Constant companions

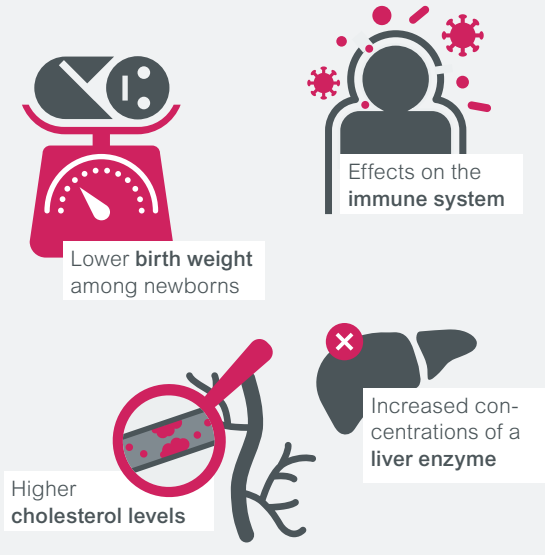
The chemicals known as PFAS are found in numerous everyday products, and are in the spotlight as a major problem for the environment and humans. New findings are available concerning the health risks, and a broad ban is coming closer.

They are exceptionally stable, and are widely used in numerous everyday products, including non-stick pans, waterproofing agents, fire extinguishing foam, cleaning products, outdoor clothing, fast food packaging, drinks to-go containers, refrigerants and even cosmetics. They make them water, grease and dirt repellent. We are talking about so-called per- and polyfluoroalkyl substances – in short: PFAS. But their blessing is also their curse: The molecular structure of the chemicals is so stable that they are difficult to break down in the environment. PFAS spread around the world via air and water, are found in groundwater and soils, and accumulate in plants and animals. Humans mostly ingest them via drinking water and food. Research teams are detecting PFAS all over the world and everywhere – even in human blood and breast milk.

The list of possible health effects as the result of increased PFAS levels in the body is long: these include higher cholesterol levels, lower birth weight among

PFAS – what's the problem?

Potential impacts on health



The use of **PFOS** has been widely **prohibited** since 2009, and that of **PFOA** since July 2020. Further PFAS (C9 to C14) will be restricted in the EU from February 2023 onwards. Work is ongoing at the European level to restrict the production and use of all PFAS.

Still unexplored

Do high PFAS concentrations in the blood really mean an increased risk of infection?

How exactly do PFAS enter the food chain from the environment?

Further research needed

More sensitive analytical methods for PFAS in food samples need to be developed.

newborns, increased concentrations of a liver enzyme, and effects on the immune system. The latter was confirmed by the 'Risks of Subpopulations and Human Studies' unit at the German Federal Institute for Risk Assessment (BfR) with a study on PFAS in children, which was published in 2020. It shows that the post-vaccination concentration of antibodies in children is lower if they have a high level of PFAS in the blood. To determine this, private lecturer Dr. Klaus Abraham's team examined retained blood samples taken from infants at the Charité hospital in Berlin at the end of the 1990s.

Guidance value is partially exceeded

The European Food Safety Authority (EFSA) used this work as a key study for a new assessment of the health risk from PFAS, and derived a new lower tolerable weekly intake of 4.4 nanograms per kilogram per week. The BfR based its own health assessment on this guidance value, and published it in summer 2021. The result: The long-term intake via food exceeds the health-based guidance value for certain PFAS in around 50 per cent of adults and adolescents in Germany. If mothers are affected, their infants may have a reduced concentration of vaccine antibodies in their blood during their first years of life in case they have been breastfed for a long time.

Soon a widespread ban?

The good news: for the past 30 years or so, the levels of some PFAS frequently found in the blood of the population have been decreasing significantly. Nevertheless, the latest figures from the BfR show that even the current levels are still too high. The institute is thus supporting the EU's intention to severely restrict the manufacture and use of all PFAS compounds. Five EU member states, including Germany, have published an announcement to this effect. In July 2022, the proposal for the restriction will then be submitted to the European Chemicals Agency. In concrete terms that means: any use of PFAS that is not considered socially indispensable, or for which equivalent alternatives are available, is to be banned in future.

Better analytical methods, more research

Important questions are still unanswered. For example, it is not clear whether high PFAS concentrations in the blood are actually associated with an increased risk of infection. In addition, analytical techniques are in many cases not sensitive enough to measure the levels in many food samples, so improved methods need to be developed. Knowledge gaps also exist on the transfer of PFAS from the environment into the food chain. In this regard, the BfR is participating in research projects such as 'PROSPeCT'. The aim is to find out how PFAS get from the soil into plants in order to derive guidance values for soils in the future and ensure food safety in contaminated areas. ◘

More information:
www.bfr.bund.de/en > FAQ: per- and polyfluoroalkyl substances (PFAS)
BfR Opinion No. 020/2021 of 28 June 2021