

Summary of Risk Assessment Conducted Pursuant to subsection 83(1) of the *Canadian Environmental Protection Act, 1999*

New Substances Notification 21368: 2-Propenoic acid, magnesium salt (2:1) (Chemical Abstracts Service Registry Number 5698-98-6)

Regulatory decisions

Under the provisions for Substances and Activities New to Canada in Part 5 of the *Canadian Environmental Protection Act, 1999* (CEPA), and pursuant to section 83 of the Act, the Minister of the Environment and the Minister of Health have assessed information in respect of the substance and have determined that it is not anticipated to enter the environment in a quantity or concentration or under conditions that have or may have an immediate or long term harmful effect on the environment or its biological diversity, constitute or may constitute a danger to the environment on which life depends, or constitute or may constitute a danger in Canada to human life or health.

Substance identity

The notified chemical is 2-propenoic acid, magnesium salt (2:1) (Chemical Abstracts Service Registry Number¹ 5698-98-6).

Notified and potential uses

The substance is proposed to be imported into Canada in quantities greater than 10 000 kg/yr for the notified use as a monomer to restore oil wells. Potential industrial uses may include as a reagent in water-sealing compositions, a component to improve cement and to prepare concrete composite, industrial processing aids, and removal of gases from coal mines.

Environmental fate and behaviour

Based on its physical and chemical properties, if the substance is released to the environment, it will tend to partition to water. The substance is not expected to be persistent in this compartment based on its very high ready biodegradation (> 85% in 28 days); however, water soluble magnesium released through biodegradation is expected to be persistent in water, sediment and soil. The substance is not expected to bioaccumulate based on its very low octanol-water partition coefficient ($\log K_{ow} < 0$).

Environmental risk assessment

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Based on the available hazard information, the substance is expected to have moderate acute toxicity to fish (median lethal concentration 1-100 mg/L), low acute toxicity to aquatic invertebrates (median effective concentration > 100 mg/L), low chronic toxicity to aquatic invertebrates (10% effective concentration [EC₁₀] > 10 mg/L), and high chronic toxicity to algae (EC₁₀ < 0.1 mg/L). Using the EC₁₀ from the most sensitive organism (algae) and by applying an assessment factor of 2 to account for mode of action, the predicted no-effect concentration (PNEC) was calculated to be in the range of 0.01-0.1 mg/L, which was used to estimate the risk to the environment.

The notified and other potential activities in Canada were assessed to estimate the environmental exposure potential of the substance throughout its life cycle. Environmental exposure from the notified activities is expected to be mainly from cleaning of transportation vessels from release of the substance to water resulting in a predicted environmental concentration (PEC) in the range of 0.001-0.01 mg/L. For potential activities such as manufacturing, environmental exposure is expected to be quantitatively similar to that of the notified use.

Comparing the PEC with the PNEC, the ratio is less than 1. This, along with other lines of evidence including environmental fate, hazard, and exposure, indicates that the substance is unlikely to cause harm to the environment in Canada.

Human health risk assessment

Based on the available hazard information, the substance has a low acute toxicity by the oral and dermal routes (median lethal dose > 2000 mg/kg body weight). It is expected to have moderate subchronic toxicity following repeated oral doses (90-day no-observed-adverse-effect level (NOAEL) 10-100 mg/kg-bw/day) and high subchronic toxicity following repeated inhalation doses (90-day no-observed-adverse-effect concentration < 0.2 mg/L/6 hrs) in mammalian test animals. The substance is expected to have low reproductive toxicity (NOAEL > 300 mg/kg-bw/day) and moderate developmental toxicity (NOAEL 30-300 mg/kg-bw/day) following repeated oral doses in mammalian test animals. It is not a dermal sensitizer (negative in the local lymph node assay). It is not expected to be mutagenic *in vitro* or *in vivo* and is not expected to be clastogenic *in vitro*. Therefore, the substance is unlikely to cause genetic damage.

When the notified substance is used as a monomer to restore oil wells, direct exposure of the general population is not expected due to the industrial nature of the use. Indirect exposure of the general population from environmental media is not expected given the specialized industrial use of the substance, which results in little or no release to the environment. Potential uses of the substance may include use as a reagent in water-sealing compositions, a component to improve cement and to prepare concrete composite, industrial processing aids, and removal of mine gases from coal mines. Similar to that of the notified use, direct and indirect exposure of the general population from these potential industrial uses are not expected to be at levels that would pose a concern.

Based on the low potential for exposure, the substance is not likely to pose a significant health risk to the general population and is, therefore, unlikely to be harmful to human health.

The assumptions made in the assessment are considered to be adequately protective for the general population as well as for subpopulations which may be more susceptible or highly exposed.

Assessment conclusion

When the substance is used as notified or for other identified potential activities, it is not expected to be harmful to human health or the environment according to the criteria under section 64 of the Act.

A conclusion under CEPA, on this substance, is not relevant to, nor does it preclude an assessment against the hazard criteria for Workplace Hazardous Materials Information System that are specified in the *Controlled Products Regulations* or the *Hazardous Products Regulations* for products intended for the workplace.