NSW RURAL FIRE SERVICE

USE OF RETARDANT DURING FIREFIGHTING OPERATIONS

Community Information

The NSW RFS drops fire suppressant retardants and gels such as Phos-Check®, Blazetamer and Thermo-Gel from aircraft during firefighting operations to help slow the spread of a fire. It can assist firefighters in controlling and containing a fire, and help protect properties.

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

Has your property been impacted by fire suppressants?

To assist with answering any questions that you have in relation to the effects of fire suppressants, we have included information on the products we use and recommendations for cleaning hard surfaces which may have been affected.

Things to remember

- These fire suppressants are not hazardous substances
- It is coloured so firefighters can easily track where it has landed
- If eye contact is made, rinse the area with fresh water for 15-minutes; then consult a doctor
- If swallowed, rinse your mouth out with fresh water; then consult a doctor
- For your comfort, when cleaning surfaces be sure to wear protective equipment including safety glasses, disposable gloves and disposable face mask such as a P2 mask and wash your hands regularly
- For the best outcome, follow the advice in the attached guides
- The agents used are not harmful to you or the environment
- Fire suppressants that have landed on the ground will degrade with exposure to the sun

What are fire suppressants?

Fire suppressants such as gels and retardants are chemicals that slow the spread or intensity of a fire. They help firefighters on the ground and are sometimes also dropped from aircraft.

Short-term fire suppressants are detergent chemicals mixed into foam. 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 (ammonium and diammonium sulphate and ammonium phosphate), with thickeners (guar gum) and corrosion inhibitors (for aircraft safety).

Sometimes a red coloured pigment, made from iron oxide, is added so that those spraying can see where they have released the fire retardant. Examples are Phos-Chek MVP-fx and Phos-Chek 259-F.

Short-term fire suppressant foams are made of a combination of wetting agents and foaming chemicals, mixed with water. This allows the water to penetrate surfaces more easily. Their usefulness is limited against high-intensity fires, where long-term retardants have proven more successful. Examples are Angus ForExpan S, and Phos-Chek WD-881.

What about gels?

Suppressants in the form of gel are a chemical polymer (potassium polyacrylate) that absorbs water many times its own weight. It is the same polymer that is used in babies' disposable nappies and in wetting aids for soils. In its concentrated form as a slurry (before it is mixed with water), it can irritate eyes, airways and the skin. This does not occur after it has been mixed with water. Gel fire suppressants can be applied via aircraft or trucks as a firebreak, direct suppression or structure protection.

How do fire retardants work?

Long-term fire retardants are mixed with water before they are dispersed over the target area. When the water is completely evaporated, the remaining chemical residue retards vegetation or other materials from igniting, until it is removed by rain or erosion. Fire retardants also work by binding to the plant material (cellulose) and preventing combustion.

Gels and foams are used to fight fires by preventing the water they are mixed with from evaporating easily. They coat the fuel (grass, trees and shrubs) and prevent or slow down combustion. A slurry of gel can be pumped over the fire and it immediately cools down the intense heat and puts out the fire.

What about brominated flame retardants?

Polybrominated flame retardants (PBFRs) are a category of chemicals that are widely used in household and industrial items, including computers, electronics and electrical equipment, televisions, textiles, foam furniture, insulating foams, and other building materials They are sometimes also called fire retardants but are quite different from the chemicals described here and are not used in fighting bush fires.

What about 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, in Australia, long-term fire retardants have been observed to cause effects on some species of native plants (leading to low level damage to new growth). Water plants and animals are more sensitive to the effects of fire retardants; 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, but these agents can drift across buildings.

What about health effects?

Irritancy testing on animals shows these chemicals have little effect. 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. Workers require gloves and goggles and dust masks when handling the powder.

If the fire retardant does enter your water tank:
Do not drink it. High levels of ammonia and sulphate in water will make it smell terrible and taste salty. 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.

Tips on cleaning up fire retardant residue

If aerial fire suppressants (primarily retardant) or fire fighting foam residue is present on the house and/or cars, use a mild detergent and brushes to scrub and dilute the dried residue and flush it from the surfaces; rinse with clean water. Take care - it could be slippery. A follow-up with pressure washing may help but will not replace scrubbing to remove the residue. Gloves and non-slip shoes should be worn.

The NSW RFS acknowledges Victorian Department of Human Services in the preparation of this material