

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

New Substances Notification No. 18298: Hexanedioic acid, polymer with heteropolycyclodione, polymethylenepolyphenylene derivative and 1,2-propanediol

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

Hexanedioic acid, polymer with heteropolycyclodione, polymethylenepolyphenylene derivative and 1,2-propanediol (Confidential Accession No. 18893-2) is a polymer that can be classified as a poly(arylester-arylurethane-ester) polymer. The substance does not meet the Reduced Regulatory Requirements criteria according to the New Substances Notification Regulations because it contains functional groups of concern

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 insulator and sealant. Other potential uses are expected to be similar to those notified.

Environmental Fate and Behaviour

Based on its physical and chemical properties, if released to the environment, the substance will tend to partition to soil and sediment. The substance is expected to be persistent in soil and sediment because it is expected to generate insoluble, higher molecular weight reaction products that would bind to soil constituents. The substance is not expected to be bioaccumulate based on its high molecular weight making it unable to cross biological membranes.

Ecological Assessment

Based on the available hazard information and surrogate data on structurally related chemicals, the substance is expected to have low acute toxicity in fish (median lethal concentration (LC₅₀) >100mg/L). Additionally, the functional groups of concern are expected to react with water to form large, insoluble polymers with reduced ecotoxicity, and which will not be available to

aquatic organisms. A predicted no-effect concentration was not calculated given the low ecotoxicity of the hydrolysis products.

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 of these activities is not expected as the substance is fully consumed upon its use. In the case of accidental release, the substance will react with water to form large, insoluble polymers. Transportation is expected to occur in air-tight containers and extra precautions to be taken to prevent such a release.

Based on the low ecotoxicity and low potential for exposure, 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 and dermal routes of exposure (median lethal dose >2000 mg/kg body weight), a very high potential for acute toxicity by the inhalation route of exposure ($LC_{50} \leq 0.5$ mg/L), and a high potential for subchronic toxicity following repeat inhalation doses in mammalian test animals (no-observed-effect concentration <0.06 mg/L). The substance has a high potential for chronic toxicity by the inhalation route of exposure (no-observed-adverse-effect level <0.1 mg/L). It is a skin sensitizer and is not mutagenic *in vitro*. Therefore, the substance is unlikely to cause genetic damage.

When the substance is used as an insulator and sealant for use in aerosol spray foam products, direct exposure of the general population is expected to be low if used as directed, with the use of eye protection and gloves and that the product be used with sufficient ventilation. In spaces where ventilation is insufficient, suitable respiratory equipment during application and curing is required. Once the product is cured direct exposure is considered negligible given that the substance becomes part of a stable resin from which it cannot be released. Indirect exposure of the general population is not expected given that no environmental releases are anticipated. Direct and indirect exposure for potential uses in similar products is considered to be the same as that of the notified use.

Based on the low potential for indirect 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 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.