



Aircraft rescue and firefighting requires the best foam available: AFFF.

Tom Cortina, Executive Director, Fire Fighting Foam Coalition, explains why.

# Move forward with AFFF

**T**he AFFF vs fluorine-free foam debate has continued in this Journal for almost 10 years and while it may make for interesting reading, there is almost no debate about which foam should be used for aircraft rescue and firefighting (ARFF).

In 2006, long after the environmental issues with fluorochemicals were fully identified, the Federal Aviation Administration instituted a requirement that all airports in the US must be equipped with AFFF that meets the US military specification – one of the most respected foam standards in the world. The reasons for this decision are simple. Testing has shown that, for a given application rate, no foam agent can equal the performance of AFFF for airport applications. A pool of jet fuel burning under a fuselage can cause structural burn-through of the aluminum aircraft skin within one to two minutes. Passenger survival in such cases is directly related to how fast the exposure fire is extinguished.

## Firefighter safety

Because of their effectiveness, AFFF agents allow for the use of non-aspirating discharge devices that provide two very important safety factors for firefighters.

First, since none of the available energy of the system needs to be used by an air aspirating venturi at the discharge device, the range from that device will be maximised. Distance from the fire is always key to firefighter safety.

Second, when using a variable pattern water fog nozzle, the firefighter has the ability to change his stream pattern to a full fog, for personnel protection against a thermal event.

An aircraft crash is one of the few fire situations that may necessitate people escaping through a foam covered fuel spill, or firefighters entering this dangerous environment to perform a rescue. Foam used for ARFF purposes must provide a blanket that will quickly reseal when disturbed.

All of the currently available fluorine-free foams rely upon having a good enough foam blanket in terms of expansion ratio and drainage rate to overcome the inherent problem of fuel contamination of the foam blanket. This may require the use of air aspirating branch pipes or nozzles in order to achieve the necessary level of foam quality, which is a step backwards for firefighter safety.

## ARFF foam training

All aviation regulatory agencies require initial and recurrent ARFF training for airport fire brigade personnel. Because of cost and environmental reasons, the majority of airports send their ARFF personnel to a regional fire training facility. To avoid air and ground contamination many ARFF training mockups use liquid

petroleum (LPG) or natural gas as a fuel, and don't train with actual foam.

One of the arguments made for the use of fluorine-free foams is that you can train with the actual foam, but it is our understanding that for cost reasons alone most airports would not train with the actual foam even if they could. Since fluorine-free foams are higher in aquatic toxicity and have a similar environmental profile related to biodegradation, chemical oxygen demand, and biochemical oxygen demand, we question whether it is any more environmentally responsible to allow uncontrolled release of these agents for training than it is for fluorosurfactant foams.

## Environmental update

Because of misleading statements related to the regulation and environmental impact of fluorosurfactant foams contained in recent articles, we feel compelled to present some basic facts about this issue:

- Telomer-based fluorosurfactant foams such as AFFF, FP, and FFFP are not banned from use in the UK. There is no pending legislation that we are aware of to regulate telomer-based fluorosurfactant foams in Europe, Canada, Japan, or the US.
- The C6-based fluorosurfactants that have been the predominant fluorochemicals used in telomer-based AFFF for the last 25 years are low in toxicity and not considered to be bioaccumulative or biopersistent. New products based on C6 telomer chemistry are being approved for production and use by regulatory agencies around the world because they are considered to be "safer" for the environment than C8 and above.
- AFFF agents containing C6 fluorosurfactants are not "less effective" than those containing C8 and do not result in "poor performance foams." The reason that C6 fluorosurfactants were used in telomer-based AFFF agents when they were first developed in the 1970s had nothing to do with the environment; it was because they were more effective than C8. There are AFFF agents that have been on the market for decades that contain greater than 95% C6 fluorosurfactants and meet the world's most challenging foam standards.

## Moving forward

Manufacturers have worked closely with environmental authorities over the past decade, and are currently doing the testing necessary to incorporate into their AFFF formulations the new fluorochemicals being developed to comply with global stewardship programs. This work will ensure that safe and effective AFFF agents will continue to be available to airport fire brigades.

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