

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

New Substances Notification No. 18693: Silsesquioxanes, 3-isocyanatopropyl Pr, polymers with silicic acid (H₄SiO₄) tetra-Et ester, alkoxy- and hydroxyl-terminated, polymers with 2,2'-(1,2-diazenediyl)bis[2-methylbutanenitrile]-initiated 2-ethylhexyl acrylate-2-hydroxyethyl methacrylate-iso-Bu methacrylate-styrene-3-(trisubstitutedsilyl)propylmethacrylate polymer, reaction products

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 silsesquioxanes, 3-isocyanatopropyl Pr, polymers with silicic acid (H₄SiO₄) tetra-Et ester, alkoxy- and hydroxyl-terminated, polymers with 2,2'-(1,2-diazenediyl)bis[2-methylbutanenitrile]-initiated 2-ethylhexyl acrylate-2-hydroxyethyl methacrylate-iso-Bu methacrylate-styrene-3-(trisubstitutedsilyl)propylmethacrylate polymer, reaction products (Confidential Accession No. 19229-7). The substance does not meet the Reduced Regulatory Requirements criteria according to the *New Substances Notification Regulations (Chemicals and Polymers)* because it contains alkoxysilane and silanol groups.

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 in automotive paints. Potential uses may include other paints and coatings.

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 reacts with water to form high molecular weight, insoluble complexes that are resistant to degradation. The substance is not expected to bioaccumulate based on its high molecular weight which will limit its ability to cross biological membranes.

Ecological Assessment

Based on the available hazard information on structurally related chemicals, the substance is expected to have low acute toxicity in algae (median effective loading >100 mg/L). The substance is not expected to be water soluble and therefore will not be bioavailable to aquatic organisms. 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 low. The substance will be reacted into a polymer matrix once cured and unavailable for release, and is expected to be efficiently removed via waste water treatment processes. A predicted environmental concentration for notified activities was not estimated given the low potential for environmental exposure. Potential uses of the substance include use as a coating additive in non-automotive applications (e.g. house paints, architectural coatings). For these potential uses, environmental exposure is expected to be similar to that of the notified use.

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

Human Health Assessment

Based on the available hazard information on structurally related chemicals, the substance is expected to have a low potential for acute toxicity by the oral route of exposure (median lethal dose >2000 mg/kg body weight). The substance contains functional groups which have been associated with lung toxicity following inhalation of vapours. However, given its high molecular weight the substance is not expected to be volatile or bioavailable; therefore, lung toxicity is considered to be mitigated.

When the notified substance is used in automotive paints in industrial settings, consumers may come into contact with end-use products containing the substance; however, direct exposure is not expected because the substance will be chemically reacted into a stable matrix once the product is cured and will be unavailable for uptake. Indirect exposure of the general population from environmental media such as drinking water is expected to be low given the low potential for environmental release. If the substance is used in other industrial paints and coatings, direct and indirect exposure of the general population is expected to be similar to that of the notified use. No other potential uses have been identified.

Based on the low potential for direct or 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 *Hazardous Products Regulations* for products intended for the workplace.