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Eric Rasmussen

Joe Range

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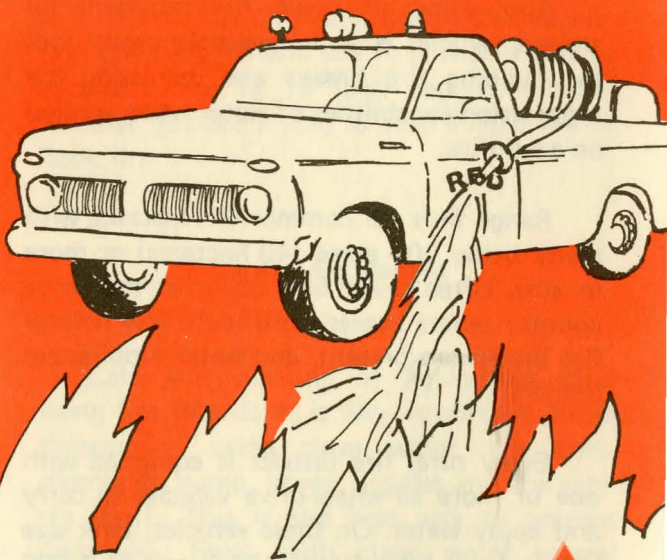
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Ground Application of Liquid Fire Retardant



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Leo E. Lucas, Director



Institute of Agriculture and Natural Resources

Ground Application of Liquid Fire Retardant

Eric Rasmussen
Rural Fire Training Manager

Joe Range
Extension Forester and Asst. State Forester

Application of liquid fire retardant by ground vehicles is an increasingly useful tool for building fire breaks and increasing the suppression capabilities of water when applied on a wildfire.

Range fires are common in Nebraska with many being 100 acres (40 hectares) or more in size. Often these fires occur in the range country where access is difficult, few natural fire breaks are present, and water supplies are limited.

Every rural fire district is equipped with one or more all-wheel-drive vehicles to carry and apply water. On these vehicles, tank size ranges from 50 gallons (189 liters) to 1,000 gallons (3,785 l) or more. These vehicles can be used for mixing and applying fire retardant solutions.

Ground Application Benefits

1. Ground application of liquid fire retardants allows the width, length, shape, and strength of the retardant fire line to be varied to suit the type and amount of fuels, and the shape of the terrain.

2. The retardant additive increases the effectiveness of the water by two to five times which is important when water supply points are limited.

3. Knock down of the fire is more complete. This reduces mop-up time.

4. Retardant barriers can be placed around high value areas such as hay stacks, hay yards or improvements in the path of the fire.

5. Ground units can operate regardless of high wind conditions which would prevent aircraft from flying.

The Retardant

A fire retardant should:

1. Control the fire.
2. Be long lasting.
3. Minimize rekindling of the fire.
4. Be easy to handle.
5. Be noncorrosive.
6. Mix easily with water.
7. Not be harmful to plants and animals.
8. Be economical.
9. Fertilize.

Liquid ammonium polyphosphate agricultural fertilizers (11-37-0 or 10-34-0) are excellent fire retardants and suppressants and meet the above requirements. They are available from fertilizer dealers across Nebraska. The fertilizer is mixed with water to make the fire retardant solution. Neither 10-34-0 or 11-37-0 are excessively corrosive to mild steel or aluminum alloys at temperatures of 80° F (27° C). Brass is satisfactorily resistant. However, magnesium will corrode even with an inhibitor present. BECAUSE BRASS IS FREQUENTLY USED, AVOID LONG TERM STORAGE.

Sodium dichromate is recommended for use as a corrosion inhibitor, when stored or applied with aluminum equipment, at the rate of one pound (.45 k) in 125 gallons (473 l) of retardant solution.

Mixing and Application Guide

The range of effective mixture is from 2 to 1 thru 11 to 1. However, the retardant/water ratio of 4 parts water to 1 part retardant is the best. 100 gallons (380 l) of mixed solution contains 80 gallons (304 l) of water and 20 gallons (76 l) of retardant concentrate (fertilizer). Mix by dumping the correct amount of fertilizer into the vehicle water tank containing the correct amount of water just before use on fire. On or ahead of the flames, apply 1/2 gallon (1.9 l) per 100 ft.² (.29 m²) or 217 gallons/acre. Wet vegetation down to mineral soil in as wide a strip as necessary (up to 15 feet) depending upon whether you are trying to stop a head fire or flank fire.

Care of Equipment

Care and cleaning of equipment after using fire retardants is very important. Flush thoroughly, using clean water, the tank, plumbing, pump, hoses, nozzles and the vehicle itself. This is the best way to prevent corrosion. Flush with clean water several times until all traces of retardant are removed.

It's a Useful Tool

Fire retardant applied by ground vehicles is another useful tool for fighting wildfires. When used properly in conjunction with aircraft applied fire retardant, all-wheel-drive vehicles, preplanning, good 2-way communications, and fire-fighter training, the fire fighters job can be done quicker with more effectiveness and less loss of property.

IT IS RECOMMENDED THAT THE CONCENTRATED 10-34-0 or 11-37-0 BE RECYCLED WITH FRESH PRODUCT ON AN ANNUAL BASIS DURING THE FALL SEASON.

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