



ÉDITO

SUBSTITUTION SITE: A NEW WEBPAGE DEDICATED TO POLY- AND PERFLUORINATED SUBSTANCES

As announced in [Newsletter 18](#), Ineris has added a new section to the substitution site dedicated to Per- and polyFluoroAlkyl Substances (PFAS)

Per- and polyFluoroAlkyl Substances form a group of several thousand synthetic substances (polymers or non-polymers) containing at least a perfluorinated methyl group (-CF₃) or a perfluorinated methylene group (-CF₂-). Among the most studied PFAS are: perfluorooctanoic acid (PFOA), perfluorooctanesulfonic acid (PFOS¹), perfluorohexane sulfonate (PFHxS) and perfluorohexanoic acid (PFHxA).

These substances are of concern as many are likely to be persistent in the environment and some are also known to be mobile, toxic and/or bioaccumulative

Regulatory pressure on PFASs is increasing: in addition to global bans and restrictions on the use of PFOA and PFOS, countries in the European Union are beginning to take individually action on many PFAS: a restriction on all PFAS in fire-fighting foams is in progress and a general restriction on PFAS is expected to be submitted in January 2023. This ambition was further confirmed on 25/04/2022 by the European Commission, which published a restrictions roadmap (of which PFAS are part) together with its Chemicals Strategy for Sustainability.

This regulatory ambition is also accompanied by a major research effort. Projects such as [ZeroPM](#) and [Promisces](#), financed under Horizon 2020, started at the end of 2021 with the ambition of developing knowledge on the PFAS current levels of contamination of the environment, but also on the possibilities of treatment, and alternatives to these substances. Ineris is a partner in the Promisces project.

¹ because of their inclusion in the United Nations Stockholm Convention on Persistent Organic Pollutants

PFAS REGULATORY NEWS IN EUROPE

Several restriction procedures targeting PFAS have just been completed or are currently under review by the European Chemicals Agency (ECHA).

European Union bans 200 PFAS

On a proposal from the Swedish Chemicals Agency (KEMI) and the German Environmental Agency (UBA), PFNA³, PFDA, PFUnDA, PFDODA, PFTrDA and PFTDA will be subject to use restrictions from February 2023: these substances must no longer be manufactured, used or placed on the market (as substances, as constituents of other substances or in a mixture) and articles or parts of articles containing any of these substances must no longer be placed on the market.

³ PFNA - Perfluorononan-1-oic acid
n°CAS 375-95-1

PFDA - Nonadecafluorodecanoic acid
n°CAS 335-76-2

PFUnDA - Henicosafuoroundecanoic acid
n°CAS 2058-94-8

PFDODA - Tricosafuorododecanoic acid
n°CAS 307-55-1

PFTrDA - Pentacosafuorotridecanoic acid
n°CAS 72629-94-8

PFTDA - Heptacosafuorotetradecanoic acid
n°CAS 376-06-7

Although this measure targets only six substances, the actual number of PFAS impacted by this restriction is 200 since they can all be broken down (in solutions or materials) into one of the banned six substances.

For more information:
<https://eur-lex.europa.eu/eli/reg/2021/1297/oj>

Towards a restriction on all PFAS?

The national authorities of Denmark, Germany, the Netherlands, Norway and Sweden submitted on 15 July 2021 an intention to restrict the manufacture, placing on the market and use of any chemical with at least one perfluorinated methyl group (-CF₃) or at least one perfluorinated methylene group (-CF₂-), including branched fluoroalkyl groups and substances containing ether linkages, fluoropolymers and side chain fluorinated polymers. This draft restriction could be submitted in January 2023.

For additional information:
<https://echa.europa.eu/fr/registry-of-restriction-intentions/-/dislist/details/0b0236e18663449b>

Restriction of the use of PFAS in firefighting foams

The European Chemicals Agency submitted on 23 February 2022 a proposal for the restriction of all per- and polyfluoroalkyl substances (PFAS) in fire-fighting foams.

For additional information:
<https://echa.europa.eu/fr/-/proposal-to-ban-forever-chemicals-in-firefighting-foams-throughout-the-eu>

<https://echa.europa.eu/fr/registry-of-restriction-intentions/-/dislist/details/0b0236e1856e8ce6>

PFAS: OVERVIEW OF THEIR APPLICATIONS AND ALTERNATIVES

Hydrophobic, oleophobic, chemically and thermally stable and with a low surface tension, PFAS combine properties useful to many industrial sectors:

- / either as additives or auxiliaries for the production of fluoropolymers (such as PTFE, itself considered a PFAS) used in sectors of textile, aeronautical, automotive, electronic, paper, food packaging, etc. for the production of:
 - oil and water repellent, stain release and flame-retardant coatings
 - raw materials for components (low-friction bearings and seals, pipes, tanks, wires and electronic elements, etc.)
- / or as co-formulants in phytosanitary products, maintenance products (floor polishes, etc.), metal treatment products (metal plating) in fire-fighting foams and in paints.

Several institutions have published reports compiling information on alternatives to PFAS for the following applications:

- / **Paper and Paperboard Food Packaging**
The OECD reports « PFAS and alternatives in Food Packaging (Paper and Paperboard) Report on the Commercial Availability and Current Uses » and « PFAS and Alternatives in Food Packaging (Paper and Paperboard) : Hazard Profile » published in 2020 and 2022

respectively address the commercial availability, hazards and current uses of alternatives (chemical and non-chemical) to PFAS in the food packaging sector.

/ Fire-fighting foams

ECHA and the European Commission published in 2020 the report « [The use of PFAS and fluorine-free alternatives in fire-fighting foams](#) », gathering information on the availability, technical and economic feasibility of alternatives to fire-fighting foams containing PFAS, as well as the socio-economic impacts of their substitution.

/ Textiles

The Danish Ministry of the Environment provides information on possible alternatives (chemical substances or non-chemical techniques) to PFAS for textile treatment (examples of marketed products, environmental and health assessments) in its 2015 report « [Alternatives to perfluoroalkyl and polyfluoro-alkyl substances \(PFAS\) in textiles](#) ».

The POPFREE project produced by RISE (Research Institutes of Sweden) aims to help promote marketable PFAS-free products by developing competitive alternatives with a reduced environmental footprint and creating market pull. The 2017 report « [Promotion of PFAS-free alternatives – POPFREE Project](#) » presents the results of the study of alternatives to PFAS conducted for six applications: food contact materials, textiles and leathers, cosmetics, ski waxes, film-forming products, and firefighting foams. The alternatives study includes performance testing and risk assessment.

NEWS - PFAS SUBSTITUTION

Zume and Solenis publish a process for manufacturing PFAS-free food containers

U.S. food packaging company Zume and specialty chemical producer Solenis have created PFAS-free molded fiber food containers (plates, bowls, trays, etc.).

The two partners unveiled the manufacturing process for their packaging solution, which, according to them, ensures resistance to food fats and water without the use of PFAS. The process is based on five key points: thermoforming, freeness, chemistry management (including the choice of Topscreen MF300-NA biobased wax as a replacement for

PFAS), charge management and part formation.

For additional information:
<https://www.solenis.com/en/resources/news-releases/2021/solenis-zume-collaboration>

<https://docsend.com/view/7iugmkm9g74yrxfi>

National Foam Expands Production Capacity of Fluorine-Free Fire Fighting Foams

National Foam has developed a line of fluorine-free fire-fighting foams to replace AR-AFFF⁴ and AFFF⁵ foams containing PFAS.

Composed of hydrocarbons and polar solvents, the products in this range have received the north american GreenScreen™ certification which implies that their composition is free of PFAS and substances identified by the label as being of concern.

According to National Foam, these fluorine-free foams are designed to be used by municipal and rural firefighters to fight Class A and B⁶ fires.

National Foam recently announced the completion of the extension of the manufacturing line of these fire-fighting foams decided by the producer to meet the growing needs of these products.

Sources :
<https://nationalfoam.com/2021/03/12/fluorine-free-firefighting-foam-facility-expansion/>

⁴ Alcohol Resistant Aqueous Film Forming Foam

⁵ Aqueous Film Forming Foam

⁶ Class A fires are generally fires produced by «solid» or «dry» materials (wood, paper, fabrics, certain plastics, etc.).

Class B fires are fires involving liquids or liquefiable solids (gasoline, hydrocarbons, solvents, etc.).

RECENTLY PUBLISHED ON THE CHEMICALS SUBSTITUTION WEBSITE...

- / Update of Annex XIV of the REACH Regulation for four phthalates
- / EU RoHS exemptions on four phthalates in medical devices published
- / Drinking water: nonylphenol will now have to be monitored
- / Firefighting foams: Proposal to ban PFAS in Europe

AGENDA

FESPA Global Print Expo 2022 from 31st May to 03rd June 2022 in Berlin (Germany)

The global federation of national associations for the screen printing, digital printing and textile printing will organize the FESPA Global Print Expo 2022 for professionals in the field of printing industry, which will offer the opportunity to learn about new technologies and innovative solutions in the different fields of printing that could potentially replace bisphenols, phthalates, alkylphenol ethoxylates, and PFAS.

<https://www.fespaglobalprintexpo.com/welcome>

Biobased coatings Europe from 8th and 9th June 2022 in Amsterdam (Netherlands)

The Biobased Coatings Europe 2022 conference will bring together experts from the coatings industry and technology innovators to discuss the latest developments in this industry. Alternatives to bisphenols, Alkylphenol ethoxylates and PFAS could be presented.

<https://www.wplgroup.com/aci/event/biobased-coatings-europe/>

3rd National PFAS Meeting from 15th to 22th June 2022 in Wilmington, USA

The 3rd National PFAS Meeting aims to strengthen existing and establish new collaborations between scientists, political and public sectors to encourage coordinated and solution-based approaches to prevent future PFAS contamination and exposure-related health risks.

<https://pfasmeeting.wordpress.ncsu.edu/>