



## **Fire Industry Association**

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## **Announcement from the FIA FIRE, THE ENVIRONMENT AND FOAMS**

Various regulations and guidance notes have recently been issued concerning the protection of the environment, particularly from fire, firewater run-off, and foams. These include the COMAH regulations and the HSE Guidance Note EH70. In addition, the 3M Corporation has announced its decision to discontinue the manufacture of their fire fighting foams.

In response to the concerns being expressed both within and outside the fire safety community, The Fire Industry Association (FIA) Technical Committee, comprising of fire protection experts, has issued three Statements addressing the concerns being expressed.

The first is a statement on 'The Prevention of Environmental Damage by Control of Fire Water Run –Off'.

The second is a statement on 'The Environmental Impact of Fire Fighting Foams'.

The third is a statement on '3M's decision to cease production of fire fighting foams'.

All three statements have been prepared by specialists from the major UK fire protection companies with expertise in the technology, use and the disposal of fire fighting foams.

The statements have been released in the belief that a better informed debate will lead to better decision making by the many individuals and organisations involved in fire effluent issues.

**Fact File No 0003**

## **SECTION 1: PREVENTION OF ENVIRONMENTAL DAMAGE BY CONTROL OF FIRE WATER RUN-OFF**

FIA supports the HSE initiatives laid down in Guidance Note EH70 to prevent environmental damage through the reduction and containment of firewater run-off from facilities where major fire incidents occur.

It supports the view that whilst water is essential for cooling, foam may be used for effective fighting of fires involving hazardous flammable chemicals.

In particular, FIA draws attention to the HSE statement that *“a well designed active fire suppression system can reduce the amount of water which needs to be applied to control/extinguish a fire, and this in turn can reduce the scale and cost of other facilities”*. The HSE goes on to say *“the earlier a fire can be tackled, the greater the chance of successfully extinguishing it and minimising the quantity of contaminated water”*.

Well engineered fixed water and foam protection systems can enable a fire to be attacked and controlled in its incipient stages. The cost of such investment should be placed against the cost of the large and extensive fire water run-off containment systems necessary should fire attack be delayed, plus the high cost of pollution clean up.

FIA members will help and assist prudent companies to review the options available to mitigate the potential fire and environmental hazards.

## **SECTION 2: FIA ENVIRONMENTAL IMPACT STATEMENT FOR FIRE FIGHTING FOAMS**

### **OBJECTIVE**

The objective of this statement is to give users clear directions on the responsible use of foam and acceptable disposal of foam, and is intended to be read in conjunction with the Foam Concentrate Manufacturer's **MATERIAL SAFETY DATA SHEETS**.

### **FIRE FIGHTING FOAMS AND THEIR USES**

Fire fighting foam, applied to a flammable liquid fire, by a fixed system and/or manually, is one of the most cost-effective ways to suppress such fires quickly and at the same time control release of flammable vapours. As a result, the impact of fire and the amount of fire effluent can be significantly reduced.

Increased awareness of environmental issues has led to legislation under the Water Resources and Water Industries Act of 1991, and more rigorous rules and guidelines which address the release and disposal of all liquids via the soil, drains, sewers to “controlled waters”. It is therefore important that users of fire fighting foams have the information necessary to deal responsibly with both fire and non-fire releases of foam.

The first step is to understand that foam is a mixture of foam concentrate, water and air. In use the first stage is to proportion (meter) a foam concentrate into a water flow – typically at 3 parts foam concentrate to 97 parts water by volume. This produces “foam solution” which is fed under pressure to discharge nozzles which aerate the solution, so a blanket of foam bubbles forms over flammable liquids. After a period of time, the bubbles break down and foam solution remains.

There are various generic types of foam concentrate used. These are:

- Protein (P)
- Fluoroprotein (FP)
- Film Forming Fluoroprotein (FFFP)

- Aqueous Film Forming Foam (AFFF)
- Alcohol Resistant (AR) AR-AFFF + AR-FFFP
- Synthetic (S)

### CARE

Foam concentrate and/or foam solution, as well as fire effluents should be collected and disposed of in a controlled and responsible manner as appropriate to local circumstances. The fire fighting foam concentrates supplied by members of FIA are formulated to provide maximum fire performance with minimal environmental impact. If additional information is required, contact the foam concentrate supplier.

Prior to the release/discharge of foam in any form, the Health & Safety Officer of the facility should be contacted to ascertain the disposal procedures. If these are not available, this document may be put forward to the Officer for acceptance.

### FOAM RELEASES

Foam solution or concentrate may be released for one of a number of reasons, namely:

Causes	Possible forms of foam	
	Solution	Concentrate
Fire	4	
Inadvertent release	4	
Commissioning	4	
Testing	4	4
Spillage	4	4
Disposal	4	4

The amounts of foam concentrate and solution, as well as the fuels and fire effluents from fire incidents, can vary widely according to circumstances; however, the unnecessary discharge of foam should always be avoided. Where discharge is necessary to establish performance, foam amounts should be minimised. Any release must not threaten:

1. Conservation areas (ie Sites of Special Scientific Interest [SSSI])
2. Drinking water intakes
3. "Controlled waters" (i.e. areas where rivers, lakes or ponds are present)

### Foam Disposal

It is considered unnecessary to differentiate between the different types of foam concentrate and their solutions, so the criteria for all foams are based upon the most onerous requirements and are as follows:

- Prior to releasing foam, the wastewater treatment authority receiving the foam is to be contacted to advise them of the intention.
- Foam solution or small spills of foam concentrate, can be diluted with water to 250 ppm, ie
  - 120 litres per litre of foam solution
  - 4,000 litres per litre of foam concentrate

and then released to waste water treatment facilities in consultation with the receiving authorities.

Larger volumes of foam concentrate must be disposed of through licenced disposal companies.

## REFERENCE DOCUMENTS

- a) Water Resources Act 1991 HMSO ISBN 010 545791 4
- b) Water Industries Act 1991 HMSO ISBN 010 545691 8
- c) R&D Report on Design of Containments for the Prevention of Water Pollution from Industrial Incidents – CIRA ISBN 0860 17476X
- d) Pollution Prevention Measures for the Control of Spillages and Fire Fighting Run Off – NRA – PPG 18

## SECTION 3: FIA STATEMENT ON 3M DECISION TO CEASE PRODUCTION OF FIRE FIGHTING FOAMS

The FIA specialist Foam Working Group is concerned over the confusion within the general fire safety community over the decision by the 3M Corporation to discontinue production of their range of Fire Fighting Foams. This statement is intended to provide the information needed by those concerned with the use of fire fighting foams for the protection of our community and its environment. It is also to stress that NONE of the UK foam manufacturers use the surfactants that 3M have been using, although some European and Japanese producers are believed to be using 3M type surfactants.

3M were almost alone, amongst the fire fighting foam producers, in using Perfluorooctynal Sulfonate (PFOS) surfactants; so their decision does not have wider implications for those who manufacture other foams, using surfactants produced by different technologies, nor for those who use such foams.

Fire fighting foams, effectively applied, can reduce the duration of flammable liquid fires by as much as 10 times. As a result the use of foam can reduce by up to 90% the amount of fire effluent (polluted run off), fire damage and environmental damage, as well as the fire fighting resources required.

While all fire fighting foams are readily biodegradable, according to National Rivers Authority (now part of the Department of the Environment) reports, both the fire effluent and foam should be prevented from entering drinking water sources and fish courses.

Section 1 and 2 of this fact file provide practical and responsible information on the use and disposal of foams.

The decision by 3M to cease manufacturing their particular range of AFFFs has no bearing upon the safety, and environmental desirability of the products manufactured in the UK; nor on their continued use in minimising the losses and damage caused by the severe fires involving burning flammable liquids. It is important that those concerned with fire protection, and the safety of those involved in fire fighting, understand that surfactants are essential to fire fighter safety using modern fire fighting techniques. **If these surfactants are banned then all that remains will be basic synthetic detergent and basic protein foams - neither of which are effective under forceful applications and could put the lives of fire fighters at risk.** Members of FIA will be happy to provide information and assistance on fire protection and foam to those responsible for controlling flammable liquid hazards.

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## DISCLAIMER

The information set out in this document is believed to be correct in the light of information currently available but it is not guaranteed and neither the Fire Industry Association nor its officers can accept any responsibility in respect of the contents or any events arising from use of the information contained within this document.