

Banning PFAS in food contact paper in Belgium

Reaction to the Belgian Federal Parliament's request for input on resolution proposal: DOC 55 2260/001 of 18th October 2021.

This response has been elaborated co-signed by:



Hazards and risks from PFAS were largely covered in the earlier resolution adopted by the federal parliament (DOC 55 1446/001 of 2nd October 2020). We therefore do not cover the topic here, despite its crucial importance for health, environment and decision making.

1 Summary

1.1 Background

On 18th October 2021, members of the Belgian federal parliament submitted a proposal for a resolution to ban the use of PFAS¹ in paper and cardboard used for food contact purposes. The text asks the federal government **to enact a ban very closely inspired from a similar ban in Denmark**, in force since July 2020 (see also section 3.1).

1.2 EEB's recommendation

EEB recommends that the proposed text is transferred **as quickly and directly as possible into Belgian national legislation**. We consider that

- The proposed formulation is the best possible
- that a delay would not improve the situation and
- this is a matter of Belgian federal competence.

2 Legal situation

2.1 Food contact material legislation

2.1.1 Belgian Royal decree of 11/05/1992

Belgian rules on food contact materials are defined by the royal decree of **11th May 1992**.² **Annex 4** of the decree lists substances that may be used in paper and cardboard that intended to come into contact with food. It is a "positive list", meaning that **only substances on that list are allowed**. Conversely, substances not mentioned on that list may not be used.

¹ Per- and polyfluoroalkyl substances. Reader-friendly introductions to the topic are available from [ECHA](#), the [EEA](#) and [from EEB](#). A somewhat more in-depth [primer](#) has also been published by EEB.

² Subsequently modified several times, current versions with highlighted passages available here in [NL](#) and [FR](#).

The interplay between national dispositions and European legislation is detailed in the following section (2.1.2).

Interestingly, current legislation does **not specifically allow the PFAS currently in use** (see section 4.1 for a technical description).

Under point 3.1.7, Annex 4 of the royal decree a now-defunct PFAS is listed: a so-called diPAP based on PFOS. These PFAS have been out of legal use for a long time: no diPAP has been registered under REACH. In Europe, production of PFOS, the raw material for this diPAP, ceased in 2002. Since 2009, PFOS use for food contact materials has been internationally banned by the Stockholm convention.³ As a result, despite the fact that point 3.1.7 of the decree has not been updated, this does not correspond to any authorised use of a PFAS.

However, **some relevant PFAS** (see section 4.1) **may be legally used, provided their intended purpose and technical description is somewhat tweaked**.⁴ Indeed PFAS are technically used as grease repellents (the object of point 3.1. of Annex 4); however producers could also claim they are used as a retention product, i.e. rendering the product water- or oil-tight. This would correspond to point 3.4. of Annex 4, which mentions (point 3.4.1.) polymers of acrylic acid and acrylamide.⁵ Indeed, as described in section 4.1, most PFAS used to treat paper and board are acrylic copolymers. We would like to stress that **such an interpretation is obviously abusive**, and likely does not correspond to the intention of the Belgian legislator.

It may therefore be concluded that Belgian legislation does not explicitly authorise use of any single PFAS in food contact paper and cardboard. This non-authorisation is similar to the effective non-authorisation in Dutch law until 2022 (see section 3.2).

2.1.2 EU Food Contact Materials Regulation 1935/2004

A **common misunderstanding is that European legislation** rules food contact materials. This is partially true, but **EU legislation does not apply in the case of paper and cardboard**.

The EU's FCM Regulation⁶ has been in place since 2004. It states in Art. 5 (1) that *for the materials [...] listed in Annex I [...] specific measures may be adopted [...] by the Commission*, such as lists of substances. Art. 6 then stipulates that national measures apply where no such list has been defined.

Of the 17 groups of materials defined in Annex I, only plastics and ceramics have so far been covered with specific measures referred to in Art. 5 (1.a). As a consequence, for paper and board (item 9 in Annex I), national legislation applies.

³ PFOS was [added to Annex B](#) of the Convention in 2009; the only remaining legal uses of PFOS and its derivatives are listed [here](#).

⁴ Whether such an interpretation is acceptable should be the decision of a judge. We merely want to highlight the possibility of such an interpretation, but certainly not to endorse it.

⁵ It may be assumed that the legislator meant polymers of acrylic acid and polymers of acrylamide, as a polymer containing both monomers would have been described more aptly as a copolymer of acrylic acid and acrylamide.

⁶ [Regulation 1935/2004](#).

2.2 Other legislation

2.2.1 REACH

The EU's flagship legislation on chemicals, REACH,⁷ covers a broad array of uses of chemicals. Where REACH restricts a certain use or range of uses of a substance, national legislation clearly cannot derogate from this restriction. However, REACH currently only partially limits the use of PFAS for such purposes.

Current relevant restrictions and restriction proposals are listed here:

- A restriction on PFOA, its salts and related substances (often referred to as "C8 restriction") has been banned the use of PFAS based on C8 chemistry since 2020.⁸
- The currently most used substances (so-called C6, see section 4.1) are covered by another restriction proposal.⁹ The final opinion of this restriction proposal was adopted in December 2021.¹⁰ This proposal still requires validation by the European Commission. Once added to Annex XVII of REACH, this measure will probably only be applicable as of 3 years later – at the moment this can **in the earliest case be in 2025**. This restriction **would affect most** of the currently used PFAS for paper and board, but not all: PFAS surface treatments based on e.g. **perfluorinated polyethers would remain unaffected** (see section 4.1).
- The "universal PFAS" restriction¹¹ is the restriction proposal that gets most visibility. It would cover all remaining PFAS; however it will very unlikely be effective before 2028.¹²

2.2.2 Trade law

Questions on free circulation of goods within the European Union is often cited as an excuse to adopt national measures. However, in spite of a largely open market, member states are clearly allowed to define national technical regulations where this is necessary and in the general interest; they are only required to inform other the members states.¹³

3 Examples from other countries

3.1 Denmark

The first country to ban the use of PFAS was Denmark in 2019, with legislation taking effect in 2020. The Danish ban¹⁴ is laconic: **it bans the use of PFAS in one sentence**. The only allowed derogation is where a

⁷ [Regulation 1907/2006](#).

⁸ This restriction has since been superseded formally by a ban under [the POPs regulation](#), with the same effect for the purposes under concentration here.

⁹ Restriction on PFHxA, its salts and related substances, available [here](#).

¹⁰ ECHA's press release available [here](#).

¹¹ Currently in its early phases, all currently available information can be found [here](#).

¹² Considering the dossier publication being expected for 2022. Publication will start a process likely taking 3 years. Another 3 years may be expected as a common transitional period – much longer than generally needed.

¹³ [Directive 2015/1535](#) defines this mutual information obligation, while recognising the right of member states to adopt national measures (e.g. recital (4)). The procedure to notify other member states about national measures is a routine step (e.g. Belgium triggered this procedure 23 times in 2019, as can be seen [here](#)).

¹⁴ Official text here. The relevant § 8 translates to: *Food contact materials of paper and paperboard in which per- and polyfluorinated alkylated substances (PFAS) are used shall not be placed on the market.*

barrier layer is applied, to ensure the PFAS do not get into contact with the food. While this appears as a theoretical loophole, it should be noted that this defies the purpose of applying or adding a PFAS in the first place.

The legal ban is accompanied by an official factsheet¹⁵ setting an indicator value of 20 microgram organic fluorine per gram of paper, guiding enforcement by the authorities. This indicator value also allows for unintentional contamination at low levels (e.g. from recycled paper), while prohibiting intentional use at any useful level.

3.2 Netherlands

In the Netherlands, food packaging materials are subject to specific legislation¹⁶ that follows very much the same logic as the Belgian one. Art. 2 (b) clearly includes paper and board in the scope, chapter 2 contains the positive specific list of authorised substances. The current legislation lists five PFAS:

1. A polymer of tetrafluoroethylene of a somewhat cryptic description (section n (“macromolecular compounds”) of the list);¹⁷
2. In section r (“other additives”), three PFAS are listed: a PFOS-based diPAP (see section 2.1.1), a longer-chain diPAP and a PFOS-based methacrylic polymer;
3. In section l (“aqueous dispersions used for water resistance”) a mixture of longer-chain mono- and diPAPs.

It is interesting to note that none of the substances under points 2 and 3 are currently in legal use: like the diPAP in the Belgian legislation, these substances are not REACH-registered.¹⁸ On top, **all of them are explicitly banned** under the POPs bans (see sections 2.1.1 and 2.2.1).

The Dutch Ministry has enacted and **advertised a “ban”** on the four substances under points 2 and 3,¹⁹ although the change in legislation only corresponded to scrapping four effectively extinct substances. Conversely, any use of effectively existing substances in paper and board was therefore illegal; the authorities have confirmed that so far no enforcement had taken place, but that this would improve.

3.3 Federal states of the USA

The US FDA [brokered a voluntary phase-out by 2024 of C6-based](#) treatments of food contact paper and board, following all-PFAS bans by single federal states such as [Washington](#), [Maine](#) and [New York](#).

PCS. 2. Notwithstanding subsection 1, food contact materials of paper and cardboard, in which per- and polyfluorinated alkylated substances (PFAS) have been used, may be marketed if a functional barrier is used in the product, whereby migration of the substances to the food is avoided.

¹⁵ Available [here](#).

¹⁶ [Warenwet regeling verpakkingen en gebruiksartikelen](#), .pdf version with relevant highlights available [here](#).

¹⁷ The use of these substances remains authorised. However, it appears questionable that this substance is at all available on the market.

¹⁸ For small molecules, this means they may not be used in the EU at an total annual volume exceeding 1 ton. For polymers, this tonnage limitation would hold for the fluorinated monomer.

¹⁹ This narrative is documented [in this list](#) of parliamentary questions.

4 Technical situation

This section should be viewed as additional information only, to provide a high-level summary of the types of PFAS in use, to the best of our knowledge. It is not necessary to read or understand this section for adequate decision-making.

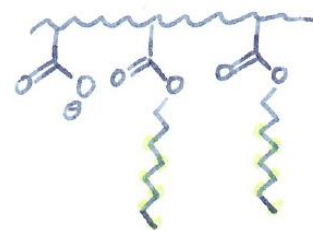
4.1 Types of PFAS used

Germany's BFR publishes and annually updates a list²⁰ of all approved substances for food contact paper and board. The substances in the list are relatively precisely described and correspond to general knowledge on such treatments; they are also consistent with available analytical results.

4.1.1 (Meth)acrylates

Copolymers of acrylic and methacrylic monomers are doubtlessly the most widespread class of substances in current use. The relevant fluorinated monomers incorporated in these polymers are the acrylic (EC 241-527-8) and the methacrylic (EC 218-407-9) ester of 6:2 fluorotelomer alcohol (6:2 FTOH).

As such, these substances are also referred to as side-chain fluorinated polymers (SCFPs). The fluorinated side-chain can be lost by hydrolysis or saponification as 6:2 FTOH: it will degrade to (among others) PFHxA and be spread in the environment.



The illustration (right) depicts schematically such a SCFP, in which one initially fluorinated monomer (the one at the left) has been hydrolysed; a molecule of toxic 6:2 FTOH has been released.

4.1.2 Typical impurities

Depending on the grade²¹ of 6:2 FTOH used, the polymer may be contaminated with longer-chain impurities based on 8:2 – which are nowadays illegal based on the ban on C8 PFAS.

4.1.3 Other PFAS used in paper and board

It is virtually impossible to compile a certainly exhaustive list of PFAS used in paper in board in the EU member states, let alone in the EU. Germany's published list of substances (see footnote 20) likely gives a good overview of technologies used in Europe, including coatings based on perfluoropolyethers. It should be noted that such materials are not allowed on the Belgian market, as they do not correspond to the substances and substance classes authorised by Belgian legislation (see section 2.1.1).

²⁰ The currently valid, annotated list can be found [here](#).

²¹ The molecular origin of these substances has been explained in [EEB's contribution](#) to a recent public consultation, in section 3.1.

4.2 Analytical techniques

Analysing PFAS is not always trivial and it requires the skills of a professional analytical lab. However, analysis of PFAS are routinely available.²² Total organic fluorine (TOF) measurements, mandated by the Danish ban, are also widely available, as demonstrated by the enforcement of the Danish ban.

Despite this, it should be foreseen that minor capacity building in enforcement authorities will be necessary to familiarise staff with state-of-the-art techniques.

Further recent developments particularly suitable for the analysis of (meth)acrylic SCFPs include pre-treatment with a strong base²³ and the total oxidisable precursors assay (TOP-assay).²⁴

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²² ECHA conducted a [survey of laboratories](#) across Europe that have standardised and validated methods at their disposal, to detect and quantify an array of PFAS in an array of solid matrices.

²³ Test results of this methodology were submitted into a recent public consultation on the C6 restriction under REACH. Document available [here](#); the same method was also [published in the open literature](#) recently.

²⁴ [Recent scientific publication](#) describing the technique, which was already widely used by commercial laboratories before.