

# ASSESSMENT OF ICE MELT PRODUCTS

Representatives of BC's Film & Television Industry approached Actsafe (formerly SHAPE) in 2007 over concerns regarding ice melt products being used to assist in clearing walkways. These products tended to increase the conductivity of electricity, and electricians working on film sites were receiving electrical shocks. Research on ice melt products was requested.

Actsafes approached UBC's School of Environmental Health to conduct research on this issue. Following are their comments and recommendations.

Most safe and effective ice melt products contain chemical salts as an active ingredient. Since salts conduct electricity when dissolved in water, these products will increase the conductivity of the water it melts.

The safest methods of avoiding electrical hazards are engineering controls: prevent water from contacting electrical wires and electrical connections. If water is effectively prevented from contacting electricity sources, de-icing products that increase the conductivity of water can be used.

If electrical conductivity is a concern, consider appropriate products intended to increase traction rather than ice melt products.

## Ice Melt Products

Based on the twelve products assessed and the information provided by the manufacturers, it appears that Zep Ice Attack (active ingredient: calcium magnesium acetate) has the fewest health and environmental impacts.

**Health Effects of Calcium Magnesium Acetate:** Based on the available evidence, calcium magnesium acetate (CMA) appears to be relatively non-toxic.

**Environmental Impact of Calcium Magnesium Acetate:** Calcium magnesium acetate is generally regarded as having relatively few environmental impacts. It readily biodegrades and therefore does not persist in the environment.

*The only de-icing product that did not significantly increase the conductivity of water was Urea. However, the use of Urea to melt snow and ice may result in significant health and environmental impacts.*

**Health Effects of Urea:** Skin or eye contact with urea can cause irritation. Ingestion of highly concentrated urea can cause nausea, excitement and convulsions. Inhalation of urea dust or mist may cause respiratory irritation. Chronic inhalation exposure to high levels of urea dust or mist may be associated with emphysema.

**Environmental Impact of Urea:** Urea can have a number of negative environmental impacts when it enters aquatic habitats.

*Chloride salts (potassium chloride, magnesium chloride, calcium chloride and sodium chloride) are a common ingredient in ice melts.*

**Health Effects of Chloride Salts:** These salts can cause mild skin and eye irritation. Animal studies have shown that calcium chloride may cause severe acute skin irritation if it contacts broken skin, and they have

also shown that calcium chloride can cause eye damage.

**Environmental Impact of Chloride Salts:** Chloride salts contribute to the levels of chloride in the environment. Chloride can be harmful to plants and wildlife. Aquatic life, particularly algae, is sensitive to chloride exposure. If animals and birds eat the salt they may be poisoned; behavioural changes have been seen in animals and birds who have eaten salt used to melt road ice.

## Traction Products

Sand can be used to improve traction in icy areas. Sand runoff can cause sediment buildup and drainage system blockage, possibly harming aquatic ecosystems.

However, because sand is not soluble in water it may be possible to collect sand at the work site before sand runoff enters the environment.

*EcoTraction is a natural volcanic mineral which is being promoted as a 100% green product. It is being advertised as having better traction than sand. It does not appear to have negative health or environmental impacts when used as recommended.*

Note: A comprehensive health and environment assessment of the products discussed above cannot be obtained because of the non-disclosed "other ingredients" involved in the manufacture of the products.