Simmonds & Bristow
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VITAL CHEMICAL PTY LTD

Environmental Assessment of

Vital Bon-Matt HR

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Vital Chemical Pty Ltd

Environmental Assessment of Vital Bon-Matt HR

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1. INTRODUCTION

Vital Bon-Matt HR is a water-based copolymer formulated by Vital Chemical Pty Ltd to act as a dust suppressant.

The composition of this mixture is proprietary information. The product components have been described by Vital Chemical and are listed below:

- Acrylate Copolymer(s) >70%
- Non-hazardous ingredients Remainder

These ingredients are determined not to be hazardous (see Safety Data Sheet (SDS) for Vital Bon-Matt HR – Vital Chemical Pty Ltd).

2. USE

Vital Bon-Matt HR consists of a copolymer emulsion for use in the coating and binding of dust particles where properties of high water and wind resistance, elasticity and tensile strength are required for areas of high dust emission and heavy traffic.

3. WASTE DISPOSAL

Small concentrations of this product should be absorbed using sand, vermiculite or similar and disposed of within suitable containers to an approved landfill site. Although these recommendations are considered appropriate for safe disposal, it is necessary to ensure compliance with local regulations which may be more stringent.

Sprayed residues on particulate surfaces are subject to environmental degradation (e.g. by sunlight, hydrolysis and microorganisms) although rates would be variable depending on disposal conditions. Dusts and soil containing residues may be disposed to landfill or stockpiles where carbon oxides and hydrocarbons may be produced during decomposition.

4. ENVIRONMENTAL PROPERTIES AND BEHAVIOUR

Vital Bon-Matt HR is a blend of acrylate copolymer(s) and non-hazardous ingredients. It is non-flammable and stable under the recommended conditions of storage. The dust suppressant should be stored in a cool, dry, well-ventilated area, removed from incompatible substances and foodstuffs.

The formulation occurs as a stable white liquid (specific gravity of approximately 1.04) with a slight odour. The pH of the liquid is approximately 7.0 – 9.5 (i.e. neutral to alkaline).

The slight odour released from this product would be reduced when used in open spaces or well ventilated areas.

Accidental and poorly controlled over-spraying may disperse fine aerosols and mists off-site for considerable distances depending upon airborne droplet size in spray and environmental conditions (e.g. strong winds).

The dispersion of the product in water can result in off-site losses of unbound polymers and breakdown products. Water and wind erosion may also transport some polymer bound dust or soil particles off-site from application areas. However, the polymer coatings would tend to strongly bind to particles to reduce erosion and dispersion potential.

Leaching of polymers and suspending agents through disturbed or sandy soils may occur but the binding nature of this mixture with soil surfaces would inhibit losses to groundwater.

The copolymer(s) should be prevented from entering any drains or waterways.

5. ENVIRONMENTAL FATE

Spills can be readily contained by sand and absorbents such as sawdust or inert materials (e.g. vermiculite) to allow disposal to landfill. Washing down residue from spill site is also recommended.

The primary environmental fate of the copolymer(s) formulation is via degradation into simpler substances. The rate of breakdown, however, varies. By nature of their application, the soil bound polymers are intended to have a low initial rate of breakdown to ensure their efficiency in binding to soil particles.

Degradation of residues is accelerated by exposure to strong sunlight, high temperatures, moist conditions and microorganisms.

From current knowledge, there appears to be no undesirable persistence or concentration of these polymers or breakdown products in the environment.

6. ENVIRONMENTAL AND ECOTOXICITY EFFECTS

Copolymers used as dust suppressants are not considered to be hazardous or harmful to the environment. No acute toxicity data, measured as LD_{50} in test animals are available for this product.

Large molecular weight compounds such as polyacrylics are not expected to bioconcentrate in organisms from residues in waters or soils. Ecotoxicity data for the product is unavailable and not considered relevant for the copolymers or suspending agents.

If released to waterways, lakes or dams, the biodegradation of dilute concentrations of residues should have little to no impacts on dissolved oxygen levels in receiving waters. Concentrated spills or leaks of formulated or diluted product for application, however, may have the capacity to cause depletion of dissolved oxygen and indirect effects on aquatic life as for discharges of organic matter wastes. The risk of acute and chronic toxicity due to residues in the environment is predicted to be low based on known properties of components, although direct ecotoxicity data on the product is unavailable.

7. ENVIRONMENTAL RISK MANAGEMENT

Potential environmental risks from the spray application of Vital Bon-Matt HR dust suppressant are evaluated as low based on current knowledge and predicted environmental behaviour and fate. However, precautionary measures should be applied through following the SDS and preventing release of product or residues to sensitive environments such as waterways or wetlands. This includes prevention of spillages and regulated disposal of any wastes.

8. REFERENCES

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