

IMPACT OF PFOS/AFFF PRODUCTION HALT RESTRICTIONS ON US NAVY OPERATIONS

**AFFF WORKSHOP
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AFFF PROVIDES UNIQUE CAPABILITY

- No other agent can equal its ability to rapidly extinguish a pool fire
- Does not require an aspirating nozzle
- Vital to confronting
 - potential ordinance cook-off
 - pool fires threatening aircraft crew
 - threat to concentrated high value assets

NAVY DEPENDENCE ON FIXED AND PORTABLE AFFF SYSTEMS

PROTECTION

PROVIDED BY

Ships, Submarines

NAVSEA

Planes

NAVAIR with
NAVSEA, NAVFAC

Facilities

NAVFAC

INSTALLED AFFF CONCENTRATE ESTIMATED QUANTITIES

Ships, (Submarines)	500,000 (gal)
Shore Fire Fighting Vehicles	72,000
Shore Base Reserve for Vehicles	288,000
Shore Aircraft Hangars	223,000
Shore -Other	55,000
Total	1,138,000 gal

ANNUAL USAGE

- DoD annual consumption is down to 286,000 gallons from 320,000 gallons 8 years ago. Navy consumes ~160,000 gallons.
- DLA has purchased 200,000 gallons of 3M AFFF (PFOS) as the last shipment 3M will manufacture.
- Navy emergency use ~ 20,000 gal/yr
- Navy ship deck systems testing, accidental releases ~ 60,000 gal/yr
- Navy contained discharges ~ 80,000 gal/yr
- System test protocols have been modified in frequency and technique to limit discharge to environment.

DROP-IN VERSUS SUBSTITUTE

True drop-in:

Use same equipment (tanks, proportioners, piping, nozzles)

Not true drop-in:

Need to replace or modify existing shipboard delivery systems

AFFF SHIPBOARD SYSTEM REPLACEMENT IMPACT

- Systems with characteristics based on AFFF performance parameters were designed into the ship and submarine construction
- Even if suitable alternative systems could be designed at significant space & weight penalty, their implementation would require unacceptable major ship alterations, out-of-service time and expense
- Must meet existing Navy fire performance requirements
Can not tolerate performance degradation

INVENTION AND MONITORING OF AFFF

- NRL invention partnership with 3M
- NAVSEA maintains MILSPEC (Mil-F-24385F)
- NRL serves as the only AFFF qualified test facility for determining compliance with the Mil Spec

AFFF QPL

Manufacturer:

- | | |
|-----------------|--------|
| • 3M | 3%, 6% |
| • Ansul | 3%, 6% |
| • Chemguard | 3% |
| • National Foam | 3%, 6% |
| • Angus | 3% |

90 days to qualify a new formulation once product is at
NRL

One manufacturer undergoing spec test

Two possible additional candidates

CONCLUSIONS

- Many applications worldwide depend on the capabilities of the US military developed AFFF
- While many of these applications may be capable of being satisfied by reduced performance products, the US military performance requirements cannot be reduced without potential loss of life and platform survivability