

Deployment of Foam, Retardant and Gels for Fire Suppression

The ACT Rural Fire Service Chief Officer has issued this operational guideline under Section 38(1) of the *Emergencies Act 2004* – A Chief Officer may determine standards and protocols.

Purpose

This guideline covers the assessment required for the safe and effective use of foam, retardant and gel agents in fire operations.

Scope

This guideline is applicable to all personnel from the ACT Rural Fire Service (ACT RFS) brigades, as defined in the *Emergencies Act 2004*, and crews deployed from interstate, engaged in firefighting operations within the ACT.

Background

The ACT RFS uses a number of chemical agents to aid in the suppression of fires. These agents can be broadly categorised as:

- **Surfactants** – includes wetting agents and foaming agents. Wetting agents increase the effectiveness of water as an extinguishing agent by reducing its surface tension, thus increasing its penetration of fuels. Foaming agents are applied either to extinguish fire or as foam blankets to form a control line.

Surfactants can be harmful to aquatic animals, e.g. frogs and fish. The environmental effects of the repeated use of surfactant are still largely unknown.

- **Retardants** – decrease the flammability of fuels by inhibiting the chemical reaction of fire preventing it from burning. They are composed of either ammonium phosphate or ammonium sulphate. They are useful in limiting the spread of low intensity sections of a fire. They are generally applied aurally by agricultural aircraft and by helicopter water buckets.

The use of retardants can increase soil nutrient levels, which may have impacts on the native plant community and encourage weed invasion. The use of retardants in reserves should therefore meet conditions to minimise impacts on native vegetation communities consistent with desired fire control outcomes.

- **Gels** – adhere to surfaces to absorb heat and form a protective layer that prevents objects from heating, charring and catching alight. When added to water, these products absorb many times their own weight in water to reduce drift and evaporation.

Use of foams, retardants and gels is allowed under the exemptions listed in Section 6 of the *Environment Protection Act, 1997* in conjunction with Section 34 of the *Emergencies Act, 2004*, for protecting life or property, or controlling, extinguishing or preventing the spread of a fire.

The use of these agents should be minimised because it can have adverse impacts on threatened species and areas of ecological value. Foam should not be used near waterways or high conservation areas.

Responsibilities

Members / Crew Leaders	Must comply with this guideline.
Incident Controllers/Officers in Charge (IC/OIC) / Planning Officers / Operations Officers	<p>Must assess use of agents to assess their effectiveness to control intensity and spread of fire and potential impact on:</p> <ul style="list-style-type: none"> • sensitive ecological areas • water catchments • endangered flora/fauna habitats • areas of high potential weed infestation. <p>Notify RFS Duty Officer (DO) or Incident Management Team.</p>
RFS Duty Officer / Incident Management Team	Notify and obtain approval from the relevant environmental agency, Icon Water and land manager.
OIC / IC / RFS Chief Officer (RFS CO), ESA Commissioner	Approve use of retardants as required in an emergency as allowed in the Emergencies Act 2004.

Applicability of this guideline

Personnel will comply with this guideline when deployed at any incident in the ACT. The Incident Management Team (IMTs), agency representatives and agency personnel are responsible for compliance with this SOG.

Operational guideline

Guidelines on the use of firefighting retardants are provided in the *Bushfire Pre-Suppression Resource Atlas*.

The uses of these agents in fire suppression shall be selectively based on:

- the fire threat to life and property
- the estimated effectiveness in assisting the planned fire suppression operation
- the potential impacts on biodiversity, water quality and other ecosystem processes
- safety considerations.

If any of these agents are proposed to be used in areas of high ecological or water quality value, the RFS DO or IMT must be notified. The DO or IMT will notify the relevant environmental agency, Icon Water and the land manager and obtain approval for their use.

Special consideration needs to be given when using these agents in sensitive ecological areas, namely, all water catchments, endangered flora/fauna habitats and areas of high potential weed infestation. A map of these areas is contained within the Parks Conservation Service ACT *Bushfire Pre-Suppression Resource Atlas*.

When making a determination about the use of these agents, the Incident Controller should consider their effectiveness in stopping the fire, the potential of the fire if they are not used and the potential damage which may occur to the ecological/water quality value area if they are used.

If the use of these agents is deemed a necessary strategy, and approval for their use has been endorsed, their application should be undertaken to minimise the environmental impact of their use as far as practicable, e.g. avoiding application on steep slopes and areas of impermeable soils.

Specific exclusion zones

Firefighting foam must not be used in the Cotter River Catchment or upstream of Cotter Dam.

The use of firefighting foam must be avoided with 50m of waterways including wetlands, bogs and fens. Their storage, mixing and use must be avoided within 100m of waterways.

Its use should be minimised in the following areas:

- Namadgi National Park
- Tidbinbilla Nature Reserve
- Mulligans Flat / Goorooyarroo Nature Reserve
- Mt Ainslie / Mt Majura Nature reserves
- Black Mountain / Bruce Ridge / Aranda Nature Reserve complex
- Googong Foreshores
- Murrumbidgee River Corridor
- Any grassland reserves.

Approved Foams, Retardants and Gels

Any product on the US Forestry Service Qualified Products List which meets USDA Forest Service Specification 5100-307A may be used by the ACT RFS in accordance with its specification. The products are evaluated and qualified only at the specified mix ratio and only for use with the indicated application.

Additional agency involvement

ACT RFS members operating in cross border operations will need the approval of the interstate agency IC to enact this guideline. Interstate organisation's existing operating procedures or guidelines may override this guideline.

Document information

Version history

Author	Version	Version Approval Date	Summary of Changes
Andrew Stark	1.0	17/12/2013	Version 1.0
Rohan Scott	2.0	10/03/2020	Reviewed and updated
Simon May	3.0	22/06/2021	Administrative Review

Approved by

Name	Title/Role	Signature	Date
Rohan Scott	CO ACT RFS		23.07.21

Document Owner

Position	Section
Director	Operations

Next review due: 10/03/2022

Related documents

Document name
AFAC Compressed Air Foam Systems (CAFS) Guideline 28 April 2017
ACT Bushfire Pre-Suppression Resource Atlas
US Department of Agriculture Forest Service, Specification for Fire Suppressant Foam for Wildfire Firefighting (Class A Foam)
US Forest Service, Qualified Product List - Retardants
US Forest Service, Qualified Product List – Class A Foams
US Forest Service, Qualified Product List - Gels
ACT Environment Protection Act 1997
ACT Emergencies Act 2004

Signed documents will be scanned and filed in TRIM.