RFS

Use of Retardant and Foams during Firefighting Operations

FACT SHEET | MARCH 2025

NSW Rural Fire Service (NSW RFS) disperses fire suppressants from aircraft during firefighting operations to help contain and slow the spread of a fire. Foams can also be applied by firefighters on the ground, in controlling and containing a fire, and this helps to protect properties.

This fact sheet contains information about what to do if these suppressants have been used on your property.

Things to remember

Some suppressants are coloured so firefighters can easily identify where it has landed.

If fire suppressants come into contact with skin, wash thoroughly with plenty of water. Seek medical attention if irritation persists.

If eye contact is made, rinse cautiously with fresh water for several minutes. If eye irritation persists, consult a doctor.

If swallowed, do not induce vomiting without medical advice. Seek medical attention if you feel unwell.

For your comfort, disposable gloves and disposable face mask such as a P2 mask should be worn when cleaning surfaces as well as protective equipment (including safety glasses). Wash your hands regularly.

Fire suppressants that have been dispensed on the ground will degrade with exposure to the sun.

What are fire suppressants?

Fire suppressants are chemicals that help contain or slow the spread or intensity of a fire. They help firefighters on the ground and are regularly dispensed from aircraft.

Short-term fire suppressants are detergent chemicals mixed into foam, then applied using water.

Long-term fire suppressants, such as fire retardant, are chemicals that are mixed with water to form a slurry.

What are they made of?

Long-term fire suppressants such as retardants are essentially fertilisers (monoammonium and diammonium phosphate), with thickeners (guar gum) and corrosion inhibitors (for aircraft safety).

A colouring agent is added so that firefighting aircraft can see where they have dropped the fire retardant. The colour fades over time when exposed to light.

Short-term fire suppressant foams are made up of a combination of wetting agents and foaming chemicals, mixed with water. This allows the water to penetrate fuels more easily and slow evaporation. Their usefulness is limited against high-intensity fires, where long-term retardants have proven more successful.

How do fire retardants work?

Long-term fire retardants are mixed with water before they are dispersed over the target area. They continue to be effective after the water has evaporated as the retardant residue slows the spread and reduces the intensity of the fire.

Foams and gels are used to fight fires by preventing the water they are mixed with from evaporating quickly. They coat the fuel (grass, trees and shrubs) and prevent or slow down combustion.

Foams and gels all increase the ability to suppress fire, while retardants help to protect the fuels from burning.

What about environmental effects?

Current evidence does not suggest any significant effects on the environment (including flora and fauna). Testing undertaken by the NSW Environmental Protection Authority following the 2019/20 bush fire season showed the retardants used by RFS have minimal environmental impacts.

Water plants and animals are more sensitive to the effects of fire retardants, and foams in particular can be moderately toxic to aquatic life. For this reason, pilots try not to apply fire suppressant retardants within 100m of waterways.

What about health effects?

The concentrated powder may cause minor respiratory irritation to workers who are handling it. These irritations don't occur once it is mixed into slurry. Workers require gloves, goggles and dust masks when handling the powder.

No known adverse long-term or chronic health effects have been attributed to long term retardants.

Tips on cleaning up fire retardant residue

- If aerial fire suppressants (primarily retardant) or firefighting foam have impacted homes, structures or motor vehicle, fresh water and brushes can be used to scrub and dilute the dried residue and flush it from the surfaces before rinsing and cleaning with water. Care should be taken – it could be slippery. Gloves and non-slip footwear should be worn.
- Where downpipes are connected to water tanks, these should be disconnected to stop further retardant being washed into the tanks themselves.
- If the fire retardant does enter your water tank, do not drink it. Long-term retardants in water will make it smell terrible and taste salty. It will not be suitable as drinking water for humans or animals (including pets or livestock).
- The water can still be used for irrigation and firefighting.
- For property owners who are unable to clean up any residue themselves or require assistance due to drinking water shortages should contact the NSW Reconstruction Authority or local Recovery Centre if activated.