

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

New Substances Notification No. 18660: Phenol, 4-ethenyl-, acetate, homopolymer, 2,2'-substituted bis(2, 4-dimethylalkanenitrile)-initiated, hydrolyzed, 1-ethoxyethyl ethers

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

Phenol, 4-ethenyl-, acetate, homopolymer, 2,2'-substituted bis(2, 4-dimethylalkanenitrile)-initiated, hydrolyzed, 1-ethoxyethyl ethers (Confidential Accession No. 19232-0) is a polymer that can be classified as a phenolic homopolymer. The substance does not meet the Reduced Regulatory Requirements criteria according to the *New Substances Notification Regulations (Chemicals and Polymers)* because it contains ortho-unsubstituted phenol 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 electronic applications. Potential uses may include coatings and adhesives.

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 does not contain any functional groups that would be susceptible to biodegradation, resulting in expected half-lives of >182 days in soil and >365 days in sediment. The substance is not expected to bioaccumulate based on its high molecular weight which will limit its ability to cross biological membranes and its low to moderate octanol-water partition coefficient ($\log K_{ow} < 5$).

Ecological Assessment

Hazard information was not available for the notified substance given its low water extractability (<2%) which will limit its bioavailability in aquatic organisms. Based on the available surrogate data on structurally related chemicals, the substance is expected to have low acute toxicity in fish

and aquatic invertebrates (median lethal loading and median effective loading (EL₅₀) >100 mg/L) and moderate acute toxicity in algae (EL₅₀ 1-100 mg/L); however, the moderate toxicity observed in algae is likely the result of the presence of a solvent. A predicted no-effect concentration was not calculated given the low potential for ecological hazard.

The notified 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 low. Environmental release is not expected during use. A predicted environmental concentration was not calculated given the low potential for ecotoxicity and environmental release.

Based on the low levels of ecotoxicity, bioavailability and environmental exposure, the substance is unlikely to cause ecological harm in Canada.

Human Health Assessment

Based on surrogate data on structurally related chemicals, the notified substance is expected to have a low potential for acute toxicity by the oral and dermal routes of exposure (median lethal dose >2000 mg/kg body weight). It is not expected to be a sensitizer (0-8% response (guinea pig maximization test)) or mutagenic *in vitro*. Therefore, the substance is unlikely to cause genetic damage.

When the notified substance is used as in electronic applications, direct exposure of the general population is not expected. Indirect exposure of the general population from environmental media such as drinking water is expected to be low. When potentially used in industrial adhesives and coatings, consumers may come into direct dermal contact with products produced using the substance; however, it will be chemically reacted into a stable matrix and unavailable for dermal uptake. However, if the substance is used in adhesives and coatings for consumer applications, an increased direct exposure potential via contact with the skin may exist. Dermal uptake is mitigated by the high molecular weight of the substance; therefore, direct exposure from potential uses is expected to be low.

Based on the low potential for exposure and the expected low 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 *Hazardous Products Regulations* for products intended for the workplace.