

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

New Substances Notification No. 19800: 2-Butenedioic acid (2Z)-, homopolymer, potassium salt (Chemical Abstracts Service No. 26099-08-1)

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 polymer is 2-butenedioic acid (2Z)-, homopolymer, potassium salt (Chemical Abstracts Service No. 26099-08-1). The substance does not meet the Reduced Regulatory Requirements criteria according to the *New Substances Notification Regulations (Chemicals and Polymers)* because its number average molecular weight is less than 1000 daltons.

Notified and potential activities

The substance is proposed to be manufactured in and/or imported into Canada in quantities greater than 10 000 kg/yr for the notified use in cooling towers of industrial water systems. Potential uses may include household cleaning products.

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 expected to be persistent in the water based on its lack of hydrolysable functional groups and its complex chemical composition which will limit environmental biodegradation. The substance is not expected to bioaccumulate due to negative charges contained in its structure, which will limit its ability to cross biological membranes.

Ecological assessment

Based on the available hazard information on the substance and surrogate data on structurally related chemicals, the substance has low to moderate acute toxicity to algae (median effective concentration (EC_{50}) > 1 mg/L) but exhibits reduced toxicity in the presence of increased calcium and magnesium. It is expected to have low acute toxicity to fish and aquatic invertebrates. A predicted no-effect concentration was not calculated given the low potential for ecological hazard.

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

activity is expected to be mainly from its use in cooling towers of industrial water systems by release of the substance to water. For potential activities such as use in household cleaning products, environmental exposure is expected to be similar to that of the notified use. A predicted environmental concentration was not calculated due to the low potential for ecotoxicity.

Based on the low potential for ecotoxicity, the substance is unlikely to cause ecological harm in Canada.

Human health assessment

Based on the available hazard information, the substance is likely to have a low acute toxicity by the oral route of exposure.

When the notified substance is used in cooling towers of industrial water systems, direct exposure of the general population is not expected due to the industrial nature of the use. If potential uses of the substance were to include household cleaning products, direct exposure of the general population is expected to be at low levels. Although dermal contact is anticipated, the substance is expected to be present at low concentrations in these products, hands are expected to be rinsed after use and systemic uptake is not expected. Indirect exposure of the general population from environmental media such as drinking water is expected to be low for both notified and potential activities.

Based on the potential for low 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.

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 *Hazardous Products Regulations* for products intended for the workplace.