

Risk Management Activities on Perfluorinated Chemicals

Dr. Ana Corado
U.S. Environmental Protection Agency
Chemical issues learning center
CSD-19

U.S. Environmental Protection Agency



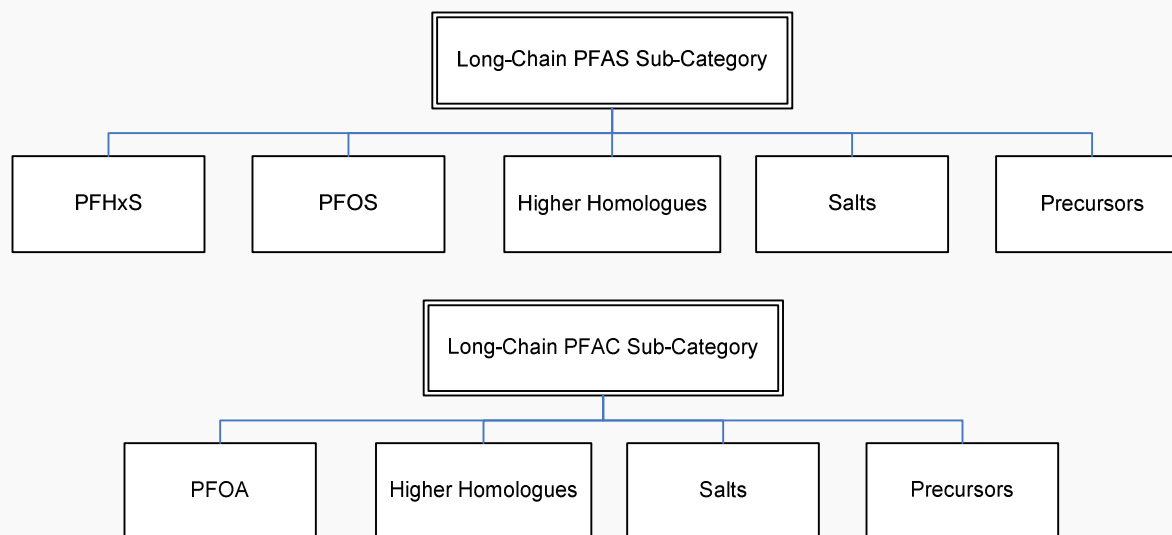
Outline

- **What chemicals are considered perfluorinated chemicals?**
 - Description of the family of chemicals included
 - Uses
- **Why is U.S. EPA concerned about perfluorinated chemicals?**
 - Health advisory in the U.S.
- **What action is U.S. EPA taking?**
- **What action is the international community taking?**
 - Stockholm Convention
 - OECD
 - Strategic Approach to International Chemicals Management (SAICM)



Long-Chain Perfluorinated Chemicals

Perfluoroalkyl sulfonates (PFAS) and
Perfluoroalkyl carboxylates (PFAC)





Uses

- PFCs impart valuable properties, including fire resistance and oil, stain, grease, and water repellency.
- For example, they are used to provide non-stick surfaces on cookware and waterproof, breathable membranes for clothing, and are used in many industry segments, including the aerospace, automotive, building/construction, chemical processing, electronics, semiconductors, and textile industries.
- However, consumer products made with fluoropolymers and fluorinated telomers, including Teflon® and other trademark products, are not PFOA. Rather, some of them may contain trace amounts of PFOA and other related perfluorinated chemicals as impurities.



Concerns

Found world-wide in the environment, wildlife, and humans.

- Bioaccumulative in wildlife and humans.
- Persistent in the environment.
- Toxic to laboratory animals and wildlife, producing reproductive, developmental, and systemic effects in laboratory tests.
- To date, significant adverse effects have not been found in the general human population. However, given the long half-life of these chemicals in humans (years), it can reasonably be anticipated that continued exposure could increase body burdens to levels that would result in adverse outcomes.



U.S. Provisional Health Advisory

- January 9, 2009, Provisional Health Advisories (PHA) for PFOA and PFOS to protect against potential risk from exposure through drinking water.
- Serve as informal technical guidance to assist Federal, State and local officials in response to an urgent or rapidly developing drinking water contamination. They reflect reasonable, health-based hazard concentrations above which action should be taken to reduce exposure to these contaminants in drinking water.
- The PHA values are 0.4 µg/L for PFOA and 0.2 µg/L for PFOS. These values may be used to assess contamination and exposure at other sites.
- Are not to be construed as legally enforceable federal standards and are subject to change as new information becomes available.



U.S. EPA Action

Background on Regulation and Risk Management

- Regulation of PFOS (<http://www.epa.gov/oppt/pfoa/pubs/pfas.html>)
 - US industry undertook voluntary actions to phase out production of PFOS between 2000 to 2002
 - Use restriction rules, allowing exclusions for certain uses (photographic/imaging industry, semiconductor industry, aviation industry; also allowed use as an intermediate to produce other chemical substances to be used solely for the uses listed; use as an etchant, and one chemical is allowed for metal plating and finishing uses)
- 2010/15 PFOA Stewardship Program (<http://www.epa.gov/oppt/pfoa/pubs/stewardship/index.html>)
 - Commit to achieve, no later than 2010, 95% reduction in *both* facility emissions to all media *and* product content of PFOA, PFOA precursor chemicals, and related higher homologue chemicals, measured from a year 2000 baseline
 - Commit to working toward elimination of PFOA, PFOA precursors, and related higher homologue chemicals from emissions and products by 2015



U.S. EPA Action

Background on Regulation and Risk Management

- New Chemicals Review of Alternatives for PFOA and Related Chemicals (<http://www.epa.gov/oppt/pfoa/pubs/stewardship/index.html>)
 - Over 150 alternatives of various types have been received and reviewed
 - Amendment of Polymer Exemption Rule (<http://edocket.access.gpo.gov/2010/pdf/2010-1477.pdf>)
 - Amends the polymer exemption rule to exclude from eligibility for the exemption polymers containing certain perfluoroalkyl moieties; polymers containing these substances will need to go through the PMN review process
 - Current Activities
 - Long-Chain Perfluorinated Chemicals Action Plan : actions to adequately address unreasonable risk from LCPFCs
- (<http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/pfcs.html>)



International Efforts

- Stockholm Convention on Persistent Organic Pollutants (POPs)
 - In May 2009, PFOS, its salts, and perfluorooctane sulfonyl fluoride (PFOSF) were added to Annex B, subjecting them to restrictions on production and use
- Organisation for Economic Co-operation and Development's (OECD)
 - *2010 Survey of Product Content and Environmental Release Information on PFCs*
- Strategic Approach to International Chemicals Management (SAICM)
 - In May 2009, during the International Conference on Chemicals Management (ICCM2), delegates agreed to consider the development of stewardship programs and regulatory approaches to reduce emissions and content of PFAC and PFAS chemicals in products and to work toward their elimination, where feasible



2010 OECD Survey

Reported uses of PFCs and PFC products AFFF agents / surfactants / surface protectants

- Manufacture of fluoropolymers
- Raw material for surface treatment agent
- Anti reflective coatings (ARCs) for photolithography processes
- Coatings / additives
- Etchants for Aluminium Surface active agents
- Gaskets / seals / membranes / cable insulations
- Tubing / pipe liners / cable insulation
- Impregnation of glass or plastic
- Ion Exchange
- Lubricants
- Water/oil repellent
- Treatment of industrial stream



2010 OECD Survey

Release of PFCs to Environment

- Seven companies (7/9) provided release information, not sufficient to provide a global view
- 38 perfluorinated chemicals were released to the environment or transferred offsite
- Majority (<225 tonnes) were disposed of by incineration, or reused or recycled, particularly for PFOA and related chemicals
- Of the total amount of all PFCs released to the environment
 - <9 tonnes were released to air with <2.2 t as fugitive release and approximately 9 tonnes as stack release
 - <7 tonnes to water, generally to local waterways
 - major proportion of environmental release was to landfills



Key Activities under SAICM

- PFC Web Portal: www.oecd.org/ehs/pfc
- Webinars and side-events on specific themes
 - Oct. 2010 « Recent PFC related activities »
 - March 2011 « 2009 PFC Survey »
 - April 2011 « PFCs alternatives »
 - Side-events at POPs COP (lunch time 28 April) and OEWG (August 2011)
- PFC Surveys on production and use of PFCs and their releases to the environment (2012)



Global PFC Group

- Need to establish a global group, given importance of countries outside OECD region in production and use of PFCs
- UNEP and OECD to serve as secretariat to « Global PFC Group »
- Open and informal group that operates through conference calls
- Efforts to include developing countries in the Group will be undertaken in coming weeks



Thank you!

OECD Portal on Perfluorinated Chemicals

www.oecd.org/ehs/pfc

Contact: ehscont@oecd.org

EPA website: www.epa.gov/oppt/pfoa

EPA Project Coordinators:

– Katherine Sleasman; 202-564-7716;

sleasman.katherine@epa.gov

– Toni Krasnic; 202-564-0984;

krasnic.toni@epa.gov