FUTURE
STARTS
ABOVE

Towards a risk-based management of PFAS in the aerospace sector

BDLI position paper on the PFAS restriction procedure under REACH – DRAFT

BDLI – German Aerospace Industries Association

BDLI

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Core requirements

- **Continue to maintain applications of PFAS[1] for the aerospace sector to ensure necessary performance characteristics while meeting high product safety requirements.**
- **Remove the fluoropolymer group entirely from the restriction process**
- **Continue to pursue risk-based approach in a targeted manner – industry has proven to use hazardous substances safely (see analogy of chromates).**

Background

In 2023, European environmental authorities submitted a restriction proposal[2] for the group of PFAS chemicals to the European Chemicals Agency ECHA. Their use in the aerospace industry could be banned from the end of 2028. The European Chemicals Agency ECHA is currently evaluating various sector-specific, time-limited exemptions. The ongoing process is already leading to considerable planning uncertainty for companies, further investment freezes and product discontinuations as well as supply chain disruptions.

Excerpt from the coalition agreement[3] between the CDU, CSU and SPD:

"We will make Germany the world's most innovative chemical, pharmaceutical and biotechnology location. Together with the federal states, companies and trade unions, we will develop a Chemicals Agenda 2045. We reject a total ban on groups of substances. We are committed to a balanced European regulatory framework with a risk-based approach to chemicals policy, for example REACH."

Argumentation

The aerospace sector is fully aware of the criticality of the PFAS issue (keyword "forever chemicals") for humans and the environment, but recognizes in the current restriction procedure with an intended total ban of the universal PFAS group a departure from the previous targeted and risk-based approach under REACH.

From our sector's point of view, the first step is to generally and immediately remove fluoropolymers from the restriction process. This one PFAS substance group is used in aerospace technology before all other PFAS in many applications due to its highly specific properties and is isolated from humans and the environment during the use phase. A comprehensive impact analysis by the Aerospace, Security and Defence Industries Association of Europe ASD[4] concludes that fluoropolymers make up the majority of all products and components affected by the PFAS restriction proposal in our sector.

In practice, around 3,500 clearly identified PFAS substances are used. A commercial aircraft contains up to 1 million components. Of these, more than 100,000 drawing parts may contain PFAS. Due to their unique properties, such as long service life, high temperature resistance and chemical resistance, good electrical insulation with low weight and the fulfillment of essential safety aspects, there are currently and for the foreseeable future no alternatives to these substances, even though manufacturers and suppliers are working intensively on substitutions.

Fluoropolymers are used in bearings, sealing rings (O-rings) and cable insulation, among other things. Even future aerospace applications, such as fuel cells, cannot be realized without the use of fluoropolymers for the proton exchange membrane from today's perspective.

Safe handling of hazardous substances in the aerospace industry

Where no alternatives are available today, the use of many PFAS substances remains mandatory for the aerospace industry. We support the risk- and substance-related use of hazardous substances, combined with a high level of protection for people and the environment, **as has been established in**

1 Per- and polyfluorinated alkyl substances (PFAS) are an extensive group of industrial chemicals, also known in the public domain as "forever chemicals".

2 Intended restriction on the manufacture, placing on the market and use of PFAS, ↗ registry of intentions.

3 ↗ www.koalitionsvertrag2025.de

4 ↗ ASD Europe, Chemicals & Hazardous Materials.

the area of chromates requiring approval. The surface protection of aircraft is an example of how a controlled risk and substance-based approach can help to ensure the protection of people and the environment without compromising the airworthiness and long service life of the products.

During the production phase, extensive safety precautions were taken for employees and measures were put in place, such as the installation of emission filters.

To ensure the effectiveness of the protective measures, annual measurements and monitoring are carried out and checked by the authorities. Hazardous waste generated during production is treated safely by authorized waste disposal companies.

At the same time, the use phase of aircraft is characterized by strict regulations that contribute to uniform flight safety in civil aviation. Aircraft operations such as repair, maintenance, operation and disposal may only be carried out by certified and approved companies, thus ensuring that the environmental impact and health risks are controlled.

Among other things, these regulatory components contribute to the circular economy and create a safety zone during the production and use phase.

At the same time, manufacturers and suppliers have launched substitution projects to develop alternatives with comparable technical performance. Reductions in the technical performance of alternative materials are not permitted under the aviation-specific regulations of the EU Aviation Safety Agency. These would also be unacceptable from the perspective of sustainable use over a long product lifetime in terms of a positive contribution to resource conservation.

The risk and substance-related approach to the use of chromates stands for safety and can be seen as a future analogous procedure for the application of the PFAS group in order to develop sustainable solutions in parallel.

Specifics of the space industry

The space sector only uses PFAS-based materials in very small quantities. At the same time, the benefits of space industry for the economy, science, security and society are immense. A blanket restriction without differentiated exemptions would jeopardize key future projects - from earth observation and climate research to telecommunications and navigation. In addition, space sector is the basis for security-relevant applications, for example in military situational awareness, the resilience of critical infrastructures or independent data collection.

Different requirements also apply to space industry in terms of the circular economy. These products are “designed to be sent into space” - they leave the earth. As a rule, they are not returned to or disposed of on Earth. Space components therefore differ fundamentally from other industrial products in terms of their potential environmental impact. The emission of PFAS into the terrestrial environment by space products is virtually impossible - this must be recognized and taken into account in the procedure.

Summary

A blanket restriction on PFAS chemicals without differentiated exemptions would jeopardize key aerospace projects. Such a step would not only undermine Europe’s technological sovereignty and security interests, but would also massively restrict our international competitiveness.

The aerospace industry therefore supports the approach formulated in the coalition agreement, which rejects a total ban on groups of substances. Instead, consideration should be given to sequential bans/restrictions that protect consumers from hazards. The aerospace industry has proven that it can also handle hazardous substances safely for people and the environment on the grounds of risk-based hazard management. Nevertheless, the goal remains to replace hazardous substances with alternative solutions through further research and to remove them from the material cycle.

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About the aerospace industry

The German aerospace industry, represented by the BDLI e. V., is an integral part of the European aerospace industry. As a key strategic industry, the sector plays a decisive role in the technological and economic sovereignty of the European Union. It promotes economic growth, technological innovation and international connectivity. In Germany alone, the industry contributes significantly to GDP with over 120,000 employees and an annual turnover of over 52 billion euros.

Over the decades, Europe has worked together with industry, member states and the European Union to achieve a leading position in the aerospace industry. This must be maintained and further expanded in the face of international competition. In view of far-reaching technological, political and industrial changes, this requires sustained investment in research and innovation.

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