



AFFF Update . . .

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Fire Fighting Foam Coalition

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EPA Decides on Stewardship Approach for Telomer-based Products

The US Environmental Protection Agency (EPA) has decided to take a product stewardship approach to dealing with potential emissions of perfluorooctanoic acid (PFOA). This is good news for fire protection because it confirms FFFC's message of the last 5 years, that EPA is unlikely to ban or severely restrict the use of telomer-based products such as AFFF. Instead, EPA has asked manufacturers to reduce PFOA emissions from production facilities and PFOA product content levels. This is not expected to significantly impact the telomer-based fluorosurfactants used in AFFF because they are not made with PFOA.

3M Decision Leads to Speculation

In May 2000, 3M decided to end production of a line of products that included fire fighting foams because they contain and break down into perfluorooctyl sulfonate (PFOS), a chemical about which EPA has both environmental and toxicological concerns. PFOS-based products were produced by a unique process called electrochemical fluorination. 3M's decision did not have any direct impact on the production and availability of other AFFF agents because those agents contain fluorosurfactants produced by a telomerization process that are generally referred to as telomers. Telomer-based fluorosurfactants neither contain nor break down into PFOS.

Ever since 3M announced its decision to end production of AFFF there has been speculation, fueled by a variety of interest groups, that other AFFF agents would also eventually disappear. This speculation was based largely on the belief that telomer-based AFFF agents could break down in the environment into PFOA, and that EPA would eventually regulate sources of PFOA as they have for PFOS. In October 2003, however, an EPA workgroup determined that telomer-based AFFF is not likely to be a source of PFOA in the environment. EPA concluded that existing data "provided no evidence that these fluorosurfactants biodegrade into PFOA or its homologs..."

The decision of the EPA Telomer Technical Workgroup was based in part on the following information:

- Telomer-based AFFF agents are not made with PFOA and contain no PFOA-based products.
- PFOA is an eight-carbon molecule (C₈). The majority (over 80%) of the fluorosurfactants used in telomer-based AFFF are derived from six-carbon perfluoroalkyl molecules (C₆). There is no known pathway for the C₆ fluorosurfactants used in AFFF to break down into PFOA.

EPA PFOA Stewardship Program

PFOA is a processing aid in the manufacture of high molecular weight fluoropolymers that are used in products such as medical devices, semiconductors, cookware, and automotive parts. There can be potential emissions of PFOA from manufacturing facilities, from products made with PFOA, and from products that have the potential to break down in the environment into PFOA. EPA could have attempted to address these emissions through a regulation that would have restricted the use of fluoropolymer or telomer products. Instead, EPA will work with manufacturers to voluntarily reduce emissions of PFOA (plus precursors and related homologues).

On January 25, EPA invited fluoropolymer and telomer manufacturers to participate in a global stewardship program on PFOA and related chemicals. EPA is asking the manufacturers to make two commitments:

- Reduce by 95% by 2010 (based on a 2000 year baseline) facility emissions and product content levels of PFOA, precursor chemicals that can break down to PFOA, and related higher homologue chemicals.
- Commit to working towards elimination of PFOA, precursor chemicals that can break down to PFOA, and related higher homologue chemicals from emissions and products by 2015.

To date, the following companies have committed to participate in the EPA program: Asahi Glass, Clariant, Ciba, Daikin, DuPont, Solvay, and 3M/Dyneon.

Importance for AFFF

This program is expected to result in the reformulation of certain products that are made with or may contain trace elements of PFOA or related higher homologue chemicals. It is not expected to have any significant impact on the quality and performance of the telomer-based fluorosurfactants used in AFFF, as they are not made with PFOA and are not likely to break down into PFOA. However, this program is important for AFFF users because it signals that EPA intends to address telomer emissions through a voluntary product stewardship program rather than regulation. This means that telomer-based AFFF agents are likely to be available to serve critical fire protection and life safety applications for the foreseeable future.

EC Releases Proposed Directive on PFOS

The European Commission (EC) has released a proposal for a Directive relating to restrictions on the marketing and use of PFOS. The proposed Directive would require all countries of the European Union to prohibit from being placed on the market PFOS or new products containing PFOS in concentrations greater than or equal to 0.1%. It would not affect the use or sale of telomer-based AFFF agents because they do not contain PFOS.

FFFC is concerned about the Directive because it exempts PFOS-based fire fighting foams from the restrictions pending an assessment of the health and environmental risks of substitutes, which include telomer-based AFFF agents. This is opposite of the approach taken by the US EPA in its PFOS regulations and by the UK Department of Environment, Food, and Rural Affairs (DEFRA) in its draft PFOS risk reduction strategy.

Although EPA provided some exemptions to its PFOS restrictions for critical uses that had no substitutes, it did not exempt the production of new PFOS-based foams. EPA could have concluded that telomer-based foams provide a substitute that is equal in effectiveness to PFOS-based foams, but safer for the environment because they contain 30-60% less fluorine, do not contain PFOS, and are not likely to be a source of PFOA.

DEFRA had proposed not only to prohibit the production of new PFOS-based foams, but to require the removal from service of existing stocks of PFOS-based foams so that they would not end up being released to the environment. The DEFRA strategy calls for a 5-year exemption (delay) from the requirement to remove existing stocks from service pending an assessment of the safety and effectiveness of substitutes. It appears that the EC took the DEFRA exemption for existing stocks of PFOS-based foams and wrongly applied it to the production of new PFOS-based foams.

FFFC has been in contact with DEFRA and EPA about this discrepancy in the proposed EC Directive. We would urge AFFF users in Europe to work through their national fire protection associations to inform the EC that telomer-based AFFF agents provide a safe and effective substitute for PFOS-based foams.

Therefore, there is no need for the continued production or sale of PFOS-based foams in Europe.

FFFC Assists in Wastewater Treatment

Last year, FFFC was contacted by an oil refinery in Missouri that was looking for help in dealing with a wastewater disposal issue. The company had a fire at a bulk plant that resulted in 1.1 million gallons of wastewater being held in four retention ponds and six frac tanks. The wastewater contained gasoline, diesel fuel, and fire fighting foam agents used to extinguish the fire. The Missouri Department of Natural Resources had issued a Hazardous Substance Emergency Declaration requiring the characterization and removal/disposal of the wastewater.

FFFC put the company in touch with one its members, Martial Pabon of DuPont, who had done research on the use of activated carbon to treat water that contained fluorosurfactants similar to those used in AFFF. Based in part on the information provided by Dr. Pabon, the company successfully treated 1.1 million gallons of wastewater in 15 days using granular activated carbon (GAC) in a trailer-mounted system with two pressure vessels each containing 5,000 pounds of GAC. Dr. Pabon believes that it would be possible to perform similar operations in the future without having to pump the foam effluent by using a different type of activated carbon.

Buncefield Fire

There was a large fire last December at an oil depot in Buncefield, England, that resulted in 12 million liters of wastewater containing among other things, PFOS-based fire fighting foams. The fire and subsequent wastewater issue has drawn negative attention in both the national and trade press in the UK. One writer in a UK fire protection journal went so far as to ask in the title of his article whether the fire or the resulting runoff was a bigger threat. We find this notion to be ridiculous. As shown in the case outlined above, wastewater containing AFFF fluorosurfactants can be treated and disposed of without causing any significant harm to the environment.

Anytime there is a fire, especially at a large oil refinery or storage facility, there will be major clean-up issues. These include separating the finished products that were saved by extinguishing the fire, such as refined gasoline or diesel fuel, from the water and foams that were used to extinguish it. These also include cleaning up wastewater that will contain many toxic combustion byproducts from the fire. Removing and disposing of fire fighting foam agents is just another necessary step in the process.

Is this writer really suggesting that it would be better to let millions of gallons of oil burn, resulting in great harm to the environment, rather than extinguishing it as quickly as possible using the best available agents and dealing with the resulting clean up? ■