
From: Hunstad, Mary P CIV NAVSEA HQ, SEA 05
To: Mcdaniel, Paul CIV EXWC, EV13
CC: Novstrup, Vern CIV EXWC, EV11; Courtney, Tanya M CIV EXWC, EV12; Kaempffe, Ken CIV EXWC, EV NESDI PM; Venable, William D CIV EXWC, EV1
Sent: 10/19/2016 7:56:40 PM
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

Paul - I can call you tomorrow. There is some more recent info.
Mary

v/r,
Mary Hunstad
TWH - Fire Protection Systems
And Material Fire Performance
SEA 05P5
WNYD, bldg. 197, 3W-2827
202-781-3632

-----Original Message-----

From: Mcdaniel, Paul CIV EXWC, EV13
Sent: Wednesday, October 19, 2016 1:58 PM
To: Hunstad, Mary P CIV NAVSEA HQ, SEA 05
Cc: Novstrup, Vern CIV EXWC, EV11; Courtney, Tanya M CIV EXWC, EV12; Kaempffe, Ken CIV EXWC, EV NESDI PM; Venable, William D CIV EXWC, EV1
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

Mary,
We had some inquiries from firefighting personnel on AFFF; hoping you can inform us on the status of efforts to certify non-PFOS substitutes to meet MILSPEC requirements...
Attached memo implies these efforts must be underway as it commits to dispose of existing AFFF stocks by the end of FY2017.

R/

Paul McDaniel
NAVFAC EXWC, Regulatory Support Desk
Port Hueneme, CA
(805) 982-2640

-----Original Message-----

From: Kaempffe, Ken CIV EXWC, EV NESDI PM
Sent: Monday, October 17, 2016 8:02 AM
To: Venable, William D CIV EXWC, EV1
Cc: Novstrup, Vern CIV EXWC, EV11; Mcdaniel, Paul CIV EXWC, EV13; Courtney, Tanya M CIV EXWC, EV12
Subject: FW: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

Bill,

See below, it may be that the issue below could be investigated as part of an AFFF study/IDR per the submitted need?

Also, attached is recent policy on AFFF.

Thanks,

Ken

-----Original Message-----

From: Novstrup, Vern CIV EXWC, EV11
Sent: Monday, August 22, 2016 1:02 PM
To: Kaempffe, Ken CIV EXWC, EV NESDI PM
Cc: Mcdaniel, Paul CIV EXWC, EV13
Subject: FW: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

FYI

Ken any chance we could add this to the list of NESDI NEEDS or adding some of the facts to an existing NEED.

Standards have not yet compelled us to switch to an EU approved product.

-----Original Message-----

From: Staub, John W II CIV USARMY HQDA ACSIM (US) [mailto:john.w.staub.civ@mail.mil]

Sent: Friday, August 19, 2016 8:42 AM

To: Smith, Lisa J CIV USARMY HQDA ACSIM (US); Hermon, Scott W CIV USARMY USAREUR (US); Meighan, Duane L CIV USARMY IMCOM EUROPE (US); Novstrup, Vern CIV EXWC, EV11

Cc: Seeley, Kenneth R CIV USN CNR EURAFSWA NPL IT (US); Lewis, Michelle L CIV USAF AFCEC (US); Drucker, Andrew CIV EXWC, EV12; Harre, Karla J CIV EXWC, EV3; Moyer, Brian R CIV USARMY HQDA ACSIM (US); Haager, Anthony E CIV USARMY HQDA ACSIM (US)

Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Oh what a tangled web we weave - The AFFF issue is significant, and opinions abound about requirements. From an OACSIM Fire & Emergency Services perspective, this is where we are:

1. Army fire trucks used in aircraft firefighting operations are required to use MILSPEC AFFF. Even those in Europe. We have granted no relief to that requirement. To the best of our knowledge, the Final Governing Standards have not yet compelled us to switch to an EU approved product. To the best of my knowledge, the Quality Products List does not contain any EU approved AFFF.

2. Switching agents isn't as simple as it sounds. Different types of agents require different application methodologies; some agents require differing aeration and/or aspiration than MILSPEC AFFF. Our trucks are designed to deliver MILSPEC AFFF; switching agents could potentially affect the outcome of a fire. While the 45 seconds mentioned below doesn't seem like a long time when fighting a fire, consider that fact that we only have 90 seconds to reduce/remove flame impingement on an aircraft fuselage to help ensure a survivable environment inside. To us, 45 seconds is a lifetime. Similarly, our nozzles and foam proportioning devices on our vehicles are designed to deliver MILSPEC AFFF at the required agent application density rate. Changing the formulation could change the application density rate which in turn will affect the outcome of a fire.

3. Unless a particular company is willing to shoulder the associated costs, I doubt NAVSEA will certify an agent to meet EU/MILSPEC standards. I'm told the costs are upwards of \$500K for testing and certification, but I have no way to validate that figure.

The ACSIM issued a policy memo regarding the use of AFFF. We are working with our DoD partners to find a product that will meet everyone's requirements, meet our mission support obligations and be a good partner and protect our environment. However, until we identify a replacement agent, Army fire trucks are still required to use MILSPEC approved AFFF for aviation firefighting.

I hope this helps.

V/R,

JS

John W. Staub, Civ, EFO, CFO
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Army Fire & Emergency Services directly supports Army Readiness and mission assuredness by providing expert prevention, education, mitigation and consulting services, enabling our Soldiers, Families and Civilians to live, work and thrive in a safe environment.

-----Original Message-----

From: Smith, Lisa J CIV USARMY HQDA ACSIM (US)
Sent: Friday, August 19, 2016 9:58 AM
To: Hermon, Scott W CIV USARMY USAREUR (US) <scott.w.hermon.civ@mail.mil>;
Meighan, Duane L CIV USARMY IMCOM EUROPE (US) <duane.l.meighan.civ@mail.mil>;
Novstrup, Vern CIV USN NFEXWC (US) <vern.novstrup@navy.mil>;
Staub, John W II CIV USARMY HQDA ACSIM (US) <john.w.staub.civ@mail.mil>
Cc: Seeley, Kenneth R CIV USN CNR EURAFSWA NPL IT (US) <kenneth.seeley@eu.navy.mil>;
Lewis, Michelle L CIV USAF AFCEC (US) <michelle.lewis@us.af.mil>;
Drucker, Andrew S CIV USN (US) <andrew.drucker@navy.mil>;
Harre, Karla J CIV USN NFEXWC (US) <karla.harre@navy.mil>
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

All,
I'm including John Staub from our office on this email string, he may be able to help you identify sources of AFFF that will meet the EU requirements.

Lisa J. Smith
DAIM-ISE
Army International Environmental Programs
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VEQT MDEP Manager
571-256-9716
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lisa.j.smith.civ@mail.mil
Pentagon 5C120-1 (door 5C140)

-----Original Message-----

From: Hermon, Scott W CIV USARMY USAREUR (US)
Sent: Friday, August 19, 2016 3:18 AM
To: Meighan, Duane L CIV USARMY IMCOM EUROPE (US) <duane.l.meighan.civ@mail.mil>;
Novstrup, Vern CIV USN NFEXWC (US) <vern.novstrup@navy.mil>
Cc: Seeley, Kenneth R CIV USN CNR EURAFSWA NPL IT (US) <kenneth.seeley@eu.navy.mil>;
Lewis, Michelle L CIV USAF AFCEC (US) <michelle.lewis@us.af.mil>;
Smith, Lisa J CIV USARMY HQDA ACSIM (US) <lisa.j.smith.civ@mail.mil>;
Drucker, Andrew S CIV USN (US) <andrew.drucker@navy.mil>;
Harre, Karla J CIV USN NFEXWC (US) <karla.harre@navy.mil>
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Duane

There is an interesting article on the Air Force and the use of a new foam for firefighting. There is no mention of the chemical composition only that there is a \$6.2 million award. Maybe Michelle can help us track this down.

<http://www.military.com/daily-news/2016/08/18/us-air-force-change-fire-foam-due-water-contamination.html>

Cheers
Scott

US00002898

-----Original Message-----

From: Meighan, Duane L CIV USARMY IMCOM EUROPE (US)
Sent: Friday, July 01, 2016 10:40 AM
To: Hermon, Scott W CIV USARMY USAREUR (US) <scott.w.hermon.civ@mail.mil>;
Novstrup, Vern CIV USN NFEXWC (US) <vern.novstrup@navy.mil>
Cc: Seeley, Kenneth R CIV USN CNR EURAFSWA NPL IT (US)
<kenneth.seeley@eu.navy.mil>; Lewis, Michelle L CIV USAF AFCEC (US)
<michelle.lewis@us.af.mil>; Smith, Lisa J CIV USARMY HQDA ACSIM (US)
<lisa.j.smith.civ@mail.mil>; Drucker, Andrew S CIV USN (US)
<andrew.drucker@navy.mil>; Harre, Karla J CIV USN NFEXWC (US)
<karla.harre@navy.mil>
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

ALCON,

From my understanding one of the AFFF products that is being used in Germany and meets EU requirements, but doesn't have a MILSPEC, is called "Re-Healing". The company website is <http://www.solbergfoam.com/Foam-Concentrates/RE-HEALING-Foam.aspx?lang=en-GB>
Supposedly it is for Class B fuels and meets ICAO, Doc 9187-AN/898-ASM, CEN EN 1568-3 and CEN EN 1568-4 requirements.

Rumor is that some installations at CAT-3 airports requiring a minimum ICAO performance level B have already switched to this product to avoid non-compliance with host nation law.

Please note, this is not a product endorsement. All of the US military installations within EU countries need an effective EU and MILSPEC compliant AFFF product.

v/r

Duane

Mr Duane L. Meighan
Environmental Protection Specialist
IMCOM-Europe Energy and Environmental Branch
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☎ Com: 0611-143-544-4509
☎ Com from US: 011-49-611-143-544-4509
duane.l.meighan.civ@mail.mil

-----Original Message-----

From: Hermon, Scott W CIV USARMY USAREUR (US)
Sent: Friday, July 01, 2016 10:08 AM
To: Novstrup, Vern CIV USN NFEXWC (US) <vern.novstrup@navy.mil>
Cc: Meighan, Duane L CIV USARMY IMCOM EUROPE (US) <duane.l.meighan.civ@mail.mil>; Seeley, Kenneth R CIV USN CNR EURAFSWA NPL IT (US) <kenneth.seeley@eu.navy.mil>; Lewis, Michelle L CIV USAF AFCEC (US)
<michelle.lewis@us.af.mil>; Smith, Lisa J CIV USARMY HQDA ACSIM (US)
<lisa.j.smith.civ@mail.mil>; Drucker, Andrew S CIV USN (US)
<andrew.drucker@navy.mil>; Harre, Karla J CIV USN NFEXWC (US)
<karla.harre@navy.mil>
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Vern

This was a great piece of information on the current state.

Ken Kaempffe mentioned that we could submit this as a possible need for FY17 T&E.

US00002899

I believe Ken Seeley from NAVEURAFSWA, Duane Meighan from Army IMCOM, and Michelle Lewis from AFCEC would be supportive of finding a MILSPEC approved AFFF solution that meets European specifications.

It has the potential for having a significant remediation and claims cost here in Germany and the rest of Europe.

Let us know where you want to start in the process. There is rumor that there are already EU approved alternatives, but they would need to be MILSPEC certified.

Cheers
Scott

-----Original Message-----

From: Kornuc, John J CIV EXWC, EV31
Sent: Thursday, June 30, 2016 1:31 PM
To: Kaempffe, Ken CIV EXWC, EV NESDI PM; Novstrup, Vern CIV EXWC, EV11; Barker, Casey CIV EXWC, EV12
Cc: Venable, William D CIV EXWC, EV1
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

AFFFs approved for use by DoD all contain fluorinated organic surfactants (perfluorocarbons - PFCs, or more correctly PFASs). There are fluorine-free AFFFs (i.e. do not contain PFASs) available, but these do not meet the performance criteria of the MILSPEC (MIL-F-24385) for extinguishing time and burnback. As I recall the fluorine-free product that came closest to meeting the MILSPEC extinguishing criteria missed by something like 45 seconds. So for now there are no fluorine-free AFFFs that have been submitted for testing that meet the MILSPEC, and so DoD (and civilian airports which have to comply with the MILSPEC per the FAA) must use AFFF containing PFASs. It is the PFASs that impart the "magic" in quickly extinguishing liquid fuel fires since they allow formation of a film. Although, AFFF performs differently on different fuels (surface tensions vary widely with different hydrocarbons) and for some fuels (iso-octane e.g.) fluorine-free AFFFs perform just as good or better than the fluorinated AFFF. But for now the MILSPEC test uses gasoline, and for that the fluorinated AFFF works better. You can skip the next paragraph if that's already more than you want to know.

So that leaves us with playing with the PFAS content of AFFF, and that's what's been taking place in the industry. PFASs are a large group of compounds - in the thousands. The ones which have EPA health advisory levels are PFOS and PFOA (8 fully fluorinated carbons in the "tail" and a sulfonate (PFOS) or carboxylate (PFOA) on the other end). PFOS was in the 3M-made AFFF, but due to health concerns 3M stopped PFOS and AFFF manufacturing in 2002 (but large remaining stockpiles of the 3M AFFF were still allowed to be used up until this year). Other manufacturers started making AFFF shortly after 3M started selling their products, and to get around the 3M patents they used a different synthesis, so these AFFFs have different PFASs (and little to no PFOS or PFOA). However, these other PFAS compounds are likely similarly persistent, bioaccumulative, and toxic - they just haven't made it to EPA's hit list - yet. The reasons PFASs work so well in AFFF are the same reasons they are a problem in the environment - they are highly stable (i.e. can be applied to a fire and not break down) and therefore persistent, including in the human body. Right now there is a reformulation effort in the industry to limit the carbon chain size of PFASs in AFFF to C6 - since the shorter chain compounds are perceived (and to a very limited extent, some data suggests) to be less toxic, bioaccumulative and persistent - which may or may not prove to be the case when full testing is carried out. As a matter of fact, we already know that the C6 perfluoroalkyl compounds have an even longer half-life than PFOS or PFOA in the human body - about 8 or 9 years (compared to about 4 to 5 years). The reformulated AFFFs have to meet the MILSPEC, and these are

in the process of recertification now. So as you can see the problem is a bit more complex, given that AFFFs need to include PFASs to meet the MILSPEC, but replacing one PFAS (PFOS e.g.) or group of PFASs with another is the "solution." But EPA has already put the C6 compounds on their radar and are looking at their persistence/bioaccumulation/tox. Also, the shorter chain compounds move the fastest in groundwater plumes, and break through quickly or aren't captured at all by activated carbon (the treatment method of choice where drinking water impacts occur).

I've heard of fluorine-free formulations being used in Europe that supposedly meet the MILSPEC (hearsay - maybe they test with a fuel that has a higher surface tension than gasoline), so that might be worth checking. NRL has a group that tests AFFF for MILSPEC compliance at Chesapeake Beach: <http://www.nrl.navy.mil/chemistry/research/6180/6180.1>

John Farley does the AFFF testing there and is an encyclopedia on all things AFFF. Also, SERDP had a call last year for investigation into fluorine-free foam replacements.

John

-----Original Message-----

From: Kaempffe, Ken CIV EXWC, EV NESDI PM
Sent: Thursday, June 30, 2016 10:14 AM
To: Novstrup, Vern CIV EXWC, EV11; Barker, Casey CIV EXWC, EV12
Cc: Venable, William D CIV EXWC, EV1; Kornuc, John J CIV EXWC, EV31
Subject: RE: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

My understanding is that the formulation problem has been solved but there is still a lot of legacy AFFF in the supply system. Within EXWC, John Kornuc is the most knowledgeable on this subject, check with him. If it seems worthy of a need submittal, please feel free to submit a new need by 3 Aug.

-----Original Message-----

From: Novstrup, Vern CIV EXWC, EV11
Sent: Wednesday, June 29, 2016 3:41 PM
To: Barker, Casey CIV EXWC, EV12
Cc: Venable, William D CIV EXWC, EV1; Kaempffe, Ken CIV EXWC, EV NESDI PM
Subject: FW: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

Following describes an apparent need. I think this is really an NAVSUP controlled item.

" During the EUCOM meeting you two discussed some potential POCs that could be helpful in identifying potential MILSPEC and EU certified compliant AFFF with minimal PFC content. Can you please provide the POCs information to me?"

Thoughts?

-----Original Message-----

From: Hermon, Scott W CIV USARMY USAREUR (US)
[mailto:scott.w.hermon.civ@mail.mil]
Sent: Wednesday, June 29, 2016 9:12 AM
To: Novstrup, Vern CIV EXWC, EV11
Subject: FW: AFFF testing MILSPEC and PFCs (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Vern

I recall one of the projects at EXWC in the past was an alternative to AFFF or AFFF with low PFC content. Or was it another system entirely?

Cheers
Scott

US00002901

-----Original Message-----

From: Meighan, Duane L CIV USARMY IMCOM EUROPE (US)
Sent: Wednesday, June 29, 2016 4:19 PM
To: Hermon, Scott W CIV USARMY USAREUR (US) <scott.w.hermon.civ@mail.mil>;
Seeley, Kenneth R CIV USN COMNAVREG EURAFSWA (US)
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Mr Duane L. Meighan
Environmental Protection Specialist
IMCOM-Europe Energy and Environmental Branch
☎ DSN 544-4509
☎ Com: 0611-143-544-4509
☎ Com from US: 011-49-611-143-544-4509
duane.l.meighan.civ@mail.mil

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