



AFFF Update . . .

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Fire Fighting Foam Coalition

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FFFC Participates in Manchester Foam Conference

Members of the Fire Fighting Foam Coalition (FFFC) participated in an August 2002 conference in Manchester, England that focused primarily on environmental issues related to fire fighting foams. The conference, titled "Fire Fighting Foams and the Environment," was hosted by The Chief and Assistant Chief Fire Officers Association (CACFOA) of the UK and had about 130 participants from industry, government, and academia.

Steve Korzeniowski of DuPont presented the latest scientific information on telomer-based products, including the fluorosurfactants used in AFFF fire fighting agents. He discussed the scientific differences between the PFOS-based surfactants used in AFFFs that have been voluntarily phased out of production by 3M, and the telomer-based surfactants used in AFFFs that continue to be produced by companies such as Kidde, Ansul, and Buckeye. He outlined the progress and timing of the multi-year testing program being sponsored by the four global telomer manufacturers that focuses on toxicology, pharmacokinetics, and the environmental fate and effects of selected telomer-based products. This effort is the Telomer Research Program (TRP), which was started in August 2000. He also discussed recent actions by the U.S. Environmental Protection Agency (EPA) related to PFOS and PFOA.

Also included in the presentation was an overview of the objectives and activities of the Fire Fighting Foam Coalition (FFFC), an association of manufacturers, distributors, and users of AFFF fire fighting agents and their chemical components. FFFC represents AFFF industry interests on all issues related to the environmental acceptability of fire fighting foams. FFFC also helps to ensure that accurate information about PFOS alternatives, including telomer-based products, is disseminated to appropriate audiences.

Martial Pabon of Atofina presented information on the treatment of fluorinated and hydrocarbon surfactants in wastewater streams. After either training exercises or a real fire, wastewater from the spent fire fighting foams may be collected. Dr. Pabon's research is focused on the ability to remove, if desired, the fluorosurfactants from the collected wastewater after use of a fire fighting foam. The research involves the use of specific cartridges of activated carbon to absorb the fluorosurfactants. Results show that the low levels of fluorosurfactants in foam wastewater can be removed with activated carbon cartridges.

There were also presentations at the conference on the development of fluorosurfactant-free foam concentrates. One must be careful in interpreting this terminology since fluorosurfactant-free does not necessarily mean fluorine-free. Foam manufacturers continue to evaluate fluorine-free products, but it should be noted that efforts to date have not proven to yield working products with fire performance equal to film-forming foams. Such fluorine-free foams may provide an alternative to AFFF for some applications, but they are not currently able to provide the same level of fire suppression capability, flexibility, scope of usage, and independent validation.

Fluorine-free products have existed for many years, including high expansion, medium expansion, and basic protein foam concentrates. Although these products do not contain fluorosurfactants, their environmental profile related to biodegradation, acute toxicity, chemical oxygen demand (COD), and biochemical oxygen demand (BOD), is generally no better than fluorine-containing products and in many cases is not as environmentally friendly as AFFF. In addition, alternative products typically require higher application rates for control and extinguishment resulting in higher costs for water supplies, system installations, pumping systems, and ultimately for containment and disposal costs where required.

Fluorosurfactants contained in many modern AFFF solutions account for less than 0.1% of the solution. This is because the surfactants are extremely effective in

reducing surface tension and improving spreading over the fuel surface. Very little surfactant is needed to create a product that provides the highest level of fire performance and personnel safety of any foaming agent on the market today.

EPA Releases Revised Draft Hazard Assessment of PFOA

On October 17 EPA published a revised draft hazard assessment of PFOA (perfluorooctanoic acid) and its salts, which are mainly used as an industrial process aid in the manufacture of fluoropolymers. The updated draft assessment contains additional data including blood data from the U.S. population, monkey studies, epidemiology studies, and reproductive toxicity studies. The updated draft assessment does not classify PFOA as a PBT chemical (persistent, bioaccumulative, and toxic = PBT). EPA has initiated a priority review to help determine whether PFOA meets the criteria for action under section 4(f) of the Toxic Substances Control Act (TSCA), and has initiated a request for the Science Advisory Board (SAB) to review its preliminary risk assessment of PFOA.

The Relationship Between PFOA and AFFF

PFOA is sometimes mentioned in relation to AFFF because 3M's PFOS-based products, including their AFFF, also contained varying quantities of PFOA or PFOA-based products. In addition, one of the issues that is being investigated as part of the multi-year testing program is whether telomers can break down in the environment into PFOA or similar chemicals, and to what degree and under what conditions this might occur. Presented below are some important facts about the relationship between PFOA and telomer-based AFFF.

- Telomer-based AFFF agents are not made with PFOA and do not contain any PFOA-based products. PFOA is an eight-carbon molecule (C₈).
- Only a very small percentage (<5%) of the overall global production of telomers is used in the production of telomer-based AFFF agents.
- The majority (over 75%) of the fluorosurfactants used in telomer-based AFFF are derived from six-carbon molecules (C₆). We are not aware of any pathway for the C₆ fluorosurfactants used in AFFF to break down, under any circumstances, into PFOA.

For More information

The TRP and its members have focused their research efforts to better understand the ultimate fate and effects of their telomer based products. Their efforts have been published in the U.S. EPA's administrative record and have been discussed with many other global regulators and customers. One of the goals of the TRP and the FFFC is to ensure that correct information is presented to the marketplace. For more information on the TRP please contact Katie Smythe (703-413-1100, smythe@rand.org). For more information of the FFFC please contact Tom Cortina (703-524-6636, cortina@alcalde-fay.com)

DuPont Buys Atofina's Fluorosurfactant Business

DuPont recently announced the completion of the acquisition of the surface protection and fluoroadditives business assets of Atofina, the chemicals branch of French oil/energy conglomerate TotalFinaElf. With the completion of this acquisition, DuPont becomes the largest integrated producer of fluorotelomer-based specialty products for surface protection applications in North America and Europe. DuPont manufactures and markets surface protection finishes and specialty surfactants under the DuPont™ Teflon® and DuPont™ Zonyl® brands. DuPont will also offer a broadened product line with the addition of more than 40 new products - including products currently marketed under the Forafac® and Foraperle® brands.

As part of its strategy for growth as a leader in safety and protection offerings, the announcement that DuPont has acquired the fluorotelomer based business assets of Atofina expands DuPont's role in fire safety and protection technology. As a result of this acquisition, DuPont is now the largest supplier of fluorosurfactants for fire fighting agents.

"The Atofina acquisition gives us the opportunity to expand our safety and protection offerings to provide safe and effective fire fighting solutions for commercial and industrial fires," said Stephen H. Korzeniowski, DuPont Fluoroadditives global business leader. "We are acquiring not only a full line of fire fighting foam products, but also the technical experts in fire fighting technology that will help us bring innovative solutions to this market."

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