

PFAS cause significant risks to human health and environment. These substances spread far from the source of contamination and can be found in all environmental compartments, in polar bears and human tissues, like blood and mother milk. The Memorandum on hand focuses on managing the legacy of PFAS in the environment, and more specifically in soils and groundwater. COMMON FORUM therefore calls for a dialogue in policy developments, highlights the need of applied research and promotes practical and viable solutions.

KEY MESSAGES AND REQUIREMENTS

COMMON FORUM seeks to highlight a set of key messages on PFAS from the perspective of a network dealing with contaminated land management. In addressing relevant interfaces, we also anticipate serious problems on PFAS-polluted soil and materials linked to circular economy. Likely consequences are a state of emergency in landfilling and remediation capacities, unbearable restrictions of spatial planning and construction works, all in all finally topping up to a tremendous economic burden. From an "end of pipe experts" perspective, we call to define tasks that help to solve a pending urgent transnational problem.

PFAS as a substance group involve particular physical-chemical properties limiting remediation possibilities severely. Since two decades risk-based land management has been our commonly mainstreamed European approach to address contamination. As for solving PFAS pollution problems, understanding and conceptualising related risks it seems to meet its ends.

Existing uncertainties can only be resolved if Europe joins forces to tackle a number of pending questions and fill numerous research gaps. **Key requirements are:**

- a) **Establishing high standard risk assessment** based on latest human and ecotoxicological basic data, reliable measuring data, a trustworthy set of generalized PFAS-substances and verified and standardised analytical methods.
- b) **Refining and validating risk-based modelling by biomonitoring** studies to foresee severe effects on potential receptors, which allow an update of threshold value derivation for soil, excavated materials and groundwater.
- c) **Coordinating transnational development of remediation methods and integrated management approaches**, which are suitable for a long-lasting safe removal or capture, but at least, for minimising PFAS transport in the soil-(ground)water-sediment system. In this course, progress in practices for emergency measures is essential.
- d) **Alternatives to active technical rehabilitation measures, must be developed and integrated into policy frames and legislation.** These management options have to offer practical solutions for situations where technical feasibility, viability and proportionality of measures are not given. This will apply in particular to large-scale diffuse pollution where already background levels involves risks for receptors.
- e) **A harmonisation of European and national regulatory approaches for soil, waste and groundwater** in order to address numerous interdependencies with an integrated environmental policy approach, for achieving effectively to minimise the spreading of PFAS within environment.

A promising way forward with regard to emerging pollutants and PFAS in particular, needs a joint effort to complement knowledge, evidence and concepts in managing natural resources. A substantiated PFAS Action Plan and funding opportunities for relevant research under the Horizon Europe Programme of the European Commission are steps into the right direction. However, the PFAS-example clearly shows that the reaction time to respond to new environmental hazards is simply much too long. When environmental threats get identified, it is crucial to act quickly and in a coordinated manner. To enhance networking and information exchange between policy domains, in particular with regard to chemicals, environmental and waste management is of eminent importance.

For 25 years COMMON FORUM is a European network of contaminated land policy makers, regulators and scientific advisors. Its missions are:

- Being a platform for exchange of knowledge and expertise, for initiating and following-up of international projects among members,*
- Establishing a discussion platform on policy, research, technical and managerial concepts of contaminated land,*
- Offering an exchange of expertise to the other stakeholders, in particular via collaboration with existing European and international networks*

Due to our mission, this memorandum emphasises in particular the pressing need for managing PFAS contamination already present in soils, sediments and groundwater. Up to now, this legacy is not adequately dealt with, available technologies, common practices and legal approaches are hardly fit to meet this challenge. Therefore COMMON FORUM on Contaminated Land in Europe calls for a dialogue in policy developments and highlights the further need of applied research. A boost in improving our knowledge base and exchanging experiences will allow for adapting approaches to legacies caused by Contaminants of Emerging Concern. COMMON FORUM and its network members stand available to promote and incubate practicable and viable solutions by sharing future findings across Europe and pushing regulatory efforts.

The COMMON FORUM side paper on PFAS (see Annex 1) presents the state-of-play for countries and regions having responded to a COMMON FORUM survey and deliver additional information on PFAS drivers, pressures, state, impact and response. It becomes evident that the situation in Europe is very heterogeneous. Beside other problems, there exists mainly a lack of specific analytical and detection methods and methodological bases for the investigation, the assessment and for site-specific decisions in case of pollution. The effectiveness of available remediation technologies is very limited and actually, destruction of PFAS is economically feasible only for smaller quantities.

Why PFAS?

In the last decades, a large number of substances of very high concern (SVHC) have found their way into the environment. Per- and polyfluoroalkyl substances (PFAS with approx. 5000 substances) show a broad range of commercial applications (e.g. additives in tyres, textiles, plastics, coated papers, cartonnages, firefighting foams) and a strong environmental persistence. PFAS are causing serious human health and environmental risks. It remains difficult to define critical loads and set environmental quality standards, especially since regulation would be highly impacting land and soil management practices. Recent cases have shown the substances spread far from the source, in all environmental compartments and already in food products and drinking water. The ubiquity gets underpinned by the fact that background concentrations of PFOS and PFOA have been reported. The severity of the problem has been emphasized by a socioeconomic analysis of environmental and health impacts linked to the exposure to PFAS (Costs of inaction; Nordic Council of Ministers, 2019) as well as the recent proposal of the European Food Safety Authority to lower drastically the tolerable intake of PFOS and PFOA (EFSA, 2020).

On the one hand, stronger legal mechanisms to rule out hazardous chemicals from the product design phase are needed. Procedures like REACH and initiatives such as other European Chemicals Agency (ECHA) activities are indispensable for a preventive approach.

On the other hand, the legacy of pollution with emerging contaminants, in particular PFAS in soil and groundwater demands an active and curative approach. In order to limit exposure risks and to prevent further spreading in the environment, soil and groundwater contamination with PFAS needs to be adequately managed and remediated. Until now little policy emphasis has been given to this side of the story, and only a few international joint initiatives have been started addressing this topic. From a policy perspective, PFAS are candidates for future regulation at different levels, depending on comprehensive research on their ecotoxicity, potential health effects and public perception, and on monitoring data.