



## European Candle Association ASBL

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### New Findings on Fine Particles from Candles

**BRUSSELS / STUTTGART (17 January 2019)** – In December 2018, the Danish Environmental Protection Agency *Miljøstyrelsen* published a comprehensive research report<sup>1</sup> on their website that provides a number of important new findings on particles emitted by candles and their evaluation. The most important findings are probably that these particles almost entirely consist of water-soluble salts for most candles and that their soot content is very low. This differentiates them significantly from particles emitted by other sources, and they must be evaluated differently as a consequence. It is recommended to purchase high-quality candles and protect them from draught during burning.

#### Background

Small particles with a size of less than 2,5 µm can get into the alveoli of the lungs if they are inhaled. If these particles are persistent, i.e. not water-soluble, they can only be eliminated by the body very slowly and may cause health problems. Exhaust from diesel cars, tire abrasion or wood burning stoves are well-known sources of such particles into outdoor air. But there are also particles in indoor air, emitted by cooking, vacuuming or burning candles for example. In contrast to outdoor particles, there is not much knowledge of what health relevance these indoor particles have so far, however.

There have been numerous media reports in the past years, especially in Denmark, that identified candles as one of the main sources of fine particles indoors. The measured concentrations were often compared with those measured close to a main road and candles were branded as a considerable health risk. Consumers are deeply concerned accordingly, especially in Denmark where the candle consumption per capita is highest in Europe, but also in other countries. *Miljøstyrelsen* therefore commissioned several research projects with the objective to investigate the emissions from candles and help with the assessment.

Candle manufacturers organised in ECA attach utmost importance to high-quality candles that are safe to use by consumers. There is a long tradition of independent scientific research in order to constantly improve both quality and safety aspects. Therefore, ECA and some of its member companies agreed immediately when *Miljøstyrelsen* invited them to work in a new research project under scientific guidance of the Danish Technological Institute. One of the main objectives of the project was to scientifically determine the number and composition of particles and other substances emitted by candles during normal use. Based on that, the second main objective was to develop candles that emit a minimum of health relevant substances.

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<sup>1</sup> <https://mst.dk/service/publikationer/publikationsarkiv/2018/dec/environmentally-friendly-candles-with-reduced-particle-emissions/>

## Findings

The project, which ran from January 2017 until June 2018, investigated a number of the most common candles in Denmark intensively and with state-of-the-art scientific methods. The most important findings are:

- Candles do indeed emit a comparably high number of fine particles during burning. But as long as the candles are protected from draught as instructed by the manufacturers, virtually all particles emitted by most candles consist of the salts used to treat the candle wicks. These salts dissolve easily in water, i.e. they are **not persistent** and can be excreted easily by the body.
- The **soot content** of the particles is **very low** and much lower than in diesel exhaust for example.
- Heavy metals, such as **lead or nickel** for example, **could not be detected** in the emissions.
- The **emission of volatile organic compounds (VOC)** was **unremarkable** and at very low levels.
- Due to these significant differences, **particles emitted by candles cannot be compared directly with those emitted by other sources**, e.g. by traffic.
- It is recommended to purchase **high-quality candles**, **protect** them **from draught** during burning and **trim the wick** if it gets too long.

## Outlook

Due to the limited resources of the project, it was not possible to modify the candles in a way that all emissions would decrease to even lower levels simultaneously. But this is one of the open points which were picked up by yet another research project<sup>2</sup> that was approved by the *Danish Innovation Fund* in October 2017 and will continue until September 2020. It is expected that the project will provide additional key knowledge of the emission of particles and other substances and facilitate an objective evaluation of the health effects.

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## About the European Candle Association

The European Candle Association ASBL (ECA) is the trade association representing the leading candle manufacturers in Europe. Authorities and NGOs recognise it as the leading technical authority on candle manufacturing, science and safety in Europe. For more information, visit [www.ea-candles.eu](http://www.ea-candles.eu).

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<sup>2</sup> <https://innovationsfonden.dk/da/nyheder-presse-og-job/bedre-indeklima-med-nye-levende-lys>