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Sustainable Infrastructure Solutions

DustSuppresSOR

The World Enzymes product DustSuppresSOR is designed to control dust on mine sites, construction site, roads and stockpiles.

DustSuppresSOR has been assessed with respect to toxicity to humans and the environment.

The composition of the product has been assessed with respect to the Alberta Tier 1 Soil and Groundwater Guidelines and the US EPA regulatory status.

The results of the assessments are summarised below.

HUMAN TOXICITY

Acute Toxicity

The acute toxicity of DustSuppresSOR was estimated by summing the toxicities of the individual components of the product. On this basis the acute toxicity was estimated to be >3,000mg/kg i.e. Slightly toxic (Reference 1).

Chronic Toxicity

None of the ingredients in DustSuppresSOR is known or expected to have any long term adverse effects on health; none of the ingredients are known or suspect carcinogens; none of the ingredients are genotoxic or teratogenic.

Skin and Eye Contact

Contact of the concentrated product with the eyes is likely to cause moderate to severe irritation. Prompt attention in the event of eye contact is essential. Repeated or prolonged skin contact with the concentrated product may cause defatting of the skin leading to discomfort and irritation.

Inhalation

DustSuppresSOR is not volatile and does not emit any hazardous fumes under normal conditions of use. However, inhalation of spray mist or aerosols generated by spraying the product may irritate the upper respiratory system.

Dilution of DustSuppresSOR

DustSuppresSOR is a highly concentrated product. Diluting the product with water will reduce the acute toxicity of the product and significantly reduce the hazard associated with skin and eye contact.

ENVIRONMENTAL TOXICITY

Biodegradability

Biodegradability is defined as the ability of a substance to break down in the environment as a result of the action of microorganisms.

The rate of biodegradation is influenced by many factors including the nature of the material, the level of microbial activity, moisture, temperature and other environmental factors.

For these reasons, the term biodegradability has no meaning in isolation. It must be related to a standard test method (References 2 and 3)

Based on the standard test methods, organic compounds can be classified as:

Readily biodegradable if the substance degrades by 70% or more in 28 days under the test conditions.

Inherently biodegradable if the substance degrades by 20 – 70% in less than 28 days under the test conditions.

Using these criteria, DustSuppresSOR is classified as readily biodegradable. The ultimate products of degradation are water and carbon dioxide.

Persistence and Mobility

This product is expected to be mobile in the aquatic environment. Soil mobility will depend on soil moisture. Because the product biodegrades rapidly it is not likely to persist in soil or the aquatic environment and is not likely to contaminate ground water.

Ecotoxicity

In its concentrated form, the product should be regarded as harmful to aquatic organisms. Direct discharge of the product into natural water systems, even when diluted with water should be avoided.

Estimated toxicity to aquatic organisms (based on sum of toxicity of individual components):

LC50 (96 h) >10mg/L, fish

EC 50 (48h) >10mg/L, aquatic invertebrates

EC50 (72h) >10mg/L, aquatic plants

Bioaccumulation

None of the constituents of this product have any potential to bioaccumulate.

ALBERTA TIER 1 SOIL AND GROUNDWATER GUIDELINES

The composition of DustSuppresSOR has been assessed with reference to the Alberta Tier 1 Soil and Groundwater Guidelines, May 23, 2014 ("The Guidelines").

Table A-5. *Surface Soil Remediation Guideline Values for Industrial Land Use – All Exposure Pathways* on pages 95 to 101 of the Guidelines lists a number of chemicals and limits for these chemicals applicable to the use of DustSuppresSOR.

None of the chemicals listed in Table A-5 of the Guidelines are ingredients used in the manufacture of DustSuppresSOR.

None of the chemicals listed in Table A-5 of the Guidelines are present as impurities in the raw materials used in the manufacture of DustSuppresSOR.

US EPA REGULATORY STATUS

None of the ingredients in DustSuppresSOR appear on the EPA List of Lists (Reference 4).

None of the ingredients in DustSuppresSOR when disposed of would become an EPA RCRA regulated hazardous waste (Reference 5).

REFERENCES

1. http://en.wikipedia.org/wiki/Toxicity_category_rating
2. OECD "Guidelines for the Testing of Chemicals"
3. Australian Standard AS4351 "Biodegradability of Organic Substances in an Aqueous Medium"
4. http://www2.epa.gov/sites/production/files/2013-08/documents/list_of_lists.pdf
5. <http://www.epa.gov/region02/waste/csummary.htm>

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