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# **Emission control vs Restriction**

#### Which best regulatory tool for effective PFAS risk prevention?

### **Executive Summary**

This briefing evaluates the effectiveness of emission control measures as potential alternatives to a restrictive approach to the regulation of PFAS, i.e. a restriction on production and marketing. Representatives of the PFAS industry have been repeatedly highlighting the benefits of a regulatory approach focused on risk control compared to the costs of a restriction, a possibility foreseen under the REACH Regulation.

In light of this claim, we explore two main questions:

- 1. What is the currently applicable legislative framework to PFAS emissions in the EU?
- 2. Is this framework sufficiently protective, i.e. is it enough to mitigate the current and future impact of PFAS emissions compared to a restriction under REACH?

Our legal assessment leads to two main findings. First, existing regulations, including the Industrial Emissions Directive (IED), the occupational health and safety or waste regulations, are insufficient to establish a robust prevention framework—similar to the outcomes that could be achieved through a REACH restriction. Second, there is considerable uncertainty regarding the implementation and enforcement of these rules, which raises further concerns regarding their overall effectiveness compared to a restriction.

More specifically, we show that while PFAS production falls in the scope of the IED, not all manufacturers may be affected, notably if they operate below the legal thresholds. Moreover not all industry sectors that are using PFAS fall within the limited number of activities covered by the IED.

Second, even PFAS polluters regulated by the IED are subject to permits lacking ambitious emission limit values for PFAS prevention and/or reduction. Reporting requirements for IED installations under the Industrial Emissions Portal Regulation (IEPR) are very weak on PFAS. So far only PFOA, PFHxA and



PFCs are listed in the relevant Annex II. As of July 2027, operators will have to have in place an Environmental Management System with a chemical inventory, including for chemicals subject to REACH restrictions. However, this seems to be in the first place a tool for self-regulation, as enforcement is as of today unclear.

Beyond the IED, we also highlight that other pieces of legislations, including on the protection of workers and waste, simply fail to provide any protective systems against PFAS.

In the absence of a strong regulatory framework, industry led initiatives are undoubtedly essential to incentivize responsible manufacturing practices and their implementation as soon as possible. However they can never be as ambitious and effective as strict regulation.

In light of these findings, our briefing suggests to keep the REACH restriction as the preferred risk-management option for PFAS, while continuing to develop stringent emission control rules whenever needed.

### Introduction

In 2022, five member states submitted a proposal to restrict the use of PFAS covering approximately 10,000 chemicals in the EU.<sup>1</sup> It is the broadest restriction proposal under REACH so far.

The proposal aims to ban the production, placing on the market and use of all PFAS, except for a few specific uses.<sup>2</sup> The dossier provides for time-limited derogations for sectors where PFAS have no proven alternatives yet, e.g. in protective textiles or implantable medical devices.

Industry groups have been particularly vocal in opposing the proposed ban, with one of their key demands being the exemption of fluoropolymers—a distinct subset of PFAS—from the general restriction.<sup>3</sup> Fluoropolymers, a group of diverse polymers/plastics<sup>4</sup> within the PFAS group, are similarly persistent, but they present a different toxicological profile compared to the rest of PFAS.

Advocates for their exemption argue that fluoropolymers are comparatively safer<sup>5</sup> and play a crucial role in advancing green technologies, including lithium batteries and solar panels.<sup>6</sup> Furthermore, industry

<sup>3</sup> See for example: <u>https://fluoropolymers.eu/wp-</u>

<sup>&</sup>lt;sup>1</sup> Annex XV proposal for a restriction of PFAS: <u>https://echa.europa.eu/documents/10162/1c480180-ece9-1bdd-1eb8-0f3f8e7c0c49</u>.

<sup>&</sup>lt;sup>2</sup> General derogations are proposed for PFAS used as an active substance in plant protection products, biocidal products or in human or veterinary medicinal products.

content/uploads/2023/05/Fluoropolymer\_Letter\_5\_January\_2023\_PFAS\_REACH\_Restriction\_2.pdf?\_gl=1\*op0p0s \*\_up\*MQ..\*\_ga\*MTQwMDMzNTMyMS4xNzQxMTgzODI0\*\_ga\_LHKW7QXY7J\*MTc0MTE4MzgyMy4xLjAuMTc0MT E4MzgyMy4wLjAuMTYxNDg4MzMxOQ.

<sup>&</sup>lt;sup>4</sup> <u>https://fluoropolymers.eu/wp-content/uploads/2023/06/List-of-commercially-available-fluoropolymers.pdf</u>.
<sup>5</sup>In their final report on the Regulatory management option analysis for fluoropolymers, the Fluoropolymers Group (FPG) of PlasticsEurope writes: "*FPs are not mobile in the environment given their negligible solubility and have been demonstrated to have no systemic toxicity and no bio accumulative. While FPs may meet the REACH definition to be considered persistent, they do not present a hazard to biota or the environment. A full restriction would put at risk key applications that are necessary to ensure competitiveness and achieving ambitious EU Green Deal goals, not to mention resulting risks by losing key functionalities that FPs play in ensuring safety and protection in industry and consumer applications." (p6).* 

<sup>&</sup>lt;sup>6</sup> <u>https://fluoropolymers.eu/wp-content/uploads/2023/09/FPG-DRAFT-REACH-Restriction-Consultation-Response\_FINAL.pdf</u>.

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representatives stress their ability to regulate emissions through responsible manufacturing practices and life cycle management.<sup>7</sup>

A big concern with PFAS in general, and in particular with fluoropolymers, relates to their production and disposal.<sup>8</sup>

The restriction dossier reports that in the European Economic Area (EEA), there are over 61 000 installations that may emit C6 fluorochemicals and polymers containing C6 side-chains, and over 100 000 possible PFAS point sources of emission from product manufacturing/PFAS processing.<sup>9</sup>

In relation to fluoropolymers specifically, research from the restriction proposal shows for instance that application of fluoropolymer coatings, an important PFAS application method in many sectors, could lead to significant emissions from product manufacturing sites.<sup>10</sup>

The production of many fluoropolymers requires the use of PFAS as surfactants or as monomers, which causes releases to the environment during manufacture. It is the production of fluoropolymers that first alerted the global scientific community in 1992 to PFAS hazards, and it is today the cause of many pollution hot spots across Europe.<sup>11</sup> In 2023 researchers showed how a wide array of additional hazardous chemicals are used, formed and emitted to air and water during the production of fluoropolymers.<sup>12</sup> The application of fluoropolymers in many articles and industry sectors, from electronics to medical equipment or textiles, can also lead to emissions from a high diversity of product manufacturing sites despite little information being available on the magnitude of this potential pollution.

The waste management of fluoropolymers, whether through incineration, landfilling or recycling, poses similar concerns.<sup>13</sup> At the Chemours site in the Netherlands for example, indirect PFAS emissions via waste were 11 times higher than direct discharges from the production processes to water.<sup>14</sup>

Aware of this evidence, PlasticsEurope's Fluoropolymers Group (FPG) has claimed that fluoropolymer producers can implement best available techniques in manufacturing, environmental emissions management, and beyond.<sup>15</sup> They argue that existing regulatory frameworks—such as the Industrial Emissions Directive (IED), the Waste Framework Directive (WFD), and the Occupational Health and Safety Directive (OHS)—combined with the implementation at site of safe manufacturing and end-of-life risk management practices, are sufficient to effectively control PFAS emissions during PFAS production

<sup>15</sup> https://fluoropolymers.eu/wp-content/uploads/2023/12/6.-Fluoropolymers\_Product\_Group\_-

\_RMOA\_September\_2021.pdf.

<sup>&</sup>lt;sup>7</sup> <u>https://fluoropolymers.eu/fluoropolymers/</u>.

<sup>&</sup>lt;sup>8</sup> https://pubs.acs.org/doi/10.1021/acs.est.0c03244.

<sup>&</sup>lt;sup>9</sup> ECHA, 2019c; Goldenman et al., 2019.

<sup>&</sup>lt;sup>10</sup> Annex XV proposal for a PFAS restriction, p. 40: "although processes are likely closed, some PFAS (micropowder) emissions might occur that are not accounted for in ERCs."

<sup>&</sup>lt;sup>11</sup> https://www.sciencedirect.com/science/article/pii/S0045653518324706?via%3Dihub.

<sup>&</sup>lt;sup>12</sup> Dalmijn et al. (2023) Emission inventory of PFASs and other fluorinated organic substances for the fluoropolymer production industry in Europe. Environmental Science Processes & Impacts. Royal Society of Chemistry.

<sup>&</sup>lt;sup>13</sup> See EEB article summarizing the scientific information about fluoropolymers: "In landfills, PFASs are not destroyed and will eventually enter the environment via leachate and air while contributing to releases of PFAS microplastics. When incinerated, fluoropolymers are not fully destroyed and can decompose to produce highly persistent 'smaller' PFAS substances such as Trifluoroacetic acids (TFA) and other compounds. TFA is highly persistent and potentially reprotoxic substance, that is the dominant PFAS found in Germany's drinking water." <sup>14</sup> (ILT, 2018; Tweede Kamer, 2019), referenced in <u>Annex XV proposal for a PFAS</u> restriction, p. 39.



and waste management – instead of a ban. <sup>16</sup> PFAS manufacturers such as Chemours firmly state that fluoropolymers *"can be made and used safely",* across the entire life cycle of these chemicals.<sup>17</sup> To the question *"is it dangerous for me to live near a site that makes or uses fluorochemistries?",* 3M confidently replies: *"fluorochemistries can be safely and responsibly manufactured. All around the world, 3M is investing in technologies that will help reduce our environmental footprint, including through technologies that capture fluorochemistries and prevent them from entering the environment.".<sup>18</sup>* 

ECHA's latest progress update on the restriction proposal for PFAS suggests that such a narrative is already triggering discussions as to whether a restriction is indeed the best risk management option to deal with PFAS.<sup>19</sup>

Can we rely on emission control alone to stop PFAS pollution? Are existing industrial emissions regulations stringent and comprehensive enough to provide a high level of protection—comparable to the safeguards promised by the REACH restriction?

### 1. What does *restricting* PFAS under REACH mean?

The REACH Regulation enables authorities to restrict chemicals considered to pose an 'unacceptable risk' to health and/or the environment.<sup>20</sup> The restriction regime is one of the risk management options under REACH that aims to serve its primary objective of health and environmental protection. The General Court of the EU made clear that a restriction under REACH is "*often the most effective measure*" to deal with chemical pollution issues posed by persistent chemicals like PFAS which may not be remedied otherwise.<sup>21</sup> As opposed to regulatory frameworks aimed at reducing emissions, a restriction aims to prevent all further emissions, by cutting pollution at its source.

Restrictions set conditions for the production, placing on the market and use of most harmful substances. These usually include a ban or ban with derogations, but other measures can be included, such as reporting requirements or measures to control emissions. For example, the restriction of intentionally-added microplastics includes instructions for use and disposal for certain sectors using microplastics, as well as a requirement for manufacturers and industrial downstream users to estimate and report their own emissions.<sup>22</sup>

The Member States who proposed a restriction of PFAS aim to drastically reduce the risk posed by PFAS – and that, in their view, can only be done by preventing future use of PFAS, and hence potential further releases. What they have proposed is a ban on the production and use of PFAS, including derogations for the sectors which need time to transition. Extra conditions are suggested in some cases, in particular for exempted uses – for example reporting requirements are proposed for derogations with a

<sup>&</sup>lt;sup>16</sup> <u>https://fluoropolymers.eu/wp-content/uploads/2023/08/FPG-DRAFT-REACH-Restriction-Consultation-Response\_FINAL.pdf</u>.

<sup>&</sup>lt;sup>17</sup> https://www.chemours.com/en/sustainability/sustainability-safety/our-commitment-to-pfas-stewardship.

<sup>&</sup>lt;sup>18</sup> https://pfas.3m.com/present-manufacturing-and-the-evolution-of-science.

<sup>&</sup>lt;sup>19</sup> <u>https://echa.europa.eu/documents/10162/67348133/pfas\_status\_update\_report\_en.pdf/fc30b694-cfb1-e9ed-7897-d9f3e4ef9ab7?t=1732088416751</u>.

<sup>&</sup>lt;sup>20</sup> Article 68, REACH.

<sup>&</sup>lt;sup>21</sup> General Court of the EU, Case T-226/18, Global Silicones Council, Para. 170.

<sup>&</sup>lt;sup>22</sup> <u>https://eur-lex.europa.eu/eli/reg/2023/2055/oj</u>.



duration of 13.5 years. <sup>23</sup> In some sectors, replacing a ban by specific risk management measures, is also being discussed.<sup>24</sup>

The PFAS proposal considers that a ban is the most adequate risk management option to deal with PFAS. However it also makes clear that complementary action under other regulatory frameworks, including water, food, industrial emissions and waste, is key to ensure minimum releases into the environment and related exposure, in particular for the uses which might continue to be allowed in the future, until they have transitioned to safer alternatives.<sup>25</sup>

### 2. PFAS emission control in the context of the Industrial and Livestock Rearing Emissions Directive (IED)

The Industrial Emissions and Livestock Rearing Emissions Directive (IED) is the main instrument in the EU regulating emissions into air, water and soil from large industrial installations. Even though they both intend to prevent negative effects on health and/or the environment, its main objective is different from the objective pursued by REACH. It is to prevent, or where not practicable, reduce emissions from those large installations into the environment with a view to achieve a high level of protection of human health and the environment.<sup>26</sup> The IED framework therefore assumes that emission control is 1) sufficient and effective to manage an identified risk, and 2) feasible, i.e. practicable and enforceable.

While the IED has been in place since 2010, the Directive was recently revised leading to the adoption of IED 2.0, which entered into force in May 2024. EU Member States have until July 2026 to transpose the new rules into their legal system.

The IED is a crucial legal framework when we think about PFAS because many large installations are involved in PFAS production, waste treatment or product manufacturing involving PFAS. This regulation is however limited in its potential to contribute meaningfully to prevent PFAS, for a number of reasons, which we set out in more detail below:

- ➔ First of all, it has a limited scope which means it does not cover all manufacturing activities involving PFAS;
- ➔ Second, it lacks emission limit values for PFAS;
- 3. Third, its monitoring and reporting requirements are largely insufficient; and
  - ➔ Fourth, the newly added environmental management system and chemicals inventory may only partly support an effective reduction of PFAS emissions.

#### Not all PFAS activities covered by the scope of the Directive

Industrial installations falling under the scope of the IED require a permit in order to operate. PFAS emissions may be relevant for a great variety of installations engaging in the industrial activities covered by the IED – subject to the applicable thresholds, such as:

<sup>&</sup>lt;sup>23</sup> <u>Annex XV proposal for a PFAS restriction</u>, p. 12.

<sup>&</sup>lt;sup>24</sup> See recent updates to the PFAS restriction Background document and Annex E of the Annex XV dossier.

<sup>&</sup>lt;sup>25</sup> Annex XV proposal for a PFAS restriction, p. 69.

<sup>&</sup>lt;sup>26</sup> Article 1, IED.

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- Chemicals production on an industrial scale<sup>27</sup> including the manufacturing of PFAS as such, including fluoropolymers
- Production of plant protection products or of biocides on an industrial scale<sup>28</sup>
- Production of pharmaceutical products including intermediates on an industrial scale<sup>29</sup>
- Surface treatment of metals or plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30m2<sup>30</sup>
- Production of pulp; paper or card board (with a production capacity exceeding 20 tonnes per day) and wooden panels (with a production capacity exceeding 600m3 per day)<sup>31</sup>
- Pre-treatment or dyeing of textile fibres or textiles where the treatment capacity exceeds 10 tonnes per day<sup>32</sup>
- Tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day<sup>33</sup>
- Common waste water treatment from the chemical industry, waste treatment and waste incineration
- Manufacture of batteries with a production capacity of 15 000 tonnes of battery cells or more per year<sup>34</sup>

For those activities in scope, the IED sets out the main requirements for permitting, on the basis of which national permitting authorities then set permit conditions for the specific installations. Notably, permits must include emission limit values and monitoring and reporting requirements. Under the revised IED, installations will also need to put into place an environmental management system.

However, some industrial installations may never fall under the scope of the IED although they emit PFAS, for instance if the activity they engage in is not covered by the IED at all (such as, the production of ski waxes) or if they do not meet the IED thresholds (e.g. in terms of production volume or treatment capacity). In any case, it is clear that the IED with a total coverage of around 37,000 industrial installations<sup>35</sup> does not extend to the thousands of industrial sites that manufacture PFAS (including over 61 000 installations that may emit C6 fluorochemicals and polymers containing C6 side-chains), and over 100 000 possible PFAS point sources of emission from product manufacturing/PFAS processing, as identified by the EEA.<sup>36</sup>

#### PFAS emissions only partly be prevented by emission limit values

Emission limit values describe the concentration and/or level of an emission which may not be exceeded during a certain period of time.<sup>37</sup> The use of emission limit values, in almost all cases, assumes and therefore accepts (or even permits) a certain level of emissions. While it may in theory be possible to set an emission limit value at zero, this is not the practice of the permitting authorities. That matters when it comes to persistent chemicals like PFAS as every PFAS emissions poses a risk to the environment or

- <sup>29</sup> 2010 IED, Annex I, point 4.5.
- <sup>30</sup> 2010 IED, Annex I, point 2.6.
- <sup>31</sup> 2010 IED, Annex I, point 6.1.
- <sup>32</sup> 2010 IED, Annex I, point 6.2.

<sup>34</sup> 2024 IED, Annex I, point 2.7.

<sup>37</sup> 2010 IED, Article 3(5).

<sup>&</sup>lt;sup>27</sup> 2010 IED, Annex I Part 4.

<sup>&</sup>lt;sup>28</sup> 2010 IED, Annex I, point 4.4.

<sup>&</sup>lt;sup>33</sup> 2010 IED, Annex I, point 6.3.

<sup>&</sup>lt;sup>35</sup> Industrial and Livestock Rearing Emissions Directive (IED 2.0) - European Commission

<sup>&</sup>lt;sup>36</sup> ECHA, 2019c; Goldenman et al., 2019.



health. Emissions limit values could never constitute an adequate alternative to an outright manufacturing PFAS ban – because they would still mean that some PFASs continue to be emitted in the environment.

Furthermore, the IED - even in its revised version - fails to put into place obligatory and sufficiently strict emission limit values for PFAS. IED permits need to include emission limit values for pollutants falling in one of two categories. The first category is based on a set list of pollutants<sup>38</sup>, which does not extend to the entire PFAS group. Instead, only a few PFAS, such as PFOS<sup>39</sup> and PFAS that are identified as carcinogenic, mutagenic or reprotoxic substances<sup>40</sup>, or as persistent and bioaccumulative toxic substances<sup>41</sup> are included. Notably, short chain PFAS, which may be just as harmful, if not more compared to the long-chain versions, are missing from this list.<sup>42</sup>

The second category of emission limit values concerns <u>other polluting substances likely to be emitted</u> from the installation concerned in significant quantities, having regard to their nature, hazardousness and their potential to transfer pollution.<sup>43</sup> The Court of Justice of the European Union concluded that it may only be permissible for pollutants with a negligible effect on human health and the environment to not be regulated by emission limit values.<sup>44</sup> While PFAS should be included on this basis, emission limit values only have to be set if PFAS are emitted "in significant quantities", although minor emissions may already be tremendous for environment and human health. Moreover, conducting the relevant assessments and deciding on the inclusion (or not) of PFAS would fall to the member states and their permitting authorities, giving them a broad discretion.

**In practice, this means that no emission limit values for PFAS are set**. Recently, the Federal Environmental Ministry of Germany in a letter to RIWA-Rijn, an association of river water companies in 2024 excluded categorically the possibility of nationally set PFAS emission limit values in Germany.

The shortcomings in law and practice to set PFAS emission limit values are exacerbated by a lack of consideration of PFAS in the reference documents for best available techniques (BREFs) and best available techniques conclusions (BAT conclusions).

The BREFs are an outcome of the 'Sevilla process', an exchange of information between EU member states, industry representatives, environmental NGOs and the Commission.<sup>45</sup> The main, operative part of the BREFs is called the BAT conclusions. BAT conclusions are adopted for specific categories of installations and include, amongst others, information on emission levels associated with the best available techniques (BAT-AELs), which are usually indicated in ranges. Permitting authorities must then set emission limit values for the specific installation in the permit which do not exceed the emission levels associated with the best available techniques.<sup>46</sup> At the time of writing, none of the BAT conclusions contained any emission levels associated with the best available techniques requiring a prevention or

<sup>&</sup>lt;sup>38</sup> The list of pollutants was included in Annex II of the 2010 IED. Following the IED revision, it is now included in Annex II of the European Pollutant Release and Transfer Register (Regulation (EC) No 166/2006).

<sup>&</sup>lt;sup>39</sup> 2010 IED Annex II refers in point 13 to Annex X of Water Framework Directive on priority hazardous substances, which includes PFOS.

<sup>&</sup>lt;sup>40</sup> 2010 IED, Annex II, water pollutants point 4.

<sup>&</sup>lt;sup>41</sup> 2010 IED, Annex II, water pollutants point 5.

<sup>42</sup> https://pubmed.ncbi.nlm.nih.gov/32087313/.

<sup>&</sup>lt;sup>43</sup> 2010 IED, Art. 14(1)(a) and 2024 IED, Art. 14(1)(a).

<sup>44</sup> CJEU judgment in C-626/22, para. 114.

<sup>&</sup>lt;sup>45</sup> 2010 IED, Article 13.

<sup>&</sup>lt;sup>46</sup> 2010 IED, Art. 15(3) and 2024 IED, Art. 15(3).



reduction of PFAS emissions.<sup>47</sup> As a consequence, the key change in the revised IED that the "strictest achievable" emission limit values considering the entire range of emission levels in the BAT conclusions shall be set is irrelevant in the context of PFAS.<sup>48</sup> In the absence of relevant BAT conclusions, permitting authorities would still be obliged to set emission limit values for pollutants falling under one of the two categories mentioned above, but they are much less likely to do so in practice.

The evaluation of the 2010 IED already identified the need to better address the risks of chemicals use in IED installations and, as a consequence, the European Chemicals Agency (ECHA) was given a formal role in the Sevilla process.<sup>49</sup> Nonetheless even if a decision was made to address PFAS through BAT conclusions, there would be a significant time lag: the adoption of BREFs through the Sevilla process may take up to 4 years according to the revised IED.<sup>50</sup> Member States' authorities would then be granted an additional 4 years to reconsider and, where relevant, update conditions of existing permits to align them with the new BAT conclusions.<sup>51</sup>

In the best case, it would therefore take 8 years for PFAS emission limit values to be included in IED permits. Yet, even this would not guarantee any noticeable change in real PFAS emissions: PFAS emissions would need to be comprehensively monitored and reported (see section below), authorities would need to detect an emission limit value exceedance and take enforcement action. However, as acknowledged in the text of the IED itself, *"imposed penalties are deemed in many cases too low to truly have a deterrent effect on illegal behaviours*".<sup>52</sup>

#### Monitoring and reporting largely insufficient

While the IED provides some basic principles with regards to monitoring and reporting, the details of the substantive monitoring and reporting obligations is left to the permitting authorities. Some BREFs further specify monitoring on PFAS: for example, the BREF on Waste Treatment mentions some PFAS but only includes measures regarding monitoring and inventories. It states that installations should monitor PFOA and PFOS emissions to water every six months, only where these are identified as relevant in a waste water inventory.<sup>53</sup>

With regard to reporting, the European Pollutant Release and Transfer Register (E-PRTR) and its recent replacement the Industrial Emissions Portal Regulation (IEPR) are also relevant for IED installations. Following the revision process, the IEPR now requires reporting on PFOA and PFOS emissions, but only beyond the high reporting threshold of 1 kg emitted per year. This requirement also fails to extend to the whole PFAS group, in particular fluoropolymers - most problematic during their manufacture. Annex II of the IEPR is currently subject to review and may be expanded to include further pollutants from the PFAS group. It would in any case remain limited to a reporting requirement.

<sup>&</sup>lt;sup>47</sup> For example, the <u>BAT conclusions for the Production of Large Volume Organic Chemicals</u> (2017) contains BAT-AELs for air pollutants (e.g. TVOC and formaldehyde from formaldehyde production; benzene and TVOC from phenol production) and water pollutants (copper, EDC, PCDD/F in EDC production), but none for PFAS. Even the more recently published <u>BREF for the Textiles Industry</u> (2023), which contains the most expansive considerations regarding PFAS to date, does not include any PFAS abatement measures.

<sup>48 2024</sup> IED, Art. 15(3).

<sup>&</sup>lt;sup>49</sup> 2024 IED, recital (20) and Art. 13(1).

<sup>&</sup>lt;sup>50</sup> 2024 IED, Art. 13(1).

<sup>&</sup>lt;sup>51</sup> 2024 IED, Art. 21(3).

<sup>&</sup>lt;sup>52</sup> 2024 IED, recital (50).

<sup>&</sup>lt;sup>53</sup> <u>Best Available Techniques (BAT) Reference Document for Waste Treatment Industrial Emissions Directive</u> <u>2010/75/EU Integrated Pollution Prevention and Control</u>, BAT 7.



As of now, **monitoring and reporting obligations on PFAS emissions under the IED and IEPR are not ambitious enough to provide a clear picture on actual emissions**. Strengthening these obligations would be a good starting point as it would provide an indirect incentive for operators to reduce their PFAS emissions. However mere monitoring and reporting – without a link to emission reduction or prevention obligations - remain hugely insufficient to address PFAS pollution.

## *Environmental management system and chemicals inventory only partly effective for PFAS prevention*

Under the revised IED, industrial operators need to prepare by July 2027 an environmental management system (EMS) per IED installation. This system must include measures to "*prevent or reduce the use or emissions of hazardous substances*".<sup>54</sup> As part of the EMS, operators will need to set up a chemicals inventory of hazardous substances present in or emitted from the installation as well as a risk assessment of their health and environment impacts, and substitution or reduction possibilities.<sup>55</sup> "*Special regard*" shall be given to substances fulfilling the criteria for substances of very high concern under Article 57 REACH, as well as chemicals subject to restrictions under REACH. This precision indicates clearly how REACH and IED must work together – a PFAS restriction would automatically trigger an obligation to include PFAS in the chemicals inventory.

While a chemicals inventory, in particular the assessment of substitution possibilities, constitutes a step in the right direction, it is not a sufficiently effective tool to reduce PFAS emissions. The EMS does not contain any quantified and enforceable prevention nor reduction target for the operators.

A good indication of what PFAS measures could be included in a best case scenario is provided by the BREF for the Textiles Industry. The Textiles BREF already identifies a chemicals management system as part of EMS and a chemicals inventory as a best available technique.<sup>56</sup> The only measure foreseen with regards to PFAS is a regular analysis of the substitution potential of PFAS with the aim to identify potentially new available and safer alternatives to its use.<sup>57</sup> Again, this is no clear nor enforceable reduction obligation. It moreover leaves wide discretion to the operators to define what "*available and safer alternative*" are, and the timeline of the analysis.

In addition, it is not clear what enforcement safeguards will be put in place. According to the revised IED, the EMS has to be audited in 2027 and every 3 years after that with, regard to its conformity and implementation. Yet there is no arrangement on how the audit outcome will be linked to national enforcement actions. The EMS and chemicals inventory are mainly a tool for self-regulation, but they are, on their own, largely insufficient to address significant PFAS emissions.

### 3. Other relevant emission control legislation

Beyond the IED framework, other regulations could be relevant to mitigate PFAS risks, notably in relation to workers or at the waste stage. PFAS manufacturers are also keen to promote voluntary initiatives, rather than binding regulation. The limited effectiveness of those regulations is however looked at below.

<sup>&</sup>lt;sup>54</sup> 2024 IED, Art. 14a(2)(a)(iii).

<sup>&</sup>lt;sup>55</sup> 2024 IED, Art. 14a(2)(d).

<sup>&</sup>lt;sup>56</sup> Best Available Techniques (BAT) Reference Document for the Textiles Industry, BAT 14 and 15.

<sup>&</sup>lt;sup>57</sup> <u>https://eippcb.jrc.ec.europa.eu/sites/default/files/2023-01/TXT\_BREF\_2023\_for\_publishing ISSN 1831-</u> 9424\_final\_1\_revised.pdf Best Available Techniques (BAT) Reference Document for the Textiles Industry, BAT 14.



#### Workers protection legislation

50% of recognised work-related diseases are linked to workplace exposure to hazardous chemicals. The highest blood contamination levels are found among workers at PFAS manufacturing sites.<sup>58</sup> Some occupations known to be exposed more to PFAS include fire fighters, chemical manufacturing workers, and ski wax technicians.<sup>59</sup> It has also been shown that occupational exposure to degradation products of fluoropolymers (PTFE notably) has led to severe toxic lung effects in workers.<sup>60</sup> The primary routes to PFAS exposure are inhalation, ingestion of dust and dermal uptake at the workplace.<sup>61</sup>

The European 'Occupational Health and Safety' (OHS) legislation sets rules to protect workers from safety and health risks in general, including from dangerous substances in the workplace. Important pieces of legislation within this framework include the Chemical Agents Directive<sup>62</sup>, the Carcinogens Directive<sup>63</sup>, and the directives on limit values<sup>64</sup>. Under this framework, employers must carry out a workplace risk assessment of all safety and health risks, including the risks from dangerous substances. They are also required to implement appropriate protection and prevention measures. Under Directive 2004/37/EC, the employer is required to implement specific measures to minimize workers' exposure to carcinogens, mutagens or reprotoxic substances, including hygiene measures and collective protection procedures, means for safe storage, drawing up plans to deal with emergencies likely to result in abnormally high exposure etc. Under this directive, workers would have to be protected against exposure to the few PFAS, such as PFOA, which have a CMR classification. However, most PFAS are not yet classified as such which means most would fall between the cracks. Similarly, for most PFAS no indicative occupational exposure limit value has been established in the context of the Chemicals Agents Directive.

There is at the moment no legislation that directly addresses the specific case of workers exposure to PFAS – which is extremely specific and would require adapted measures. Finally, while this framework obliges employers to prevent risks associated with their workers' exposure to certain chemicals including PFAS, it is highly difficult to monitor the implementation of such preventive measures.

#### Waste management

Although there is no precise data on expected PFAS emissions during the waste phase, the dossier submitters expect significant emissions, in particular from the continued use of polymeric PFAS.<sup>65</sup> Waste management is an important secondary source of PFAS emissions and is qualified in the restriction proposal as a "*cyclical problem, as current waste management approaches return either the original* 

<sup>65</sup> Restriction proposal, p. 158.

<sup>&</sup>lt;sup>58</sup> <u>https://echa.europa.eu/documents/10162/bc038c71-da3e-91a8-68c1-f52f8f0974dd</u>.

<sup>&</sup>lt;sup>59</sup> Olsen GW, Zobel LR [2007]. Assessment of lipid, hepatic, and thyroid parameters with serum perfluorooctanoate (PFOA) concentrations in fluorochemical production workers. International Archives of Occupational & Environmental Health, 81(2), 231-246.

<sup>&</sup>lt;sup>60</sup> <u>https://echa.europa.eu/documents/10162/1c480180-ece9-1bdd-1eb8-0f3f8e7c0c49</u>, p.31.

<sup>61</sup> De Silva et al., 2021; Fu et al., 2015.

<sup>&</sup>lt;sup>62</sup> Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC).

<sup>&</sup>lt;sup>63</sup> Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (Sixth individual Directive within the meaning of Article 16(1) of Council Directive 89/391/EEC) (codified version) (Text with EEA relevance).
<sup>64</sup> https://osha.europa.eu/en/legislation/directive/directive20191831-indicative-occupational-exposure-limit-values.



*PFASs or their degradation products to the environment*". Landfilling, wastewater treatment and incineration are the most relevant waste treatment methods. Recycling is hardly effective as PFAS can be difficult to remove from products and materials, and is thus likely to persist into the recycling process. Due to existing environmental stocks as well as technical stock (stock of PFASs in existing articles), PFAS-containing waste is expected to continue to be a source of exposure in the future.

Like other waste, PFAS waste is mostly regulated by the Waste Framework Directive (WFD)<sup>66</sup> which sets the basic requirements for handling waste in the EU as well as by other potentially relevant waste legislations, e.g. the Landfill Directive.

The primary objective of any waste policy in line with the WFD should be to minimise the negative effects of the generation and management of waste on human health and the environment. On that basis, authorities are required to ensure waste in general, but in particular dangerous waste, is managed under strict specifications, so that potential negative effects on human health or the environment are minimised.<sup>67</sup> Beyond specific requirements when it comes to managing waste, authorities are also required to set up waste prevention plans, in line with the EU waste hierarchy.<sup>68</sup> There are however big limitations to this framework when it comes to PFAS.

First, the lack of specific measures on PFAS makes less clear for authorities on how to effectively handle its waste. Notably, the WFD does not impose any specific legal obligation on recycling or fully destructing PFAS-containing waste.

Also, some PFAS containing waste may be classified as hazardous and therefore be subject to stricter requirements, when it comes to transport, storage, treatment, monitoring or even mixing with other waste.<sup>69</sup> However this will only apply to PFAS classified as hazardous under the CLP Regulation, e.g. PFOS or PFOA, which makes its scope relatively limited.<sup>70</sup> PFOS, PFOA and PFHxA are moreover already covered under the Persistent Organic Pollutants (POPs) Regulation, via its Annexes IV and V which set limits values for these chemicals in waste.<sup>71</sup>

The WFD in Article 9 (1) (i) also prescribes that MS should promote the reduction of substances of very high concern (SVHCs) in materials and products. They must notably ensure that suppliers of products provide the necessary information about chemicals and substances to relevant authorities and to consumers from 5 January 2021, as stated in the REACH Regulation. That, again, only applies to identified as SVHCs under REACH, and very few PFAS are considered as such for now.

Finally, the implementation of WFD also mostly relies on member states, and therefore suffers similar issues when it comes to ensuring a level playing field and effective enforcement.

Waste management requirements should be considered as necessary complement to a restriction to manage risks related to derogations. In particular, waste management requirements can be applied to

<sup>&</sup>lt;sup>66</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance).

<sup>&</sup>lt;sup>67</sup> Article 13, Waste Framework Directive.

<sup>&</sup>lt;sup>68</sup> The EU waste hierarchy prioritises preventing waste as the preferred option, and sending waste to landfill as a last resort.

<sup>&</sup>lt;sup>69</sup> Articles 18 and 35 Waste Framework Directive.

<sup>&</sup>lt;sup>70</sup> Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.

<sup>&</sup>lt;sup>71</sup> Annex XIV – see also: <u>https://www.consilium.europa.eu/en/press/press-releases/2022/06/21/council-and-parliament-agree-to-reduce-limit-values-for-the-presence-of-persistent-organic-pollutants-in-waste/.</u>

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control emissions from articles already in use. However, it could not on its own reduce the risks posed by the end of life of PFAS and PFAS containing products.

#### Self-regulation and voluntary industry initiatives

Industry claims that they can implement self-regulation in the form of responsible manufacturing. Scandals in the US like the BP Deepwater Horizon have yet shown how simply accepting assurances from industry to implement sufficiently protective standards is unwise, especially in economic sectors that are known to potentially cause severe, irreversible damages to the environment and health.

It is of course desirable that industry actors implement, to the best of their capacity and resources, measures to better control emissions at their site. This can and should be done today, with a view to already reduce, as much as possible, the levels of pollution. However, self-regulation is no regulation - and can never be trusted as a replacement for it.

The main issues lie not only in the discretion used to set applicable standards, which may not fully reflect the latest scientific knowledge or provide the highest level of protection, but also in the uncertainty surrounding their implementation. While some companies may adhere to the most stringent self-regulation standards, others may not, creating an uneven playing field and placing a disproportionate burden on businesses to act responsibly. Additionally, the lack of clear guidelines from PFAS manufacturers on what constitutes 'responsible manufacturing' and examples of how it is already implemented today - makes it challenging to assess their credibility and effectiveness in minimizing PFAS emissions and related harm.

Moreover, already within frameworks like REACH and the IED, non-compliance with existing rules is well-documented.<sup>72</sup> This raises the question of why self-regulation would lead to more responsible behavior. The OECD recognized in this respect that "*the voluntary risk reduction approaches taken by corporations have been effective measures to reduce emissions from manufacturing facilities and from product content. Such approaches need to be followed quickly by effective regulations to level the playing field.*"<sup>73</sup>

Finally, due to their inherently non-binding nature, voluntary initiatives alone deprive enforcement authorities of the power to sanction irresponsible behaviors. Compliance problems would be even harder to monitor by people other than enforcement authorities. Therefore, self-regulation can never be considered sufficient to govern an entire manufacturing sector.

## Conclusion

This briefing showed that EU legislation focusing on preventing industrial emissions cannot be relied upon as stand-alone regulation to minimize to a maximum extent the risk posed PFAS. Regulations pursue different objectives, they aim to solve diverse issues and rely on specific tools for implementation. On the one hand, the REACH restriction regime is the best tool to cut pollution at source from chemicals which cannot be safely managed, and for which the pollution is tied to too many negative effects for

<sup>72</sup> https://www.clientearth.org/latest/documents/catch-them-cause-you-can/.

<sup>&</sup>lt;sup>73</sup> p. 70, <u>https://www.oecd.org/en/publications/risk-reduction-approaches-for-per-and-polyfluoroalkyl-substances-pfass-a-cross-country-analysis\_ed861d08-en.html</u>.



health and the environment. The IED, and other relevant emission control frameworks, on the other hand are meant to simply control and limit emissions.

The problem with PFAS is that emissions can hardly be controlled and, when they are not, they lead to pollution that is not only irreversible but also highly uncertain when it comes to future societal impacts. In this situation, we have shown in our briefing that merely regulating industrial emissions does not constitute an adequate risk management of PFAS —at least not to the level of a REACH restriction. The challenges in monitoring and enforcing these regulations moreover undermine confidence in relying solely on them for ensuring effective oversight over PFAS pollution. In the absence of a comprehensive ban, as proposed under the REACH Regulation, these mechanisms remain insufficient for effectively controlling PFAS, notably fluoropolymers, induced pollution.

On that basis, and at this point in time, it is fair to conclude that emission control alone does not provide, on its own, a sufficient framework against PFAS pollution. It cannot replace a strict regulation of PFAS under REACH and should only be seen as a useful, even necessary complement.

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