

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

New Substances Notification No. 18358: Benzene, 1,3,5-tris(1-methylethyl)-

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 that 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

Benzene, 1,3,5-tris(1-methylethyl)- (Chemical Abstracts Service Registry No. 717-74-8) is a chemical that can be classified as a discrete organic chemical.

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 use as an additive in lubricants. Other potential uses may include as a fuel additive and other specialized industrial applications.

Environmental Fate and Behaviour

Based on its physical and chemical properties, if released to the environment, the substance will tend to partition to air, soil and sediment. The substance is not expected to be persistent in air based on its short half-life (<2 days). In other compartments, the substance is expected to be persistent based on its long half-life in soil (>180 days) and in sediment (>365 days). The substance is not expected to bioaccumulate based on its bioconcentration factor (<5000 L/kg).

Ecological Assessment

Based on the available hazard information on the substance and surrogate data on structurally related chemicals, the substance has low acute toxicity in fish, aquatic invertebrates and algae as no significant adverse effects were observed in saturated solutions. A predicted no-effect concentration was not calculated given the low potential for ecotoxicity.

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 is expected to be mainly from release of the substance to water during blending processes. Given the low

hazard profile of the notified substance, a predicted environmental concentration for notified activities was not calculated.

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

Human Health Assessment

Based on the available hazard information on the substance and surrogate data on structurally related chemicals, the substance has a low potential for acute toxicity by the oral, dermal and inhalation routes of exposure (oral and dermal median lethal dose >2000 mg/kg body weight; inhalation median lethal concentration >5 mg/L). It is a weak sensitizer (effective concentration >10%). It is not mutagenic or clastogenic *in vitro*. Therefore, the substance is unlikely to cause genetic damage.

When used as an additive in lubricants, direct exposure of the general population is expected to be negligible. For its potential use in specialized industrial applications, direct exposure of the general population is expected to be negligible, but for its potential use as a fuel additive, direct exposure of the general population is expected to be mainly by contact with the skin or by inhalation at low levels based on the low concentration in fuels. However, based on its low toxicity and the infrequent and short duration of exposure, a risk to human health from direct exposure was not identified. Indirect exposure of the general population from environmental media such as drinking water is expected to be at low levels.

Based on the low potential for toxicity, 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 uses, it is not suspected to be harmful to human health or the environment according to the criteria under section 64 of CEPA.

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 workplace use.