



FoamLines

Combat Support Products
Division Of Cottrell Associates, Inc.



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Keep The Public In The Loop

Further to the Public Information Officer (PIO) talking points we discussed during our many training sessions, I put together the following for consideration regarding public information officer's response to media and citizens questions when it comes to your agencies use of firefighting foam. ***(See FD's operational notes B¹ - B⁴ on page 2)***

A. Environmental ... Fluorosurfactants, PFAS (PFOS and PFOA) Concerns

Environmental impact is proportional to foam concentrate used. Like anything else, too much of a good thing may end badly. According to US EPA there are as many as 3000 species of PFAS, Per-and polyfluoroalkyl substances. Two species: PFOS (perfluorooctanoic sulfonate) and PFOA (perfluorooctanoic acid) are linked to cancer and other health complications which are rightfully in the news. In this regard, long term health, environmental and residual impacts of accumulated chemical components of AFFF (Aqueous Film Forming Foam) concentrates containing PFOS and PFOA have been discovered in public water wells near such chemical manufacturing facilities and military or civilian firefighting training sites where years of continuous flammable liquid fire training activities have occurred.

It should be noted that modern AFFF and AR-AFFF firefighting foam compounds are formulated using a so called, non-bio-persistent, C6 (six carbon chain) telomer-fluorosurfactant. Telomer surfactants are less environmentally persistent than old long carbon chain (C8-12) electrochemical formulations and are, for now, the standard in the United States military and FAA controlled airports. Military and FAA changed to C6 formulations many years ago.

Today, small liquid fire events (class B fires) where AFFF and or AR-AFFF are used on a onetime basis, in my opinion, should not be cause public alarm as the quantities of fluorinated surfactants used at the largest of events is a micro-fraction of the whole event. Still, a matter of public concern and should not be taken lightly in view of recent health and environmental stories associated with legacy, electrochemically produced AFFF firefighting foams manufactured prior to 2003.

Appearance: Both class A & B firefighting foams present the same.

Class B foams are not generally used for class A ground cover fires or in structure firefighting. Such fires are fought with detergent based wetting/foaming agents, not unlike dish soap, which present the same as class B, AFFFs. Runoff from these events often cause public concern. Users, the media and the public must understand that Class A foams do not contain fluorinated surfactants (PFAS) and should not be painted with the same environmental brush as AFFF agents. Training foams are also detergent based and contain no PFAS compounds.

Not All Fire Foams Are Bad Actors

Alcohol resistant, fluorine free class B foams, known as AR-F3 or AR-SFFF (Synthetic Fluorine Free Foam) are available from National Foam. Universal F³ Green is a effective U.L. listed, alcohol resistant foam concentrate, approved for fire department use with fresh or sea water.

B. Fire Department Operations

Foams used for flammable liquid firefighting (class B fuels) is a mixture of 97 to 99 parts water and one to three parts foaming concentrate that produce a shaving cream-like lather or froth. Fire foam does what a frying pan cover does to smother a grease or cooking oil fire; it separates needed air from a burning liquid's fuel surface by way of a chemically treated microscopic film of water that drains from the foamy lather, much the same as beer or soda-pop loses its head. This foaming agent is known to firefighters as Aqueous Film Forming Foam (AFFF). The more popular alcohol resistant variant is known as AR-AFFF and what is used, on the whole, by most municipal firefighters in the region for dealing with class B liquid fires or un-ignited spills. Un-ignited fuel spills require a two to four-inch foam blanket (lid) on the spill to prevent explosive fuel vapor finding an ignition source as it drifts in air currents.

B¹. Firefighters mix water and foam concentrate with special devices known as foam proportioners. Such devices supply concentrate/water solutions to commonly used hand-held fire hose appliances at small un-ignited spills or fires. Larger cannon-type devices known as monitors are mounted on fire engines or mission specific foam firefighting trailers. The larger the appliance the further its reach. Long reach is required because liquid fuel fires release tremendous amounts of radiant and convected heat requiring firefighters to stand off at safe distance while delivering long range streams of class B firefighting foam. These devices can consume as much as thirty or more gallons of foam concentrate per minute.

B². Airport crash vehicles mix water and AFFF foam concentrate on the fly and can nimbly apply firefighting foam through turret monitors as they move around an aircraft involved in fire. On flat, non-porous surfaces foam extinguishes liquid spill fires pretty much on contact and is very short lived (fast draining) requiring frequent reapplication to maintain its air excluding blanket. Aircraft fire trainers now use a surrogate not unlike Mr. Bubble or high sudsing dish detergent rather than the real thing as was the case in years past.

B³. Fire Departments use a slow draining alcohol resistant version (AR-AFFF), which is slightly more complex and is specially formulated to deal with a wide range of liquid fuels found on rail, road tankers, marine transit or stored in large tanks throughout your state. Once extinguished, liquid fuels require foam be reapplied to maintain ignition or explosion security. This is often done every six to twenty minutes until the re-ignition threat has past. Here are the times where very large quantities of AFFF foam concentrate are likely to be discharged. I estimate about eighty percent or more of all class B fire foams are used at un-ignited events or recently extinguished spill fires and is where the lion's share of environmental consequence takes place.

B⁴. Effective fluorine free, (F3) alcohol resistant foams are now available from National Foam and should be seriously considered, regardless of local PFAS regulation for use at hazardous material spills and related fires. These new fluorine free foam compounds have residence times (quarter life) far exceeding those of the best AFFF and AR-AFFFs.

Technical Info - Refer to National Fire Protection Association Standards - NFPA 11 / NFPA 403 and or Underwriters Laboratories Standard for Foam Equipment and Liquid Concentrates - UL162 GFGV, not GOHR.

General fire dept. info. go to:

<http://www.cottrellassociates.com/combatsupportproducts/training-library.html>