

## Reply To The Commissioner On Training Foams

by: Jim Cottrell



For starters, Mr. Commissioner, I will not comment on the MSDS analysis of the class A training agent you identified in your note, but I can say that National Foam's Class A agents contain no alcohol, fluoro-surfactants or chemistry compounds identified as hazardous substances by the U.S. EPA or PA DEP (see attached MSD document).

National Foam manufacture (in PA) two clean AFFF simulator foam compounds, which are basically less expensive versions of our premium, Knockdown, Class A foam product, which is USDA (U.S. Forest Service) approved for use as a firefighting agent on federal lands or in National Parks. Generally, generic training foams such as ours are not so approved, which is why I prefer Knockdown.

The reason I'm more comfortable with using a U.S. Forest Service approved Class A foam is they are likely to exhibit low biological oxygen demands (BOD) when diluted with water at less than 1/2%. Moreover, USDA (U.S. Forest Service) approved agents go through quite a rigorous environmental evaluation.

BOD statistics are indicators of the foam solution's competition for available oxygen in a column of water over time.

When training or demonstrating foam firefighting appliances we use Knockdown at proportioning ratios of 1/4 to 3/10 % (99.75 to 99.7 parts water) In this dilute form, the foaming elements are still present in enough strength to give a foamy froth, but not enough to give the solution long lived expansion characteristics. When finished we NEVER rinse residual foam from the site with hose streams, as wash-down water used to clear the site often finds its way into storm drains, run-off ditches, retention ponds or rivers, where it will re-foam as it tumbles or agitates on its journey to where ever it ends up.

Using class A foam for class B (AFFF) training simulations at high water dilution rates insures that BOD of discharge solution is at its lowest - and more importantly, fluorinated surfactants are not un-necessarily discharged. In the case of Knockdown, BOD ranges from 1,070 mg/kg (1/4%) to 1,267 mg/kg (3/10%).

To put it in perspective, the BOD of raw concentrate (Knockdown) with no water dilution as would be right out of the shipping container is 389,000 mg/kg.

**When training, or in use at fires without regard for concentrate consumption and proportioning rates, run-off solution can have a significant impact on aquatic life in small, still bodies of water.**

Seeing training foam in a river is why we prefer training sites having open fields, where solution can drain into the earth. Solution draining into turf, sand and gravel is generally best with respect to preventing run-off from entering waterways. In the more than 20 years I've been training and demonstrating, I have never once been called for harming lawns and gardens. Generally I can get several small devices and quite a few 500 gpm deck gun applications done with 150 gallons of water mixed with five-gallons of Knockdown, with appliance metering valves set at 3%. If you are doing the math, that 30:1 ratio comes to 3/10 %. The 150 gallons is half a 330 gallon tote on one of our foam training trailers.



Another after training or firefighting issue can be where clouds of expanded foam starts drifting through the air, often into vehicle traffic lanes. This is usually caused by foam losing its water to the extent that the foam's skeleton is set adrift on air currents. This should be anticipated and controlled by misting water over the drained foam blanket... Don't confuse misting with washing down.

Another way of eliminating piled-up foam is to use a de-foaming agent. Foam disappears on contact. When demonstrating, training or when we need to manage tons of foam at our U.L. fire test field, we apply it directly on the finished foam as a mist from a garden-type pump sprayer. Cottrell Associates, Inc. / Combat Support Products division keeps de-foamer in stock. I'll have a sample with me when I visit the Academy on Monday.

Finally, training pump operators how to make foam is the single biggest waste of foam concentrate I know of. If engine drivers can suck water out of a pail, they can suck foam out of a pail. Substituting colored water for foam concentrate will eliminate the associated environmental impact completely.

**How to:**

Use a five to eight gallon, translucent, graduated training pail. You can get-em at a good agricultural supply store. Alternatively use an empty (square) Knockdown pail, it's translucent and graduated.

If using a 95 gpm eductor at 200 psi you will drink a little more than 3 gallons of water in a minute with meter set at 3%. At 6%, you will drink +6 gpm. A 125 eductor will use +3.6 gpm at 3%, and +7.2 gpm training water at 6%. Most eductors and onboard systems will drink 15% more water than the thickest alcohol resistant foam.

In the end, foam run-off into streams, ponds or rivers can and will catch the attention of the public and can be cause for concern to anyone, myself included. These sights often cause the alert of environmental enforcement authorities - and rightfully so.

When training or at the real thing keep a few copies of Material Data Safety with you. We all have the right to know, keeping MSDS documents at hand is a common sense thing for all, including the curious public.

Remember, when training - less is best.



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