EU PFAS restriction proposal: Umicore's position

Umicore supports a science-based approach to environmental concerns and risk mitigation/management.
PFAS is a large group of substances with different levels of hazard. Many of these substances are considered as polymers of low concern, such as the fluoropolymers. Fluoropolymers meet the OECD criteria[1] to be defined as 'polymers of low concern'. They verifiably do not pose a risk to human health or the environment as they do not dissolve or contaminate water, are not found in drinking water, and cannot enter or accumulate in a person's bloodstream.
A full ban of PFAS as proposed today is likely to harm Umicore's business related to addressing global challenges such as mobility transformation (global transition to carbon free mobility), growing need for sustainable advanced materials and circularity for critical metals Therefore, Umicore would like to request that the hazard profile of the different PFAS groups is considered when a prioritization of PFAS is included in the restriction, that the scope of the restriction is limited and that substances of low concern (e.g. fluoropolymers) are exempted from the restriction.
Moreover, the Restriction proposal insufficiently considers essential uses of PFAS, especially industrial uses of solid polymeric forms of PFAS with negligible environmental emission potential. We would like to raise four of these essential uses of PFAS, relevant for Umicore, where there are no suitable alternatives:

1. Certain classes of fluoropolymer (fluor elastomer and fluoroplastic) captured under the current Restriction proposal are used within items such as seals, gaskets and coatings within industrial processing equipment (reactors, pipe work, etc.) because their unique properties can withstand the extremely harsh conditions necessary for some operations, for example for precious metals refining, thereby maintaining the integrity of the equipment and ensuring the hazardous contents remain contained. The quantities of these fluoropolymers are modest and contained; environmental emissions from their use within processing equipment are expected to be zero.

   For more information about this use of PFAS, please refer to submissions 12b83bc9-c916-4457-ae74-e14ada23fa36 from European Precious Metals Federation (EPMF), 601a1b18-8b1b-4352-adb1-7e22a1050133 from IPA (International Platinum Association) and 36e0d537-152e-4721-88d1-a4d8e2923eeb from Cefic.

2. In the hydrogen value chain, fluoropolymers are used to manufacture proton exchange membranes (PEM) in PEM electrolysers and fuel cells, as binder materials in the electrodes, both anode and cathode, and as a component of the gas diffusion layers. Moreover, fluoropolymers are used for gaskets and sealings in most electrolyser and fuel cell types, and in parts of the transport and distribution system in valves. At end of life, the Platinum Group Metals contained in the membrane/electrode assemblies are recycled.
   With no substitute available today, the impact of an ill-considered ban on all PFAS would be to severely inhibit the manufacture and use of PEM fuel cells and electrolysers, because these technologies depend on gas-impermeable, chemically stable proton-conducting fluoropolymer membranes, which comprise fluoropolymers. Not only would a ban dangerously threaten the European hydrogen value chain industry, but it would also jeopardize the achievement of the EU Hydrogen Strategy, REPowerEU and of the Green Deal objectives.

[1] Data Analysis of the identification of correlations between polymer characteristics and potential for health or ecotoxicological concern, OECD 2009. https://www.oecd.org/env/ehs/risk-assessment/42081261.pdf

For more information about this use of PFAS, please refer to the submissions from Hydrogen Europe and Hydrogen Council.

3. PFAS can be present in recycling streams containing precious metals (including recycling of components from PEM Fuel Cells and Electrolysers). During the recycling process, there is a thermal treatment with temperatures above 1100°C, the temperature considered sufficient to decompose all the PFAS contained in the recycling stream. The PFAS are transformed into fluorine salts. These salts are collected into the flue gas and are safely disposed (or can potentially even be recycled as CaF2).
   Any limitation on the use of precious metals recycling streams containing PFAS will restrict precious metals recycling activities in Europe. Platinum Group Metals are categorized as critical raw materials, important to the EU's strategic ambitions.

   For more information about this use of PFAS, please refer to submissions 12b83bc9-c916-4457-ae74-e14ada23fa36 from EPMF and 601a1b18-8b1b-4352-adb1-7e22a1050133 from IPA.

4. Batteries have been identified by the European Commission as a strategic value chain. Batteries are a main enabler for the transition towards low-emission mobility, decarbonized energy generation and digitalization. As chemical resistance and tolerance to a high range of working temperatures are crucial for batteries, PFAS, mainly fluoropolymers (substances of low concern according to the OECD definition), are used in key components for all high performance and lithium battery technologies.
   We, as battery recycler, want to highlight that there are no emissions of PFAS during our battery recycling process. At Umicore, batteries are recycled by a combination of pyrometallurgical and hydrometallurgical processes. Through the pyrometallurgical method, the battery components are processed at high temperature (>1100 °C). This thermal reduction process allows the recuperation of the battery raw materials (Ni, Co, Cu, Li, …) for further hydrometallurgical refining. The very high temperature used with the pyrometallurgical method decomposes all the PFAS contained in the batteries. The PFAS are transformed into fluorine salts. These salts are collected into the flue gas and are safely disposed (or can potentially even be recycled as CaF2). The recycling process of Umicore uses the energy of the batteries themselves as energy source. Carbon is combusted and produces the heat necessary for the pyrometallurgical process. Therefore, no external energy is required for this process.
   A PFAS restriction without derogations and transition periods for batteries, and without review clauses, will limit the Green Deal and prevent Europe from achieving a net zero economy by 2050.

   For more information about this use of PFAS, please refer to submission bf0cd08d-0ff3-44c7-8df9-e33d0dc31396 from RECHARGE.

For these 4 applications/sectors, recycling contains the PFAS and no emission is expected. We want to underline that recycling processes enable the recovery of the fluorine, for instance in the form of calcium fluoride, made of fluorspar, or fluorite (which is on the EU's 2020 critical raw materials list). Calcium fluoride can then be used as a raw material input for further production of fluorine-containing material.

Umicore urges the Commission to adopt a proportionate approach to the regulation of PFAS that delivers the intended benefits without undermining the EU's own strategic, policy and environmental ambitions by unnecessarily disrupting critical industry applications of PFAS – where there are no suitable alternatives – in circumstances where the toxicity and risk to workers, and the environmental emissions both in use and at end-of-life, are expected to be negligible to zero.