Perfluorooctane sulfonic acid (PFOS), its salts and perfluorooctane sulfonyl fluoride (PFOSF)

Highlights of the effectiveness evaluation 2017

Background Information

PFOS, its salts and PFOSF are listed in Annex B to the Stockholm Convention with specific exemptions and acceptable purposes for production and use in accordance with Part III of Annex B. Production and use shall be eliminated by all Parties except those that have notified the secretariat of the intention to produce and/or use them for specific exemptions and acceptable purposes.

Acceptable purposes and specific exemptions for production and use of PFOS, its salts and PFOSF according to Part I of Annex B to the Stockholm Convention

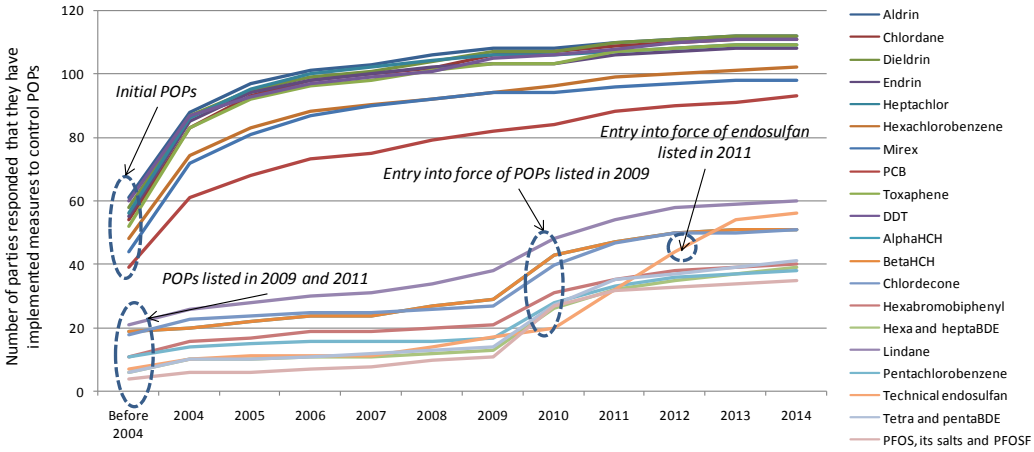
Acceptable purposes	Specific exemptions
• Photo-imaging • Photoresist and anti-reflective coatings for semiconductors • Etching agent for compound semiconductors and ceramic filters • Aviation hydraulic fluids • Metal plating (hard metal plating) only in closed-loop systems • Certain medical devices (such as ethylene tetrafluoroethylene copolymer (ETFE) layers and radio opaque ETFE production, in-vitro diagnostic medical devices, and CCD colour filters) • Fire fighting foam • Insect baits for control of leaf-cutting ants from Atta spp. and Acromyrmex spp.	• Photo masks in the semiconductor and liquid crystal display (LCD) industries • Metal plating (hard metal plating) • Metal plating (decorative plating) • Electric and electronic parts for some colour printers and colour copy machines • Insecticides for control of red imported fire ants and termites • Chemically driven oil production ***Expired exemptions*** • ***Carpets*** • ***Leather and apparel*** • ***Textiles and upholstery*** • ***Paper and packaging*** • ***Coatings and coating additives*** • ***Rubber and plastics***

The following guidance documents and guidelines have been developed to assist parties in meeting their obligations under the Convention (http://chm.pops.int/Implementation/IndustrialPOPs/PFOS/Guidance/tabid/5225/Default.aspx):

- Guidance on alternatives to PFOS, its salts, PFOSF and their related chemicals;
- Revised draft guidance on best available techniques and best environmental practices for the use of PFOS and related chemicals listed under the Stockholm Convention;
- Revised draft guidance for the inventory of PFOS and related chemicals listed under the Stockholm Convention;
- Technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with PFOS, its salts and PFOSF.

Measures to reduce and/or eliminate releases

The listing of PFOS, its salts and PFOSF in 2009, along with other eight chemicals, triggered an increase in the number of parties having implemented measures, including legal and administrative, to control the production, import, export and use of these chemicals.



(UNEP/POPS/COP.8/INF/40)

Due to stricter legislation and control worldwide, there has been a significant drop in the production and use of PFOS, its salts and PFOSF from 2003 until today. The most important global producer phased out the production of PFOS, its salts and PFOSF in 2003. Uncertainty however remains as to the current levels of use taking into account the limited quantitative data available.

Providing a global overview of the production and use of PFOS, its salts and PFOSF is currently challenging. Data gaps are notable in developing country Parties and Parties with economies in transition. A majority of Parties are in the process of updating their NIPs, through which initial information on the national situation may become available. Identification of products that contain PFOS is difficult, particularly in imported products. This makes it more difficult to follow the substance through its life cycle to its end of life (waste) management, and potential release to the environment.

Changes in concentrations measured in the environment and in human populations

Information on changes over time in concentrations of PFOS is limited. In regions where changes over time can be assessed, air concentrations of PFOS seem to show increases over the 1990s, then leveling off and decreasing in the early 2000s .

Although PFOS is measured at low concentrations in human milk and better detected in human blood, there is good correlation between measurement results in these two matrices. A strong association between blood and milk concentrations of PFOS has been reported. quantifiable concentrations of perfluorinated chemicals have been detected in human milk. PFOS was quantified in 67% of the milk samples analyzed, with concentrations ranging from <4 to 65 ng/L. The fact that PFOS could be detected at values above LOQ for the majority of samples shows that contamination and human exposure to PFOS in all regions where results are available is of concern.

PFOS concentrations in blood of mothers, pregnant women and women of childbearing age in the circumpolar countries (AMAP 2009)

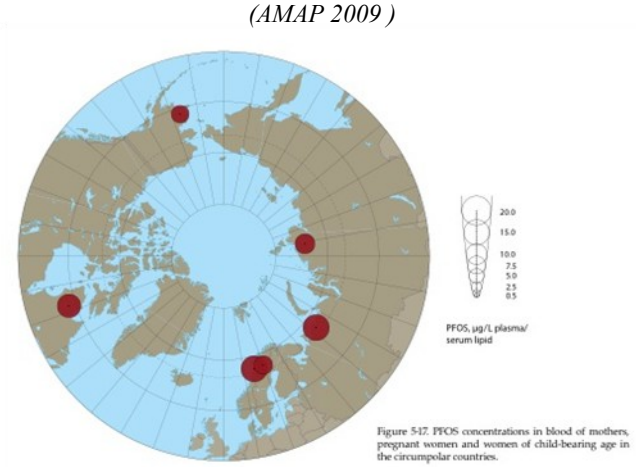


Figure 5-17. PFOS concentrations in blood of mothers, pregnant women and women of child-bearing age in the circumpolar countries.

In the Arctic, the geographical distribution of human exposure to PFOS provides no clear spatial distribution or distinct differences between countries. In addition, sample size for most countries is limited, reducing the availability of firm conclusions. However, concentrations reported from Sweden, Alaska, and Naryan Mar (Russia) seem slightly lower than the majority of the other concentrations. The highest mean concentration (20.6 µg/L plasma) was reported among men from Nunavik. Initial time trend data for women of childbearing age in Nunavik suggest PFOS concentrations are decreasing; this is in contrast to recent data from Nuuk, Greenland that indicate an increasing concentration between 1997 and 2006 .

As to PFOS concentrations in water, temporal trend information is currently very limited. Differences in sampling locations and in detection limits currently preclude any robust assessment of trends of PFOS concentrations in water .

Conclusions and recommendations of the effectiveness evaluation committee

While a significant drop in the production and use of PFOS, its salts and PFOSF has clearly been achieved, limited information and data prevent this evaluation from providing a comprehensive global overview of production and use.

Phasing out the use of PFOS, its salts and PFOSF is challenging due to the paucity of information on alternative substances or methods, the lack of financial resources and insufficient technical capacity.

***Recommendation**: Parties that are developing countries and countries with economies in transition need to build their capacity to identify and collect information on PFOS, its salts and PFOSF, to strengthen the legislation and/or regulations to manage the chemicals throughout their lifecycles, and to introduce safer, effective and affordable alternatives to PFOS, its salts and PFOSF.*

For more information, please see documents UNEP/POPS/COP.8/22/Add.1 and UNEP/POPS/COP.8/INF/40