Use of water additives in controlling bushfires

What it is: A “water additive” is a supplement that can be combined with water to help fight bushfires.

This solution is then either applied to a bushfire to slow the spread and intensity of the fire or applied to vegetation or property to try and prevent it from catching fire.

How it works: The solution is spread over the target area by aircraft. When the water is completely evaporated, the remaining chemical residue slows vegetation or other materials from igniting, until it is removed by rain or erosion. The solutions also work by binding to the plant material and preventing combustion.

Gels and foams (additives) are used to fight fires by preventing the water they are mixed with from evaporating easily or allowing the water to penetrate surfaces more easily.

They coat the fuel (grass, trees and shrubs) and prevent or slow down combustion. A slurry of gel can be pumped or dropped over the fire and it immediately cools down the intense heat and helps put out the fire.

What they’re made of: Foam concentrates are made of mainly water with a mixture of surfactants (which are detergents, wetting agents, emulsifiers, foaming agents and dispersants), foam stabilisers, organic solvents and corrosion inhibitors.

Aqua gels: Super absorbent polymers (SAPs) can absorb high volumes of water relative to their own weight. When mixed with water, the result is a gel-like substance which acts as a barrier against evaporation from heat. Gel fire suppressants can be applied via aircraft or trucks as a firebreak, direct suppression or for structure protection.

Environmental effects: Although not a lot of research has been done in this area, the current evidence does not suggest any significant effects on birds or mammals.

However, water plants and animals are more sensitive to the effects of firefighting solutions used to fight bushfires: in particular, foams can be moderately toxic to aquatic life. For this reason, we try not to apply solutions close to waterways.

QFES fire-fighting foams are classified as biodegradable and readily biodegradable. That means the vast majority of it will degrade within 28 days.
Before using firefighting foams, QFES considers many factors to ensure your safety, including environmental protection. We continuously monitor fires to make sure we use the right amount of foam to contain the fire as quickly as possible. This is to minimise foam use and any environmental impacts.

**Health effects:** Queensland Health advise these chemicals can produce minor irritant effects. The concentrated powder may cause minor respiratory irritation to workers who are handling it. Once it is mixed into slurry this health effect does not occur.

Risk assessments carried out in the United States and in Victoria demonstrated that the risk of health effects was very low, even to people who are accidentally exposed to the firefighting solution during their application.

**Precautions:** Disconnect your water tank to prevent contaminated water from entering it.

Install a first flush diverter or make sure the first part of run-off after rain cannot go into your tank. This will prevent any water run-off from your roof containing fire retardant from entering your tank. It will also prevent embers, ash and other contaminants from entering your drinking water.

If the firefighting solution does enter your water tank, Queensland Health advise you should not drink the water. It will not be suitable as drinking water for humans or animals (pets or livestock). The water can still be used for irrigation and fire-fighting purposes.

**After care:** If firefighting solutions or firefighting foam residue is present on the house and/or cars, use a mild detergent with water and brushes to scrub and dilute the dried residue and flush it from the surfaces. Rinse with clean water.

If no asbestos is present, a follow-up with pressure washing may help, but should not replace scrubbing to remove the residue. Gloves and non-slip shoes should be worn as it may be slippery.

**For further information**

Call 13 HEALTH (13 43 25 84) at any time.


Contact 13 QGOV (13 74 68) for your nearest Public Health Unit.