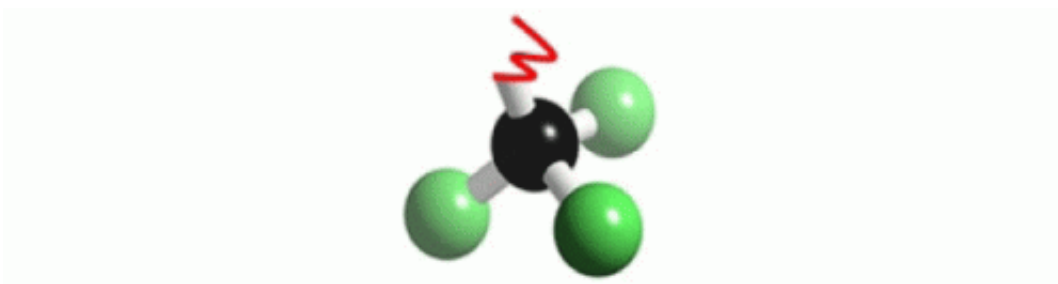


# Extensive use of fluorinated substances with potential harmful effects

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More and more scientific studies indicate that perfluorinated substances are carcinogenic or otherwise hazardous to health. In the Nordic countries, new per- and polyfluorinated substances are used to replace the known harmful ones. However, there is a need for new detection methods and more knowledge on their exposure and toxicity. An international workshop in Denmark co-organised by the National Food Institute, Technical University of Denmark, will focus on these substances on 27-29 October 2013.

Fluorinated substances in various forms are found in many ordinary consumer goods. Some fluorinated substances may be problematic to the environment and health, for instance the so-called perfluorinated substances. These substances do not occur naturally in nature, are extremely persistent and accumulate in humans and animals.

A study performed by a number of Nordic research institutions including the National Food Institute shows that in the Nordic countries a large number of fluorinated substances are used. The few toxicological data available indicate specific toxic effects on humans and the environment.

## **Lack of data and analytical methods**

The study also shows that there are considerable knowledge gaps concerning most fluorinated substances as to exact chemical composition in commercial products, quantities produced and extent of use in the Nordic market. One explanation may be trade secrets of companies in the Nordic market.

"Currently we lack the methods to detect most of the commercially used fluorinated substances which can end up in food and the environment. Therefore, there is a need to develop such methods and to better understand the biological mechanisms behind the potentially harmful effects of various fluorinated substances", says Ph.D. Xenia Trier, research chemist at the National Food Institute.

## **Substitution with other potentially harmful substances**

If a fluorinated substance is considered toxic, this will often lead to substitution with other fluorinated substances with similar technical properties. However, we need both to test and understand the mechanisms which make fluorinated compounds toxic, so we don't make the mistake to substitute with another similar harmful chemical.

The good news is that since fluorinated substances are created by humans it is possible to decrease the use and thereby the human

exposure.

For example, as the Nordic study illustrates the content of the fluorinated substance PFOS in human blood in the Western countries decreased after phasing out PFOS. However, the fluorinated substances used instead, which contain fluorotelomer alcohols, can degrade to other [harmful substances](#) such as perfluorooctanoic acid (PFOA).

"There is a need for further regulating the use of fluorinated substances in consumer products both nationally and globally", says Stefan Posner, senior researcher at Swerea IVF AB and lead author of the Nordic study.

## International workshop

On 27-29 October 2013, the National Food Institute, University of Copenhagen, Stockholm University, University of Århus, the Nordic Institute of Product Sustainability, Environmental Chemistry and Toxicology, Hochschule Fresenius and University of Amsterdam organise the 5th international workshop on per- and polyfluorinated alkyl substances - PFAS: Fluorinated compounds in materials, humans and the environment - current knowledge and scientific gaps, the PFAS/Nordfluor workshop.

The workshop will focus on the level of existing knowledge in the fields of epidemiology, analysis, exposure, human biomonitoring, transport, toxicity, production and regulation, and on areas where scientific knowledge is missing.

**More information:** See the Nordic study: Per- and polyfluorinated substances in the Nordic Countries. Use, occurrence and toxicology ([pdf](#)).

Provided by Technical University of Denmark

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