

International workshop for authorities on the assessment of risks of short-chain per- and polyfluoroalkyl substances (PFASs) – 24/25.10.2016 Berlin

Motivation for organizing the Workshop

The workshop was initiated by the German Environment Agency (UBA) to achieve a common understanding on concerns regarding environmental risk exhibited by short-chain PFASs. Furthermore, possible risk management options to minimize these risks were discussed. For long-chain PFASs, concerns have been identified due to their persistent, bioaccumulative and toxic properties. They are ubiquitously found both in samples from humans and the environment. This has led to risk reduction measures initiated by authorities and certain companies. As a reaction, a shift in the production and use towards PFASs with shorter perfluorinated alkyl chains can be observed. Short-chain PFASs are thus used as alternatives to long-chain PFASs, although they also have some properties of concern. Similar to long-chain PFASs, short-chain PFASs are used in a wide dispersive way, and are equally persistent. Thus, these chemicals are distributed in the environment ubiquitously due to their mobility. Already today, short-chain PFASs are increasingly detected in different environmental media, in remote places far from any obvious sources and in drinking water resources including ground water. Therefore, it is of importance to illustrate possible concerns of the not naturally occurring substances and adverse effects related to their presence in different environmental compartments in order to initiate regulatory measures, where needed.

Outline of the Workshop

Participants from six EU-Member State authorities responsible for the assessment of chemical risks (for consumers, workers and the environment), the EU-Commission (DG Environment), the European Chemicals Agency and a representative of Australia attended the meeting. The latest scientific findings on short-chain PFASs were presented by invited scientists, focusing on bioaccumulation potential in food chain and in humans, enrichment in plants and mobility. Based on this information a discussion on concerns and possible regulatory actions took place.

Outcome of the Workshop: concerns identified for short-chain PFASs

As a general outcome, the participants shared the opinion that short-chain PFASs represent a substance group that gives reason for concern. A key component for that was the fact that the strong fluorine-carbon bond leads to an extreme persistence of these molecules in the environment. The combination of this extreme persistency with high mobility lead to further concerns:

- Short-chain PFASs can occur in raw water and can therefore be found in drinking water.
- Short-chain PFASs cannot be eliminated from water with the commonly applied measures. Furthermore, modern technologies are ineffective in removing short-chain PFASs from water.
- Ubiquitous presence of short-chain PFASs in aquatic systems might lead to continuous background exposure to short-chain PFASs.
- Short-chain PFASs can be taken up by plants and have already been found in edible crops.
- Exposure via food might lead to increased exposure, due to the consumption of water rich edible plant (parts) contaminated with short-chain PFASs.
- Short-chain PFASs show a relevance in organisms:
 - toxicokinetic experiments illustrate bioavailability of short-chain PFASs.
 - protein interactions are similar to that of long-chain PFASs.
 - the half-lives of short-chain PFASs enable sufficient exposure durations for provoking adverse effects in organism.
- Exposure via background concentrations of short-chain PFASs may affect sensible population groups or development stages.
- Due to the prognosticated increasing use of short-chain PFASs (based on substitution of long-chain PFASs), background concentrations might reach toxic levels.
- Effects cannot be sufficiently predicted and experimental data are not suited to describe potential long term effects with adequate clarity.

In conclusion, the participants shared the opinion that the intrinsic properties and the known exposure profile of short-chain PFASs would justify to initiate EU-wide risk management measures for short-chain PFASs.