



NICNAS Alert No.6

February 2007

This Alert updates NICNAS Alert No. 4 and should be read in conjunction with Alert No. 4.

Perfluorooctanoic Acid (PFOA) & Perfluorocarboxylic acid (PFCA)

Perfluorooctanoic acid (PFOA), or pentadecafluorooctanoic acid, is a fully fluorinated eight-carbon chain carboxylic acid (CAS Registry Number 335-67-1). PFOA is primarily a reactive intermediate, while its salts, such as ammonium perfluorooctanoate, are used as processing aids in the production of fluoropolymers and fluoroelastomers, and in other surfactant uses. Perfluorocarboxylic acid (PFCA) is a generic term used to describe any fully fluorinated carbon chain length carboxylic acid, including PFOA. For the purposes of this Alert, this group includes PFCA and PFCA-related substances with a fully fluorinated four or more carbon chain length.

Both PFOA and PFCA-related substances may be salts of PFOA/PFCA or polymers that contain PFOA/PFCA as a portion of the entire polymer. PFOA/PFCA-related substances also include their precursors, which are the chemicals that can break down to form PFOA/PFCA. For example, some residual monomer chemicals from the telomer manufacturing process such as telomer alcohols and telomer iodides may remain in the final product and break down into PFOA/PFCA. In addition, fluorotelomers may potentially degrade to PFOA/PFCA from their polymer backbones via metabolism or environmental degradation.

Australian Data

PFOA and related substances

In July 2006, NICNAS collected information on manufacture, importation and uses of perfluorinated chemicals including PFOA-related substances and products/mixtures containing these substances for the calendar years 2004 and 2005. Information provided to NICNAS indicates that:

- No PFOA related chemicals are manufactured in Australia.
- An antifoam product containing <10% of a PFOA-related chemical was imported in 2005 for use in a dyeing process with sulfur dyes. The total quantity imported was approximately 10 kg.
- A dedusting product for industrial use and a consumer paint product, both containing less than 100 ppm PFOA salt, were imported. The total volumes of PFOA salt in both products were 10 and 71 kg in 2004 and 2005, respectively. The concentrations of PFOA salt in these products were reduced to less than 10 ppm in 2006.
- PFOA could be present as an impurity in polytetrafluoroethylene (PTFE) products and in some fire-fighting foam products imported into Australia. These products also include industrial painting/coating products, and some wiring products. The concentrations of PFOA in these products are at trace levels ranging from parts per billion (ppb) to less than one part per million (ppm).

NICNAS will continue to monitor the importation and use of PFOA-related substances in Australia.

PFOA and related substances

The information collected for PFOA-related substances in July 2006 is likely to be incomplete, as the Call for Information did not specifically include the PFCAs group. Information obtained by NICNAS indicates that:

- No manufacture, importation or use of PFOA was reported.
- Two PFOA precursors were imported into Australia in 2005. One is a perfluorinated furan compound (0.25 kg) used as an analytical reagent. The other substance was a polymer containing a perfluoroalkylethyl ester moiety imported at 150 kg in 2005 and used to formulate coatings for wood boards of internal wall cladding.
- Eight products containing PFOA precursors were imported into Australia during 2004 and 2005. Five of them are water/oil repellent products used for textiles, carpets, and masonry/cement surfaces. The remaining three products are used for automotive painting, glass treatment and ink cartridges. These eight PFOA precursors included five perfluoroalkylethyl chemicals and three fluorinated acrylate polymers. The total volume of the eight products was up to 33,300 kg per annum. The concentration of PFOA precursors in the products ranged from <0.1% to 50%.

International Activities

- The USEPA provides regular updates on their activities for PFOA and fluorinated telomers to interested parties globally including NICNAS. The USEPA released a revised report *Draft risk assessment of the potential human health effects associated with exposure to perfluorooctanoic acid and its salts* in January 2005. On-going scientific investigations of PFOA and the potential sources and pathways of PFOA in the environment will be used to update the assessment. The investigations include studies to determine PFOA, the potential for generation of PFOA and characterization of release of PFOA from articles such as garments, household cookware, textiles and carpets.
- In December 2005, Health Canada and Environment Canada proposed temporary prohibitions on the introduction of four new polymers containing fluorinated carbon chains based on the toxicological effects of their breakdown products, perfluorocarboxylic acids (PFCAs). In February 2006, Environment Canada and Health Canada also published a position paper *Perfluorinated carboxylic acid (PFCAs) and precursors: A proposed action plan for assessment and management*.
- On January 25, 2006, USEPA invited fluoropolymer and telomer manufacturers to participate in a Global Stewardship Program on PFOA and related chemicals. The Stewardship Program requires voluntary corporate commitment to two goals:
 - (1) to commit to achieve, no later than 2010, a 95% reduction, measured from a year 2000 baseline, in *both*: facility emissions to all media of PFOA, precursor chemicals that can break down to PFOA, and related higher homologue chemicals, *and* product content levels of PFOA, precursor chemicals that can break down to PFOA, and related higher homologue chemicals;
 - (2) to commit to working toward the elimination of PFOA, PFOA precursors, and related higher homologue chemicals from emissions and products by five years thereafter, or no later than 2015.

NICNAS Advice

Because of concerns over PFOA, certain PFCAs and fluorinated telomers that may degrade to PFCA, NICNAS advises that:

- Industry should actively seek alternatives to PFOA and precursors that may degrade to PFOA and aim to phase out the use of these chemicals.
- Importers and users of these chemicals remain vigilant of the ongoing international activities regarding PFOA and related chemicals. Updates about these activities can be accessed from the NICNAS web site at www.nicnas.gov.au.
- Information on the safe use and handling of these chemicals be provided to all users in the relevant and most recent Material Safety Data Sheets (MSDSs) available from the suppliers of these chemicals.
- On completion of the present scientific investigation of PFOA and potential sources and pathways of PFOA in the environment, NICNAS will, if needed, make recommendations on appropriate regulatory activities.

How to contact NICNAS

If you want to find out more about these issues or have information on PFOA and PFCA substances in Australia, you can contact NICNAS at:

Ph: 1800 638 528

Fax: 02 8577 8888

Write to: GPO Box 58 Sydney NSW 2001 Australia

Information on assessment of chemicals by NICNAS is available at:
<http://www.nicnas.gov.au/about/ourapproach.htm>