



Fire Fighting Foam Coalition

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FACT SHEET ON AFFF FIRE FIGHTING AGENTS

You may have heard recently about a potential environmental issue related to aqueous film forming foam (AFFF) fire fighting agents. You may have also heard that certain types of AFFF will no longer be manufactured in the future. The Fire Fighting Foam Coalition (FFFC) has produced this fact sheet to provide you with accurate, balanced information about this issue.

Fluorinated Surfactants

All AFFF fire fighting agents contain fluorinated surfactants. They are a key ingredient that provides AFFF with the required low surface tension (15 to 17 dynes/cm) and positive spreading coefficient that enables film formation on top of lighter fuels.

The chemicals used to produce fluorinated surfactants can be manufactured by different processes and have different chemical structures. The fluorinated surfactants used in AFFF are produced from fluorochemicals manufactured by two methods: electrochemical fluorination and telomerization.

Electrochemical Fluorination

The key fluorochemical raw material produced by electrochemical fluorination is perfluorooctane sulfonyl fluoride (POSF). POSF has been produced since the 1950s for the synthesis of fluorochemicals used in paper and packaging; textile, leather, and carpet treatment; industrial surfactants, additives, and coatings; and surfactants in fire fighting foam agents such as AFFF.

The degradation of POSF-derived fluorochemicals as well as the hydrolysis or neutralization of POSF results in the formation of perfluorooctyl sulfonate (PFOS). PFOS is currently a major focus of the U.S. EPA's regulatory activities.

PFOS – What are the issues?

EPA has published a hazard assessment (not a risk assessment) that categorizes PFOS as PBT:

P = persistent
B = bioaccumulative
T = toxic

PFOS has been found in the blood of workers handling the chemical, the general U.S. population, people in other developed countries, and in wildlife such as eagles, wild

birds, and fish. Levels detected in workers were as high as 12 parts per million (ppm) and levels detected in the general population were in the 30-50 parts per billion (ppb) range.

PFOS - How big a risk is it?

EPA does not believe that the current situation presents an imminent health risk to the general U.S. population, but EPA has concern for potential future risk if PFOS continues to be produced and released to the environment. EPA has questions and concerns about occupational exposures to PFOS.

PFOS - What is being done?

3M will voluntarily phaseout manufacture of POSF-derived fluorochemicals for use in performance products (which includes AFFF) by December 31, 2002. EPA has proposed a Significant New Use Rule (SNUR) that is intended to "close the door" on future manufacture and import of POSF-derived fluorochemicals as well as PFOS.

Impact of EPA's Actions

EPA's initial actions and 3M's phaseout apply only to PFOS and its derivatives. Telomer-based AFFF will continue to be produced.

EPA is currently assessing other perfluorinated chemicals like PFOA and related chemistries such as telomer products (see below).

Telomer-based AFFF does not contain PFOS or any other compound currently considered by regulatory agencies to be PBT. There is no known biological pathway by which telomer-based AFFF can be oxidized or metabolized into PFOS. Telomer-based AFFF agents contain 30-60% less fluorine than AFFF based on POSF-derived fluorosurfactants.

Perfluorooctanoic Acid (PFOA)

The predominant production of PFOA is also by the electrochemical fluorination process. EPA is currently assessing the hazard of PFOA and expects to publish a hazard assessment in the fourth quarter of 2001. PFOA is known to be persistent, and substantial toxicity data on PFOA exists in public literature and regulatory agency files. Telomer-based AFFF is not made from PFOA-based products.

Telomers

Telomers is a term used to describe the most common synthetic route for manufacturing perfluoroalkyl compounds that have straight chains of 6-16 carbons and are based on tetrafluoroethylene (TFE). The fluorochemical portion of telomer molecules is persistent, however, preliminary data on toxicity and bioaccumulation indicate that telomers behave very differently than PFOS.

EPA has concerns over the potential of telomers to break down in the environment.

In order to better understand the potential environmental effects of telomers, the major manufacturers have begun a voluntary research program, the results of which will be shared with EPA and others as information is developed.

EPA will be assessing the environmental hazard presented by telomers over the next few years based on existing data and new data generated by the TRP and elsewhere.

Telomer Research Program (TRP)

The TRP is a science-focused research consortium funded by global fluorotelomer manufacturers. The TRP is conducting a 2-3 year research program on their common raw material: Telomer 8-2 alcohol. The testing program includes studies on pharmacokinetics (how the compound is metabolized), environmental fate and effects (what does the compound break down into in the environment and what are the effects) and toxicity.

AFFF Manufacturers

What are AFFF manufacturers doing to address the environmental concerns about AFFF? AFFF manufacturers, in conjunction with fluorosurfactant manufacturers and telomer producers, have formed the Fire Fighting Foam Coalition (FFFC). The founding members of FFFC are Ansul, Atofina, Buckeye, Chemguard, DuPont, Dynax, and Kidde.

FFFC was formed to represent the AFFF industry's interests on all issues related to the environmental acceptability of fire fighting foams. The coalition provides a focal point for industry science reviews, development of industry positions, and interactions with the EPA and other relevant organizations.

FFFC will:

Support users of AFFF by serving as a single source for accurate, balanced information on environment related questions.

Establish a dialog with EPA and other regulatory authorities to ensure that accurate information about PFOS alternatives, including telomer-based products, is disseminated into the marketplace.

Participate in EPA's ongoing review of PFOA and telomers as they relate to AFFF.

Establish a dialog with DoD to ensure that the differences between AFFF agents are well understood.

Serve as a focal point for information on the development and approval of environmentally acceptable and effective alternatives.

FFFC Membership

Membership is open to any company or organization interested in AFFF-related issues including users, distributors, equipment manufacturers, agent manufacturers, surfactant manufacturers, and telomer producers. Membership and participation by AFFF users is encouraged.

For more information please contact:

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What is the Future of AFFF?

Regulation of AFFF production or use by EPA or other regulatory agencies is not currently being considered.

Telomer manufacturers have given no indication that they will stop production of telomers in the foreseeable future.

Telomer-based AFFF will continue to be produced for the foreseeable future.