey survey in 2025 sent out through newsletters from the Healthy Indoor Environment and the Agenda Centers in Copenhagen, as well as responses from 102 respondents in a survey among Boliu's user panel. It should be emphasized that the respondents are thereby not considered representative of the Danish population, as recipients of the current newsletters and the participants of the user panel, all other things being equal, are more interested in indoor climate than the general population.

Of the 146 respondents, just over half have ovens located under hoods. Most homes (77%) have hoods exhausting to the outside, while 16 residences have hoods with recirculation, 10 have hoods with unknown exhaust conditions and 7 do not have hoods. In kitchens with recirculation hoods and without hoods, there is a need for effective ventilation (kitchen window wide open and/or through-draft) during and after use of the oven to reduce particle pollution. Open-plan kitchen and dining areas are common in residences (64%), whereby it is not possible to close the door between the living room and kitchen to prevent pollution from spreading, which is why there is a particular need for good kitchen habits, effective hoods and through-draft ventilation.

Among the 44 respondents from the Survey Monkey study, specific questions were asked about habits and oven ventilation. In 37 of the residences (84%) the oven is used daily or a few days a week, and the oven is therefore a significant source of pollution in the residence. Only 10 out of 34 residences (10 did not respond) have an oven under a hood, where the hot, polluted oven air is discharged at the back against the wall and rises directly into the hood. Ovens that instead blow the polluted air out the front make it more difficult for the hood to capture the pollution. In 28 residences (64%), the hood is not usually activated when the oven is used, which does not remove the pollution. Even in the 22 residences where the oven is directly below the hood, less than half of the people usually use their hood when they use the oven. Hence, in many residences, particle pollution can easily be reduced through very simple behavioral changes.

## Air quality criteria

There is no lower limit under which particles no longer harm our health: the fewer particles, the lower the risk of becoming seriously sick. Table 1 lists pollution criteria for particle pollution in kitchens, based on the criteria for particles used by the World Health Organization (WHO).

Table 1: Pollution criteria for particle pollution in kitchens

	Pollution criteria	Remark
<b>Ultrafine particles</b> ( $\geq 20\text{nm}$ ) <sup>1)</sup>	10,000 particles/cm <sup>3</sup>	Measured as average hourly mean concentration. Seen as a high pollution level that should be avoided.
<b>Fine particles</b> (PM <sub>2.5</sub> )	Max. 15 $\mu\text{g}/\text{m}^3$	Measured as average daily concentration. Should not be exceeded more than 3-4 days per year.

1) Since P-Traks in the project do not measure particles from 10-20 nm, the WHO guidelines for the number of ultrafine particles have been adjusted accordingly, based on an assumption that about half of the particle number is in the range of 10-20 nm.

## Particle measurements

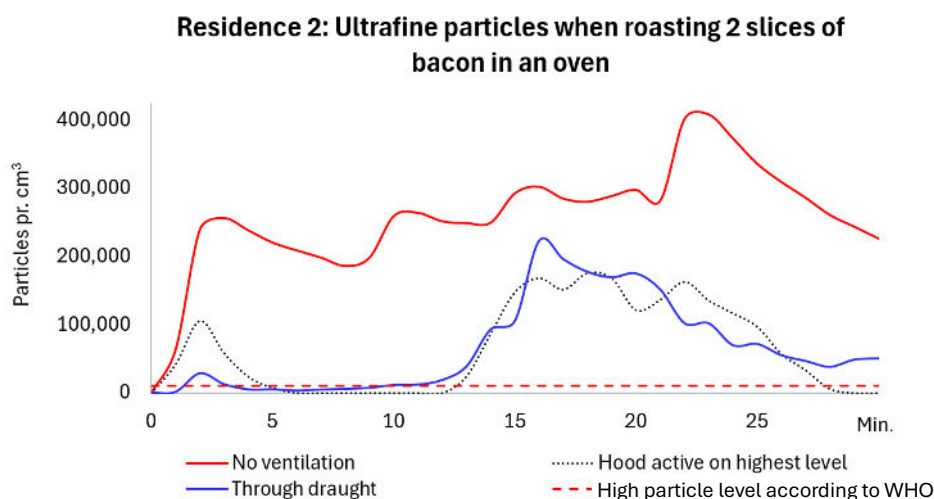
This knowledge brief is based on particle measurements in six Danish residences with a hood exhausting outside, as previous experiments have shown that recirculation hoods do not remove particles. The residences had ovens under a hood and kitchens in separate rooms without a sloping ceiling, which is important for mixing of the air and effective ventilation between experiments.

The particle measurements were carried out in the kitchen under standardized conditions, frying two pieces (four half pieces) of bacon in the oven (Appendix 1) with and without the use of a hood and with through draught or the kitchen window open. The door to the kitchen was closed during measurements, apart from measurements during through draught where the particle level is reduced both due to dilution in clean air and because the pollution is diluted in a larger air volume. Before the experiments, the efficiency of the hood in the residence was tested using a previously developed standard method for pan frying of bacon. No other sources of pollution were active in the residences during the measurements. The method for standardized bacon frying in the oven (Appendix 1) was developed and improved based on several experiments to ensure that the particle levels in small kitchens did not (or only briefly) exceed the upper measurement limit of the equipment. At the same time, the method had to be affordable in terms of time and robust. The reproducibility (robustness) of the developed test procedure for frying bacon in ovens was documented before experiments (Appendix 2).

Systematic particle measurements (ultrafine particles, particle number: 20-1,000 nm; and fine particles: PM<sub>2.5</sub>) were performed using P-Traks (Ultrafine Particle Counter, model 8525) and DustTraks (Tabletop model, model 8530) from TSI, which were cross-calibrated with independent instruments before and after the measurements.

Figure 1 and Figure 2 below show the particle pollution in two kitchens with efficient hoods from standardized cooking of two pieces of bacon in ovens. At time 0 minutes, the preheated oven is opened and the baking dish with bacon is inserted. At time 20 minutes, the bacon is removed and the oven is closed. Ultrafine particles and fine particles have been measured without ventilation, with the hood running at highest level, with ventilation with through draught (Figure 1) or the kitchen window open (Figure 2). To make the measurements comparable, background pollution (the level in the kitchen before the experiments) was subtracted. Detailed results from all 6 residences can be found in Appendix 3.

Figure 1: Pollution when frying two pieces of bacon with/without hood and with through draught



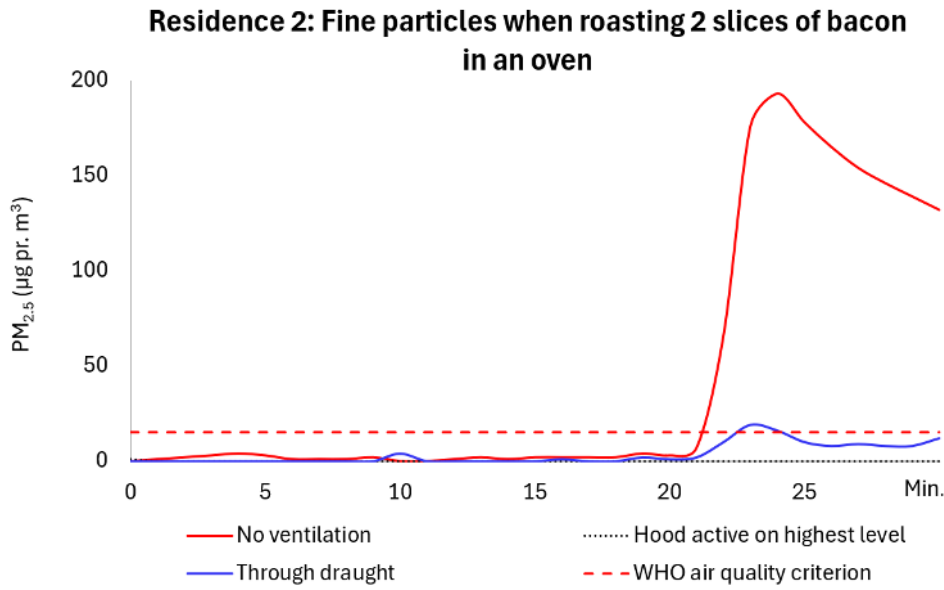
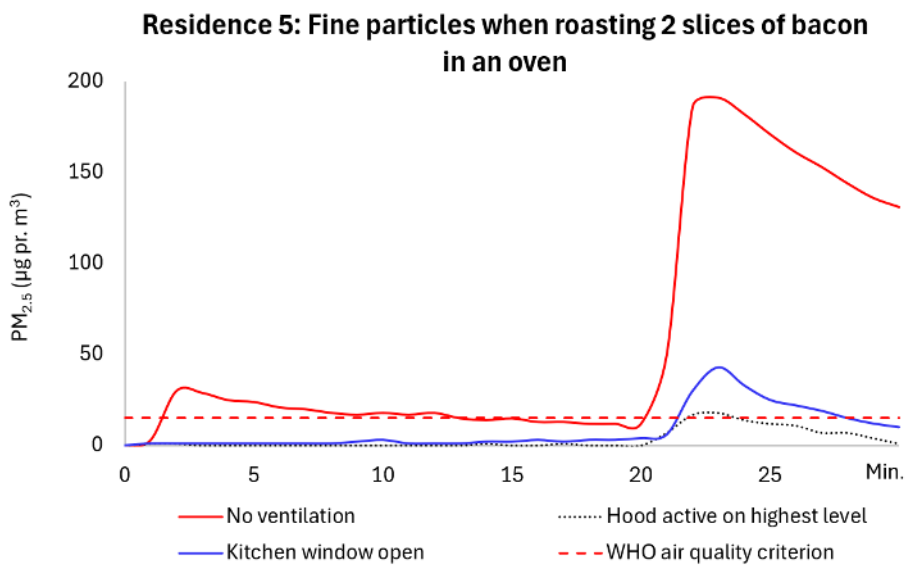
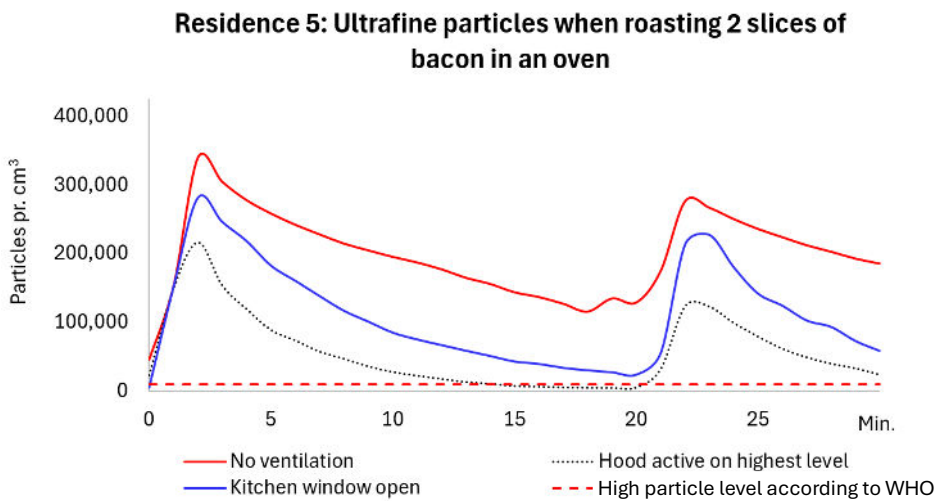


Figure 2: Pollution when frying two pieces of bacon with/without extractor hood and kitchen window open



The figures show that the level of ultrafine particles increases significantly when the oven is opened and the baking dish with bacon is placed in the preheated oven at time 0 minutes. This is probably due to hard-to-reach dirt that was not removed during the previous cleaning of the oven. For fine particles, on the other hand, a sharp increase is only seen when the bacon is taken out after 20 minutes, indicating that the fine particles are formed during the cooking of the bacon. Hence, there is no fixed ratio between ultrafine particles and fine particles throughout the experimental period.

For ultrafine particles, it is seen that an efficient hood and ventilation with through-draught are roughly equally effective at removing pollution (Residence 2), while an efficient hood is more effective than ventilation with the kitchen window open (Residence 5). The hood is most effective at removing fine particles (completely removed in residence 2). The fact that the hoods do not have even greater removal of the ultrafine particles is probably due to the fact that the warm contaminated oven air in residence 2 and residence 5 is blown out into the kitchen in front of the oven rather than being discharged at the back and rising along the wall and directly into the hood. This makes it more difficult for the hood to “catch” all the pollution. In general, the measurements from Appendix 3 show that ventilation with an open kitchen window (or through-draught) can be more effective at removing ultrafine particles than a hood with medium or poor efficiency, while poor hoods can still be better than an open kitchen window in terms of removing fine particles. However, the location of the windows in relation to the oven is, of course, of great importance.

Table 2 shows the average additional particle pollution from cooking bacon in the oven compared to the extra particle pollution from traffic on one of the most polluted streets of Copenhagen during the rush hours.

**Table 2: Average additional particle pollution from cooking 2 pieces of bacon in the oven and local road traffic**

	Ventilation conditions	Ultrafine particles (particles 20-1.000 nm/cm <sup>3</sup> )	Fine particles (µg/m <sup>3</sup> )
<b>Residence 2</b>	Without ventilation	256,695	45
	With hood	65,370	0
	Through draught	65,215	3.5
<b>Residence 5</b>	Without ventilation	198,700	60
	With hood	57,075	3.5
	Kitchen window open	109,510	8
<b>Traffic contribution on HCAB<sup>1)</sup> during rush hour</b>		5-10,000	1-2

1) H.C. Andersens Boulevard in the central Copenhagen is considered one of the most polluted streets in Denmark.

Table 2 shows that frying two pieces of bacon in an oven without ventilation can easily contribute over 20 times as much to the pollution in the kitchen as the local traffic during rush hour contributes to the pollution on H.C. Andersens Boulevard in central Copenhagen. This is largely because cars have particulate filters and because the pollution from the traffic is diluted in a large volume of air, while the smoke from the oven is concentrated in the kitchen (if there is no efficient ventilation). High indoor pollution is particularly problematic because we spend a large part of our lives - and thereby breathe a lot of air - in our homes.

If the oven and baking trays etc. are not cleaned properly after use, and more than two pieces of bacon are cooked, then significantly higher pollution levels than measured above can be expected. The pollution spreads to the entire home if the door to the kitchen is not closed. Cooking in ovens often contributes to Danes being exposed to high levels of pollution (see table 1). Exposure is significantly reduced if an effective hood is used or the room is thoroughly ventilated during cooking. If a hood is not used and windows are closed when using the oven, residents may be exposed to higher levels of pollution than the WHO air quality criterion for fine particles (see table 1), as pollution is only slowly removed from the indoor air.

The results from the 6 residences (Appendix 3) show that the concentration of fine particles in particular varies quite a bit (even when taking into account different kitchen volumes), which cannot be explained statistically based on the documentation of the method (Appendix 2), but is probably due to the fact that bacon burns more in some ovens, as the ovens in the residences do not heat the same way at the same temperature (this could be seen on the color and shape of the cooked bacon).

## Health damage

Many people associate air pollution, including harmful particles, with car exhaust or smoke from woodburning. However, as the measurements above show, a significant portion of the particles we are exposed to often originate from indoor sources such as cooking. These particles are chemically and physically quite similar to the particles that arise from combustion processes outdoors.

Particles from combustion processes - regardless of whether the source is traffic, wood-burning or cooking - are among the most harmful particles. The World Health Organization (WHO) estimates that fine particles (PM<sub>2.5</sub>) are one of the greatest health risks globally. According to the WHO and international research, both short- and long-term exposure to fine particles is associated with an increased risk of a number of serious diseases. The International Agency for Research on Cancer (IARC) has also classified particulate air pollution, including fine particles, as carcinogenic. Ultrafine particles (measured as particle number) have not yet been fully studied, but existing knowledge suggests that they may be at least as harmful to health as fine particles.

Fine particles are so small that they can pass through the upper respiratory tract's defense mechanisms and penetrate deep into the lungs. Ultrafine particles are even smaller and can reach the outermost branches of the lungs, the alveoli, where the exchange of oxygen and carbon dioxide with the blood takes place. From here, the ultrafine particles can diffuse into the bloodstream and be transported around the body, where they can potentially reach the heart, brain and other vital organs.

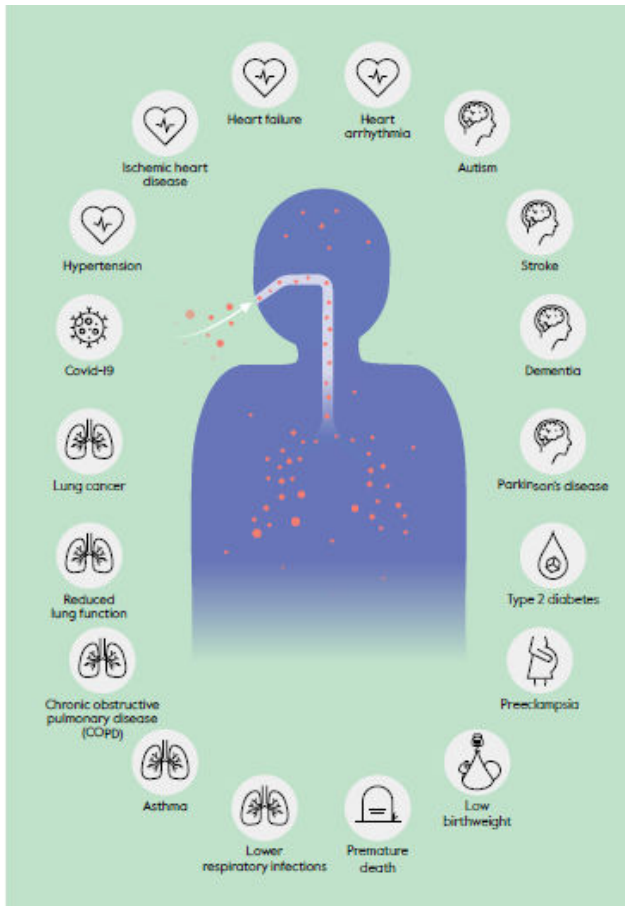
In some areas, parallels can be drawn between particles from cooking and tobacco smoke, especially in terms of particle size. Both sources contain large amounts of fine and ultrafine particles, and some of the chemical compounds overlap, including tar substances (PAHs), aldehydes and other organic compounds. However, tobacco smoke contains a wider range of harmful substances, including nicotine, nitrosamines and tobacco-specific toxins. It is therefore important to emphasize that inhaling particles from cooking cannot be directly equated with smoking, although there are several similarities.

Short-term effects: When we inhale particles (e.g. from cooking), the body reacts quickly. The particles can cause irritation in both the upper respiratory tract (nose, mouth, throat and trachea) and the lower respiratory tract (lungs). This can be experienced as coughing, irritation in the nose and throat, and burning in the eyes. These effects are due to the particles physically settling on mucous membranes and triggering local reactions. In addition, the particles can also trigger an inflammatory reaction in the body. This can be measured, among other things, as activation of the immune system and increased formation of "stress molecules" (oxidative stress). At the same time, the particles can affect the function of the blood vessels, which can be seen as temporary changes in the blood's ability to clot, increased heart rate or changes in blood pressure.

Long-term effects: Repeated exposure to fine and ultrafine particles over years can contribute to the development of several chronic diseases. The lungs can be damaged, and the risk of chronic lung diseases such as asthma, chronic bronchitis and chronic obstructive pulmonary disease (COPD) increases. In healthy people, lung function can be affected so much that it declines faster with age than normal. Particularly people who often cook without effective ventilation can accumulate a significant burden throughout their lives. Long-term exposure to particle pollution increases the risk of cardiovascular and circulatory diseases. This includes atherosclerosis and an increased risk of blood clots in the heart and brain, which are associated with long-term inflammation and chronic changes in the function of blood vessels. At the same time, ultrafine particles can penetrate completely into cells and directly affect their function, which over time can weaken the cells' ability to repair themselves and thus contribute to the development of chronic diseases. Some of the harmful chemical substances found on the surface of particles from frying oil (e.g. tar substances) are known to be carcinogenic.

Figure 3 shows some of the documented health damage from air pollution with particles.

Figure 3: Health damage from air pollution



Ref: The Danish Council on Health and Disease Prevention

**Vulnerable groups:** Long-term exposure to even low levels of particles in the indoor climate increases the risk of health damage for everyone, but especially for children, the elderly, pregnant women and people with heart or lung diseases. Air pollution does not affect everyone equally. Children and fetuses are particularly vulnerable because their lungs, brain and immune system are not yet fully developed, and because children breathe faster and inhale more air than adults. The elderly often have reduced lung function and a weakened immune system and can therefore react more strongly. Pregnant women are also more at risk due to the body's physiological changes during pregnancy. Around 700,000 Danes live with a lung disease, typically asthma or COPD. As a lung patient, you may experience breathing problems more often due to a temporary reduction in lung function due to air pollution. Fine and ultrafine particles can affect the immune system in the lungs, thereby promoting the accumulation of bacteria and intensifying existing inflammation. This combination increases the risk of acute exacerbations with infection, which often require hospitalization due to the need for intensive treatment and monitoring.

**Frying fumes:** The Department of Public Health at Aarhus University has investigated the effect of roasting smoke (from pork in the oven) on young adults with mild asthma after short-term exposure in 36 non-smokers aged 18-25. The trial was blinded and randomized and was conducted in specially built exposure chambers. Before and after exposure, the participants had their lung function measured, and blood samples taken. During their stay in the chamber, they continuously reported their symptoms. The trial showed that roasting smoke contains large amounts of harmful particles and chemicals. When exposed to roasting smoke, the participants experienced more eye irritation, stuffy nose, wheezing, headaches and chest tightness than when exposed to clean air. The health examinations showed mild, transient inflammation in the airways and blood, as well as DNA damage. Although DNA damage is most often repaired, many simultaneous damages increase the risk of errors in the process, which in the long term can lead to mutations and cancer.

## **Kitchen ventilation requirements**

Cooking food in the oven (and other cooking) gives rise to high concentrations of fine and ultrafine particles in homes, which constitutes a significant health risk. Kitchen ventilation plays a central role in limiting the accumulation and spread of pollution from cooking. However, only to a very limited extent does the legislation in Denmark focus on and support effective reduction of this pollution.

The Danish Building Regulations (BR) only regulate requirements for kitchen ventilation in new homes. For existing homes (where no significant changes are made) there are no requirements - regardless of whether the kitchen layout and/or ventilation is inadequate in terms of removing harmful pollution from cooking. Most of the existing housing is therefore not covered by requirements for kitchen ventilation.

For new construction, BR states that kitchens in homes must be equipped with a hood with mechanical extraction exhausting to the outdoors. The hood must have sufficient power to remove moisture and gaseous contaminants from cooking. However, this requirement is formulated in general terms and focuses primarily on moisture and odor, while there are no specific requirements for the removal of particles harmful to health - neither fine nor ultrafine. There are also no precise functional requirements or documentation requirements for the hood's efficiency.

BR does not require the placement of ovens in relation to the hood or where the ovens discharge the hot polluted air, which could be of great importance for the hood's ability to capture pollution. The lack of requirements for these conditions means that ovens and stoves continue to be installed where even good hoods might have limited ability to effectively ventilate out the particles, even when the hoods are used correctly.

There are therefore no requirements for existing or new homes that ensure the effective removal of harmful particles from ovens in kitchens and thereby effectively limit the health risk from pollution from cooking. The BR does not include specific functional requirements, requirements for the location of ovens or a focus on particle pollution and thereby public health. There is thus a need for requirements in the BR that support an improvement in public health by minimizing the harmful pollution of the indoor climate with particles from cooking. It could also be beneficial to introduce requirements that significant sources of pollution such as ovens must be placed under effective hoods when fitting out new kitchens and when changing ownership of homes.

## **More knowledge**

Healthy Indoor Environment: <https://en.godtindeklima.nu/>

Health damage: <https://pubmed.ncbi.nlm.nih.gov/37430267/> ; <https://onlinelibrary.wiley.com/doi/10.1111/ina.12902>

## **List of attachments**

Appendix 1: Test procedure for standardized frying of bacon in ovens.

Appendix 2: Reference experiments to document the reproducibility (robustness) of the test procedure.

Appendix 3: Key information, measurement results and overall assessment of pollution in the 6 test residences.

# Appendix 1

The appendix contains the test procedure for standardized frying of bacon in the oven and measurements in the selected residences.

Prior to the measurements of frying particles from the ovens, the efficiency of the hood in the residence was tested at the highest level using a method for standardized pan-frying of bacon. No other sources of pollution were active in the residence during the measurements. Kitchen door was closed except during through draught.

During the measurements of frying particles from ovens, the measuring equipment (P-Traks and DustTraks) was placed 1-2 m from the ovens, depending on the kitchen conditions. A fan was placed on an overhead cabinet, refrigerator or hood so that the fan did not blow directly at the oven but blew out into the room to create air circulation and ensure as mixed air as possible. The fan was turned on 10 min. before the measurements.

## Materials

Glass dish: IKEA 365+ 1.0L rectangular/glass dish.

Splash lid: Daily splash lid Ø29 cm stainless steel (plastic handle removed).

Bacon: 2 slices Tulip Original BACON (125g, 7 slices per pack).

Oven cleaner: STERLING oven and grill cleaner.

Fan heater: Bright DT-000073 2000W (used without heating function).

Cleaning ovens before experiments: First, the rack and loose accessories were removed from the ovens. An oven cleaner was sprayed on the oven surfaces and after 20 minutes, the foam was removed with a wet sponge and then dried with a dry cloth. The oven rack and ribs were soaked in a tub of hot water and dishwashing liquid for 15 min, then they were cleaned with a scouring pad, rinsed in clean water and dried with a towel.

For each experiment, a clean set consisting of an ovenproof glass dish and a splash lid was used (to ensure that any splashes from the bacon remained in the glass dish and therefore did not contaminate the oven thereby affecting subsequent measurements).

The particle measuring equipment was started well in advance of the measurements. The oven was turned on with top and bottom heat and 200°C (without hot air function). 4 half pieces of bacon were placed in the center of a glass dish (without overlapping) and a splash lid was placed on top. The experiment itself started at time 0 min., when the oven was 200°C hot.

## Procedure

00:00 The oven is opened and the glass dish with bacon pieces and splash lid is placed on the rack in the middle of the 200°C heated oven.

20:00 The oven is turned off and opened.  
The dish with bacon and splash lid is removed from the oven, placed on a hotplate and the oven door is closed. The bacon is moved to a plate with kitchen paper.

30:00 The experiment ends, after which the kitchen thoroughly aired out before the next experiment.



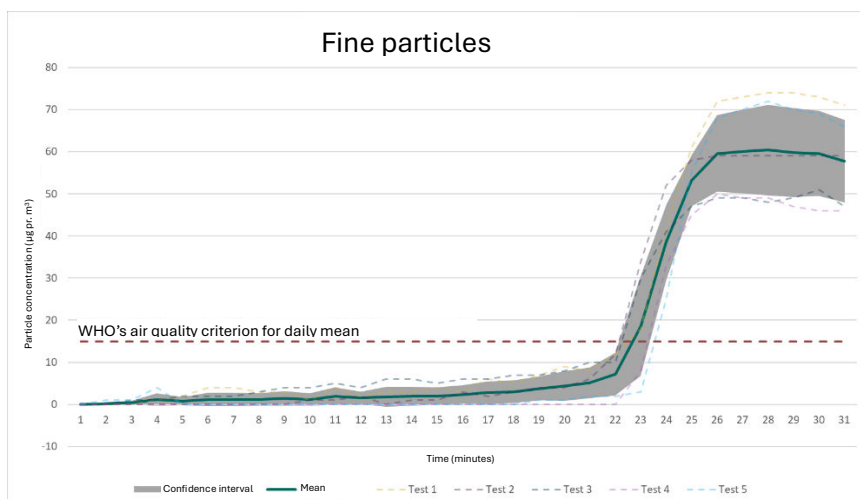
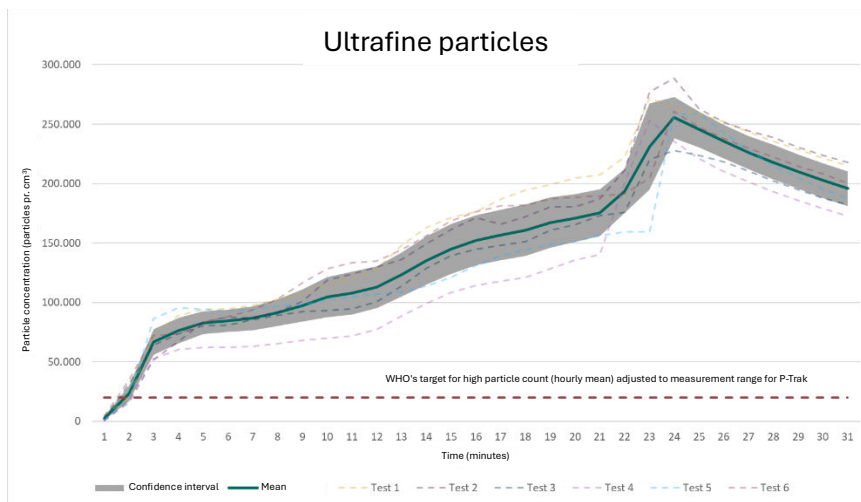
# Appendix 2

The appendix contains reference tests to document the reproducibility (robustness) of the test procedure.

Six identical reference tests have been carried out without the use of a hood with the test procedure described in appendix 1. However, one measurement of fine particles was interrupted during the process, which is why only five measurements of fine particles have been included.

The results from the reference tests have been processed statistically, where mean values and associated confidence intervals have been calculated. The calculation of the confidence intervals is based on the premise that measurement data can be described by a normal distribution.

The confidence interval is used as an estimate of the underlying, “true” mean value. In a sample such as the present one, consisting of five or six measurements, one mean value is obtained for the data set. When repeating the experiment, the mean value will, of course, vary but is still expected to be close to the original. A 95% confidence interval thus indicates that the “true” mean value is 95% likely to lie within the specified interval. From the confidence intervals indicated in the figures it is seen that the developed test procedure for frying bacon (Appendix 1) has a high reproducibility and is thus robust in relation to the purpose of the measurements.



The measurements provide an insight into the particle pattern, but no clear conclusions can be drawn from individual measurements. The individual measurement results could therefore be outside the calculated confidence interval. For the ultrafine particles, the confidence interval varies by up to 36,300 particles per  $\text{cm}^3$  around the mean value, while the variation for the fine particles is up to around  $11.8 \mu\text{g}/\text{m}^3$ .

## Appendix 3

The appendix contains key information, measurement results and an overall assessment of the pollution in the 6 test residences.

### Evaluation of hoods

Before the experiments, the efficiency of the hood in each home was tested using a previously developed method for standardized pan-frying of bacon. However, the assessment of the hoods was further refined by adding a new category (Very Good) and was specifically evaluated in relation to the volume of the individual kitchen (see below).

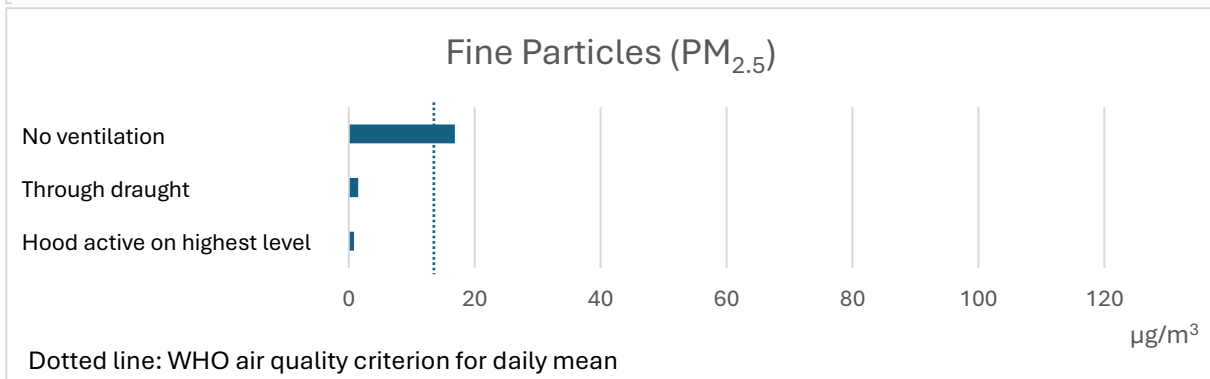
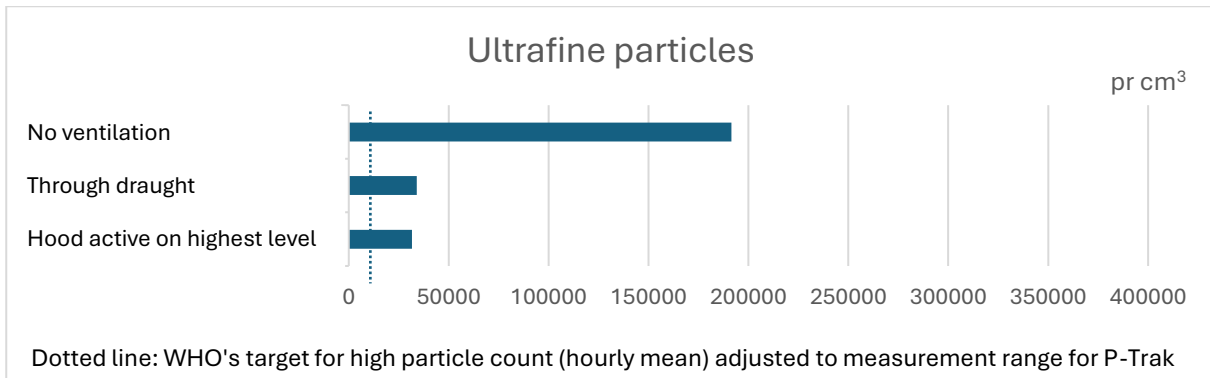
Criteria for the individual categories for a kitchen with a volume of 15 m<sup>3</sup> (rounded pollution levels)

Category	Ultrafine Particles	Fine Particles	Signature
Very Good	≤ 5,000	≤ 10	●●●●
Good	6,000-20,000	11-15	●●●○
Average	21,000-40,000	16-30	●●○○
Unsuitable	> 40,000	> 30	●○○○

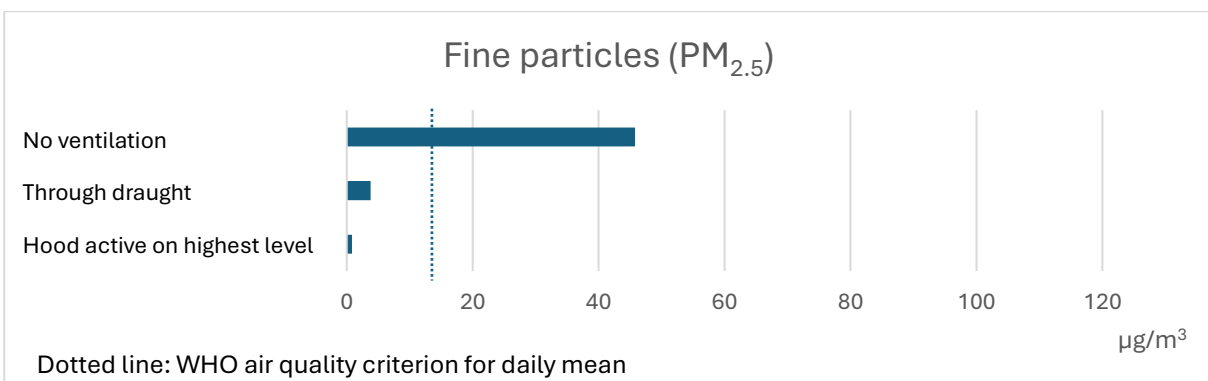
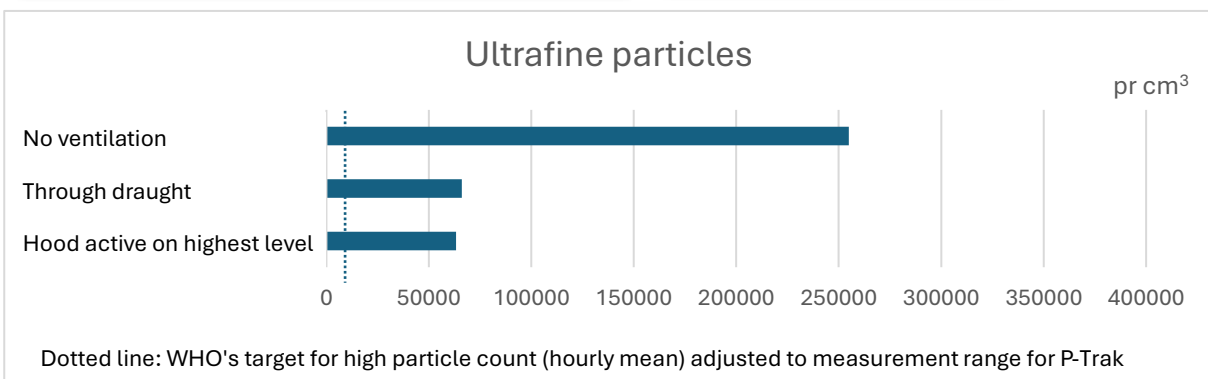
For kitchens larger or smaller than 15 m<sup>3</sup>, the pollution levels were adjusted for volume by multiplying the measured pollution level by a simple correction factor,  $k = \text{actual kitchen volume} / 15 \text{ m}^3$ , before the category of the range hood was assessed.

The following pages present key information and measurement results for pollution levels in the residences.

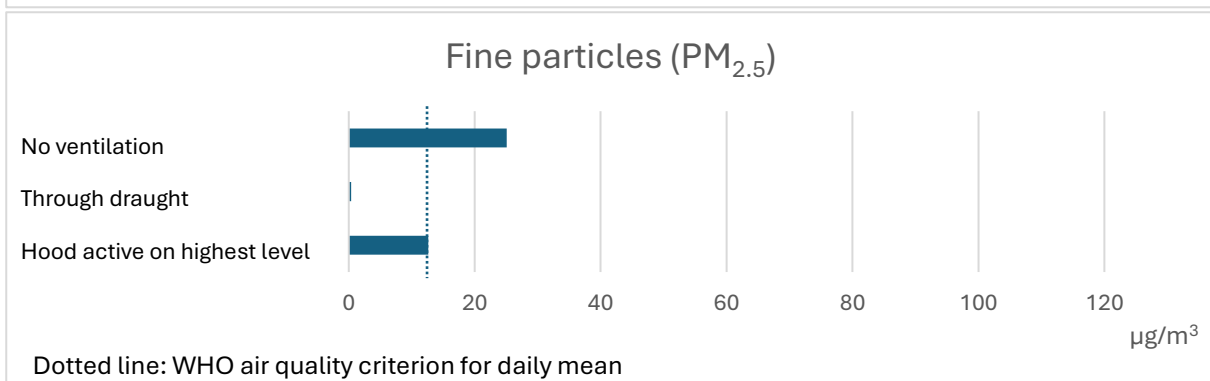
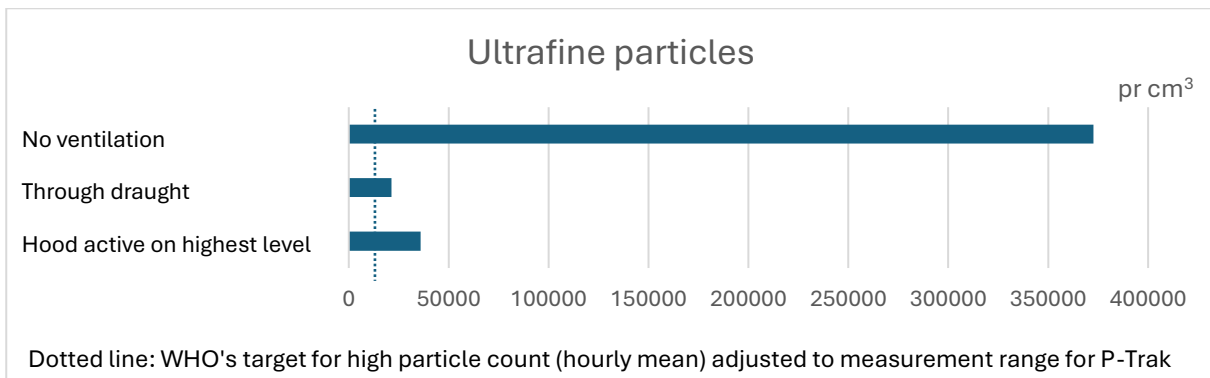
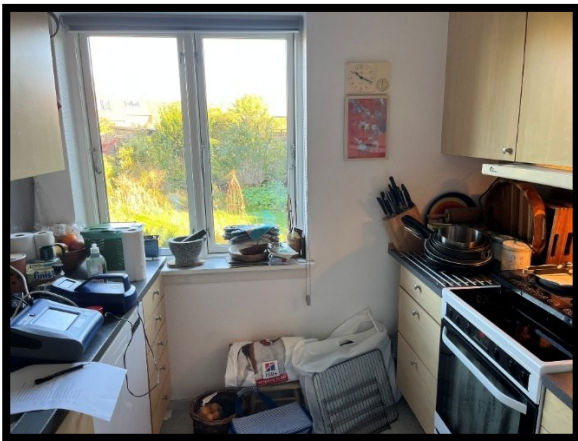
<b>Residence 1</b>		
Family		2 adults
Hood manufacturer		Thermex
Hood test	Ultrafine particles	●●●○ (Good; average: 16,500 pr. cm <sup>3</sup> )
	Fine particles	●○○○ (Unsuitable; average: 120.4 µg/m <sup>3</sup> )
Kitchen space		14.5 m <sup>3</sup>
Venting		Full draft: Window in kitchen and living room open. (Both 0.75 m <sup>2</sup> opening)
Window opens		Vertical
Oven brand		Siemens
Oven exhaust		Exhaust in the front over the door
Oven location		Under the hood (hidden under the wall cabinet)
Turns on the hood when the oven is in use		Yes
Oven is used		Daily



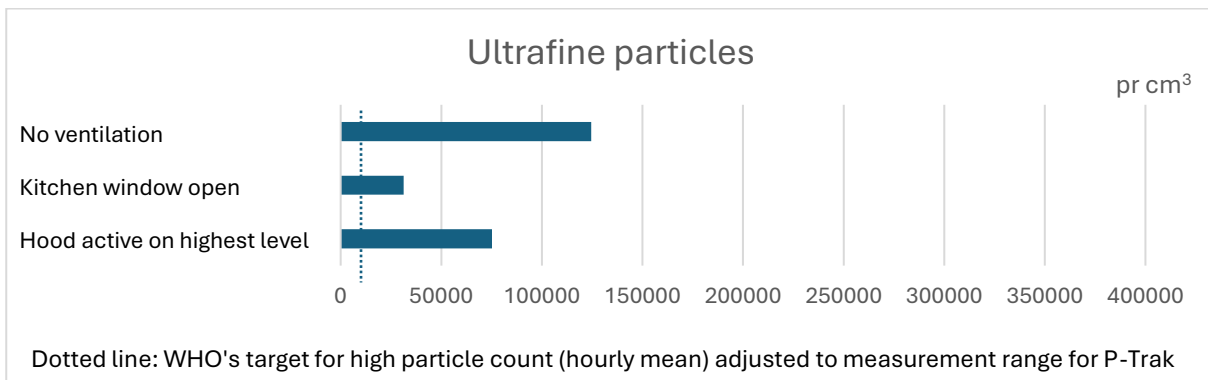
<b>Residence 2</b>		
Family		2 adults and 2 children
Hood manufacturer		IKEA
Hood test	Ultrafine particles	●●●● (Really good; average: 2,200 pr. cm <sup>3</sup> )
	Fine particles	●●●● (Really good; average: 9.7 µg/m <sup>3</sup> )
Kitchen space		13.75 m <sup>3</sup>
Venting		Full draft: Window in kitchen and living room open (0.33 m <sup>2</sup> and 0.24 m <sup>2</sup> opening respectively)
Window opens		Horizontal
Oven brand		Not disclosed
Oven exhaust		Exhaust in the front over the door
Oven location		Under the hood
Turns on the hood when the oven is in use		No
Oven is used		Daily



<b>Residence 3</b>		
Family		2 adults
Hood manufacturer		Thermex
Hood test	Ultrafine particles	●●●● (Really good; average: 3,700 pr. cm <sup>3</sup> )
	Fine particles	●●○○ (Medium; average: 15.6 µg/m <sup>3</sup> )
Kitchen space		16 m <sup>3</sup>
Venting		Full draft: Window in kitchen and front door open (0.2 m <sup>2</sup> and 0.7 m <sup>2</sup> opening respectively)
Window opens		Vertical
Oven brand		Voss
Oven exhaust		Exhaust in the front over the door
Oven location		Under the hood
Turns on the hood when the oven is in use		Yes
Oven is used		Several times a week

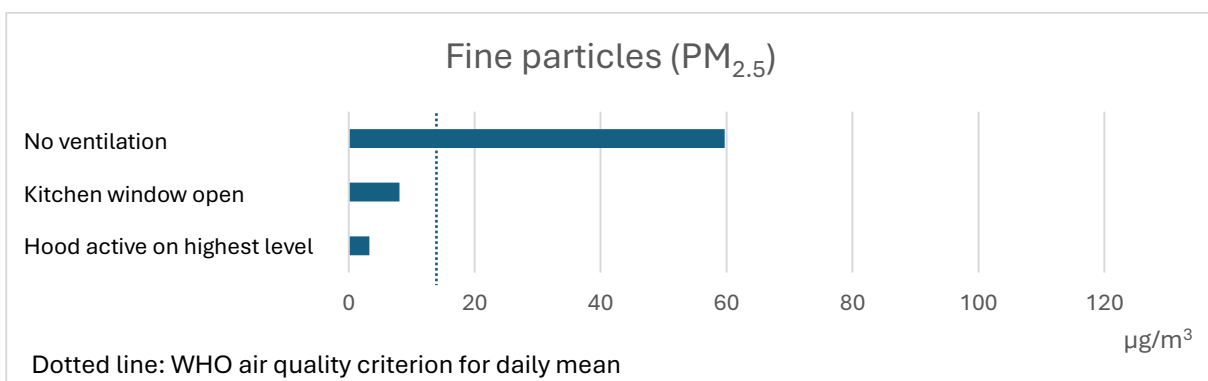
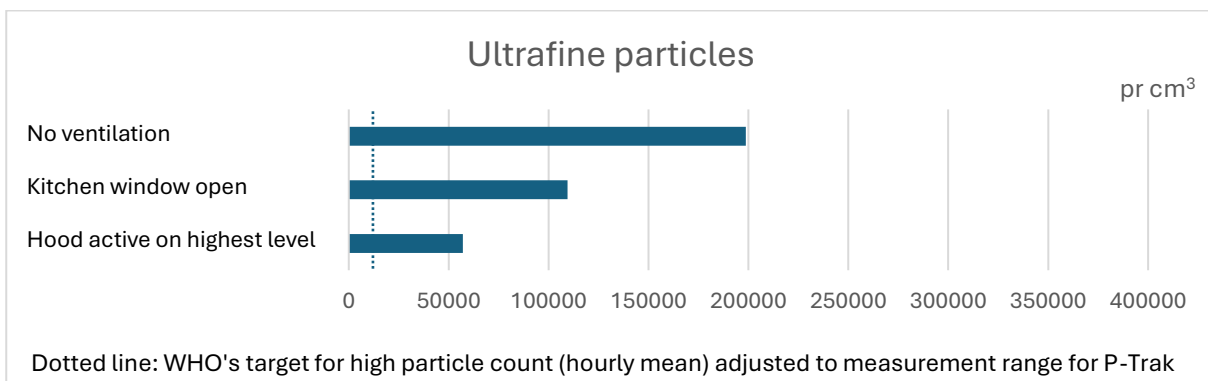


<b>Residence 4</b>		
Family		2 adults
Hood manufacturer		unknown
Hood test	Ultrafine particles	●●○○ (medium; average: 32,200 pr. cm <sup>3</sup> )
	Fine particles	●○○○ (Unsuitable; average: 112.3 μg/m <sup>3</sup> )
Kitchen space		24 m <sup>3</sup>
Venting		Open window in kitchen (0.6 m <sup>2</sup> opening)
Window opens		Vertical
Oven brand		AEG
Oven exhaust		Exhaust in the front over the door
Oven location		Under the hood
Turns on the hood when the oven is in use		No
Oven is used		Several times a week



Error on the Dust-Trak resulted in loss of data for fine particles.

<b>Residence 5</b>		
Family		2 adults
Hood manufacturer		Thermex
Hood test	Ultrafine particles	●●●● (Really good; average: 2,100 pr. cm <sup>3</sup> )
	Fine particles	●●○○ (Medium; average: 18.1 μg/m <sup>3</sup> )
Kitchen space		23 m <sup>3</sup>
Venting		Open window in kitchen (0.3 m <sup>2</sup> opening)
Window opens		Vertical
Oven brand		AEG
Oven exhaust		Exhaust in the front over the door
Oven location		Under the hood
Turns on the hood when the oven is in use		Yes
Oven is used		Daily



<b>Residence 6</b>		
Family		2 adults and 3 children
Hood manufacturer		Thermex
Hood test	Ultrafine particles	●●○○ (Medium; average: 38,400 pr. cm <sup>3</sup> )
	Fine particles	●○○○ (Unsuitable; average: 633.9 μg/m <sup>3</sup> )
Kitchen space		16 m <sup>3</sup>
Venting		Open window in kitchen (1 m <sup>2</sup> opening)
Window opens		Horizontal
Oven brand		Voss
Oven exhaust		At the back by the wall
Oven location		Under the hood
Turns on the hood when the oven is in use		Yes
Oven is used		Several times a week

