Perfluorochemicals & EPA

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Overview

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Current Status Summary

- Through the 2010/15 PFOA Stewardship Program, EPA and others have taken prudent action to reduce releases of PFCs to the environment, and to scrutinize new chemicals under development

- EPA and others are also conducting important studies that will significantly improve our understanding of these chemicals within the next few years

Current Status Summary

- EPA is still investigating these chemicals because
  - They remain in the environment and some can remain in people for a long time
  - Some PFCs cause developmental and other adverse effects in laboratory animals
  - For some PFCs, there's a narrow margin between the dose that causes mild effects and a dose that causes severe effects in animals
  - While we don't know what the adverse effect level would be in people, we believe it makes sense to limit future releases of these chemicals

Brief History of EPA's Investigation

- EPA's current inquiry began in late 1999
  - 3M submitted data on PFOS indicating unexpected toxicity in a reproductive study in rats, together with data on widespread presence in human blood and environment and long half-life in humans
- Industry undertook voluntary actions
  - 3M initiated voluntary production phaseout of PFOS, PFOA in 2000; completed by the end of 2002
  - Companies began to assess and reduce PFC emissions from manufacturing facilities
- EPA issued Significant New Use Rules (SNURs) in 2000 and 2002 to restrict the return of 88 PFOS-related chemicals phased out by 3M to the US market
  - SNURs allow only three specific, technically essential low volume, low exposure, low release uses to continue: 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
- Final SNUR for 183 perfluoroalkyl sulfonate chemicals was published in 2007
  - The SNUR continues to apply the 4 excluded uses from the previous SNURs and provides for two new exclusions for ongoing uses: seven chemicals are allowed for use as an etchant, and one chemical is allowed for metal plating and finishing uses

Brief History of EPA's Investigation

- EPA expanded inquiry to similar PFCs including PFOA, telomers, and related chemicals because of concerns for this class of chemicals

- EPA began an enforceable consent agreement (ECA) negotiation process in 2003 to obtain data on the sources of PFOA in the environment and the pathways leading to exposures
  - Signed two ECAs for incineration testing to determine whether incinerating telomer and fluoropolymer products could be a source
  - Signed two MOUs for monitoring near fluoropolymer facilities

- Discussions in the ECA process led to the creation of independent testing programs by EPA and industry to assess
  - The potential of telomers to degrade to PFOA in the environment
  - Whether fluoropolymer and telomer products could release PFOA as they age in use, potentially leading to exposures

PFOA Stewardship Program: Overview

- In January 2006, EPA invited eight major companies in the fluoropolymer and fluorotelomer industries to commit to a voluntary program with global goals

- Goals
  - 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

- Participating companies
  - Arkema, Asahi, Ciba, Clariant, Daikin, DuPont, 3M/Dyneon, Solvay Solexis
  - Submitted baseline year data on emissions and product content by 10/31/06; report annual progress toward goals each succeeding October
  - Report progress in terms of both US and global operations

PFOA Stewardship Program: Progress Reports

- All companies submitted their 1st progress reports on reductions in emissions and product content by 10/31/07
  - Report period: baseline year to end of 2006
- Program does not specify how goals are to be achieved
  - Corporate strategies included control/treatment technologies, process changes, product reformulation, new chemical development
- Significant reductions thus far put industry on target to meet the 95% reduction goal by 2010
  - 4 companies reported greater than 90% reductions of PFOA in U.S.
  - 5 companies reported greater than 74% reductions of PFOA outside U.S.
  - Additional reductions are anticipated in coming years

PFOA Stewardship Program: New Chemicals

- Trend toward C8 alternatives; to date, companies have submitted over fifty new chemical alternatives to EPA for review
- EPA incorporated information on PFOS, PFOA into new chemical reviews for related materials and substitute compounds
- Full toxicity and fate testing programs on new chemicals
  - Reviews typically consider decomposition products, fate, transport, bioaccumulation potential, toxicity, use patterns, potential exposures and releases
  - Consent Orders under TSCA §5(e) specify additional testing, other controls where necessary on new chemicals that make it through review

International Activities

- The US has shared data and issues on PFOS, PFOA, PFCs in global forums
- The US is encouraging other countries to consider programs similar to the US PFOA Stewardship Program
  - Need for parallel processes to coordinate introduction of safer alternatives globally
- Other international activities underway
  - OECD activities include a survey on production and use of PFOS, PFOA, and related chemicals; a hazard assessment on PFOA; and a November 2006 PFOA Workshop to identify ongoing activities and unmet data needs
  - Sweden nominated PFOS for inclusion in the Stockholm Convention and LRTAP POPs protocol; listing process is underway

Ongoing Research

- Government, Industry, Academic research programs, and others are underway to help provide missing information, especially
  - Sources and pathways of exposure
  - Toxicology and pharmacokinetics
- EPA ORD is conducting research in several areas, including
  - Telomer biodegradation research
  - Toxicology and pharmacokinetics
  - Analytical techniques development
  - Aged article analysis
- Data will contribute to the ongoing risk assessment process

Next Steps

- PFOA Stewardship Program and related voluntary activities will continue to reduce emissions and potential exposures to PFOA and related chemicals
- The Stewardship Program will serve as the umbrella for ongoing and new activities on PFOA and related chemicals in the US; US to encourage similar action in other countries
- Continued commitment to ongoing research; results expected to increase understanding over the next few years; research will feed into risk assessment process to direct further action as appropriate

Information Resources

- EPA website: www.epa.gov/oppt/pfoa
- PFOS, PFOA-related electronic dockets at www.regulations.gov
  - EPA-HQ-OPPT-2003-0012 (PFOA ECA Process)
  - EPA-HQ-OPPT-2002-0043 (PFOS SNURs)
  - EPA-HQ-OPPT-2005-0015 (Follow-up PFAS SNUR)
  - EPA-HQ-OPPT-2003-0071 (FP Incineration)
  - EPA-HQ-OPPT-2004-0001 (Telomer Incineration)
  - EPA-HQ-OPPT-2004-0112 (3M MOU)
  - EPA-HQ-OPPT-2004-0113 (DuPont MOU)
  - EPA-HQ-OPPT-2002-0051 (Polymer Exemption)
  - EPA-HQ-OPPT-2006-0621 (Stewardship Program)
- Non-regulatory AR-226 data repository of information on PFCs currently available on 20+ CD-ROM media from EPA OPPT Docket Office, oppt.ncic@epa.gov
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