Australian Government
Department of Health and Aged Care
Australian Industrial Chemicals Introduction Scheme

Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidineethanol (2:1)

Assessment statement

30 November 2022

Table of contents

Contents

AICIS assessment

Chemical in this assessment

Name	CAS registry number
Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidineethanol (2:1)	59535-09-0

Reason for the assessment

An application for an assessment certificate under section 31 of the *Industrial Chemicals Act 2019* (the Act).

Certificate Application type

Health focus

According to information submitted by the applicant and criteria in the Industrial Chemicals (General) Rules 2019 and the Industrial Chemicals Categorisation Guidelines, this introduction is in the **assessed** category. The reason is that this introduction has **medium to high** indicative risk for **human health** because it is in:

- human health exposure band 4
- human health hazard band B

The introduction of this chemical has **low** indicative risk for the **environment** because it is in:

- environment exposure band 3
- environment hazard band A

Defined scope of assessment

The chemical has been assessed:

- as imported into Australia at up to 200 tonnes/year
- as imported neat, or as a formulation containing the assessed polymer at 20.25% concentration
- for reformulation into surface coating products at a concentration of less than 3% for use only by industrial and professional workers.

Summary of assessment

Summary of introduction, use and end use

The assessed polymer will not be manufactured in Australia. It will be imported into Australia at up to 200 tonnes/year either neat (~ 99% w/w), or as a formulation containing the assessed polymer at a concentration of 20.25% for reformulation into finished surface coatings

containing the assessed polymer at a concentration of less than 3%. The finished surface coating will be used in industrial or commercial settings only.

The assessed polymer functions as a light stabiliser (additive), and it is used alone or in combination with UV-absorbers, especially in waterborne coatings to significantly extend coating lifetimes.

Human health

Summary of health hazards

Based on the available data the assessed polymer is likely to be sensitising to the skin (see **Supporting information**), warranting hazard classification (see **Health hazard classification** section).

The applicant has not provided data on inhalation toxicity.

The available toxicity data indicate that the assessed polymer:

- is likely to be of low acute oral and dermal toxicity
- is non-irritating to the skin and eyes
- is not likely to cause systemic toxicity following repeated oral exposure (up to 750 mg/kg bw/day in rats)
- is not considered to be genotoxic.

Health hazard classification

Based on the available data, the assessed polymer satisfies the criteria for classification for human health, according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS) (UNECE 2017), as adopted for industrial chemicals in Australia.

Health hazards	Hazard category	Hazard statement
Skin sensitisation	Category 1	H317: May cause an allergic skin reaction

Summary of health risk

Public

When introduced and used in the proposed manner, it is unlikely that the public will be exposed to the assessed polymer. Following application, the finished surface coatings containing the assessed polymer at a concentration of less than 3% will cure under ambient conditions so that the assessed polymer will be bound within the dried coating matrix and is not expected to be available for exposure.

This assessment does not identify any risks to public health that would require specific risk management measures when the assessed polymer is introduced in accordance with the terms of the assessment certificate.

Workers

Potential exposure of workers to the assessed polymer at various concentrations, including in its neat form, may occur during various formulation operations and during professional end

use applications. Given that risks of critical health effects (skin sensitisation) of the assessed polymer, control measures to minimise dermal exposure are needed to manage the risk to workers (see **Recommendation** section). Control measures to minimise inhalation exposure may be also needed if aerosols or mists are formed during the mixing process.

Environment

Summary of environmental hazard characteristics

According to domestic environmental hazard thresholds and based on the available data the assessed polymer is:

- Persistent (P)
- Not Bioaccumulative (not B)
- Not Toxic (not T)

Environmental hazard classification

In silico ecotoxicological endpoint predictions were available for three trophic levels for a conservatively representative component of the assessed polymer. Based on the ecotoxicological predictions available for the assessed polymer, it is not expected to be harmful to aquatic life. Therefore, the assessed polymer does not satisfy the criteria for classification under the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS) (UNECE 2017) for acute and chronic aquatic toxicities.

Summary of environmental risk

No significant release of the assessed polymer is expected to occur due to its functions as a light stabiliser (additive) in surface coating products. The assessed polymer is expected to share the fate of the product it is incorporated into and be disposed of to landfill at the end of its useful life. The assessed polymer is predicted to be not readily biodegradable and is categorised as persistent. It is not expected to bioaccumulate, based on its measured log K_{OW} of less than 4.2. The assessed polymer is not predicted to be toxic to aquatic organisms.

Although the assessed polymer is persistent, it does not meet all three PBT criteria. Significant environmental release of the assessed polymer from its assessed industrial uses in Australia is not expected. Based on its low hazards and the assessed use pattern, it is expected that the environmental risks associated with the assessed polymer can be managed.

Means for managing risk

Workers

Recommendation to Safe Work Australia

- It is recommended that Safe Work Australia (SWA) update the *Hazardous Chemical Information System* (HCIS) to include classifications relevant to work health and safety (see **Health hazard classification**).

Advice to Industry

- The following control measures could be implemented to manage the risk arising from exposure to the assessed polymer during reformulation and end use activities:

- Use of engineering controls such as
  - Enclosed and automated processes where possible
  - Adequate workplace ventilation to avoid accumulation of vapours, mists, or aerosols

- Use of safe work practices to
  - Avoid contact with skin and eyes
  - Avoid inhalation of mists or aerosols

- Use of personal protective equipment (PPE)
  - Impervious gloves
  - Protective clothing
  - Respiratory protection

- The storage of the assessed polymer should be in accordance with the Safe Work Australia *Code of Practice for Managing Risks of Hazardous Chemicals in the Workplace* (SWA, 2012) or relevant State or Territory Code of Practice.

- A copy of the Safety Data Sheet (SDS) should be easily accessible to workers.

Environment

No specific recommendation for the use of the assessed polymer is required when the assessed polymer is introduced in accordance with the terms of the assessment certificate.

Conclusions

The conclusions of this assessment are based on the information described in this statement.

The Executive Director is satisfied that when the assessed polymer is introduced and used in accordance with the terms of the assessment certificate the human health and environment risks can be managed within existing risk management frameworks. This is provided that all requirements are met under environmental, workplace health and safety and poisons legislation as adopted by the relevant state or territory and the control measures described in the statement are utilised.

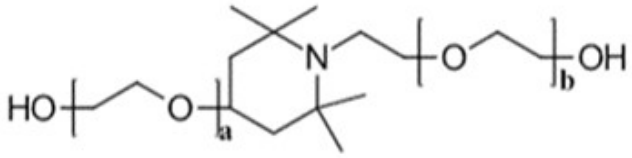
Note: Obligations to report additional information about hazards under section 100 of the *Industrial Chemicals Act 2019* apply.

Supporting information

Chemical identity

Chemical name	Poly(oxy-1,2-ethanediyl), α-hydro-ω-hydroxy-, ether with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidineethanol (2:1)
CAS No.	59535-09-0
Synonyms	1-(2-Hydroxyethyl)-2,2,6,6-tetramethyl-4-hydroxypiperidine-ethylene oxide condensation product Polyethylene glycol, ether with 4-hydroxy-2,2,6,6-tetramethyl-1-piperidineethanol (2:1)
Molecular formula	$(C_2H_4O)_n(C_2H_4O)_nC_{11}H_{23}NO_2$
Number Average Molecular Weight (Mn)	~451-469 g/mol
SMILES	OCCOCCN1C(C)(C)CC(OCCO)CC1(C)C (for a, b = 1)

Structural formula



a + b = ~5.5 (average)

Relevant physical and chemical properties

Physical form	White/yellow liquid (viscous)
Melting point	< 18 °C
Boiling point	> 300 °C
Vapour pressure	0.0098 Pa at 25 °C (calculated for a, b = 1 component)
Relative density	1.09 at 20 °C
Autoignition temperature	396 ± 10 °C
Explosive properties	Not explosive
Oxidising properties	Not oxidising
Water solubility	> 1000 g/L at 20 °C (completely miscible)
Henry's law constant	5 x 10^{-9} Pa·m^3/mol (calculated for a, b = 1 component)

Ionisable in the environment?	Yes, the amine is expected to be mostly in the cationic form but also in the neutral form at the environmental pH range of 4–9
pKa	8.6 (measured for analogue chemical)
log K_{ow}	-0.43

Introduction and use

The assessed polymer will be imported into Australia by sea in intermediate bulk containers (IBCs), drums, and pails either neat (~99% w/w) or as a formulation containing the assessed polymer at 20.25% concentration. While no reformulation activity will occur at the applicant's facility in Australia, the IBCs, drums, and pails containing the assessed polymer will be transported from the port of entry wharf to the applicants' third-party warehouse facilities for storage. As the need arises, these containers are then taken to the surface coatings manufacturing plants' warehouse facilities for reformulation by road transport.

Reformulation

As per the applicant, the reformulation process incorporates blending operations that are fully automated and occur in a fully enclosed/contained environment under appropriate exhaust ventilation by operators wearing personal protective equipment (PPE). Small samples following mixing will be taken for quality assessment purposes by the Quality Assurance Chemist wearing appropriate PPE.

Blending is followed by filling the end-use product into a variety of packages by an operator wearing appropriate PPE ranging from 0.25 L cans up to 1000 L intermediate bulk containers using a pump under appropriate exhaust ventilation.

Professional End Use

The finished surface coatings containing the assessed polymer at a concentration of less than 3% will be either applied at industrial sites or at commercial sites.

The applicant has stated that (at industrial sites), the finished surface coatings containing the assessed polymer at a concentration of less than 3% will be applied onto primed steel, aluminium, other metallic substrates and timber substrates by spray, roller, trowel, and similar application methods by coating operators wearing appropriate PPE in application booths with suitable exhaust ventilation. Once the coated substrates have fully cured at ambient temperature, they are subsequently packed up and transported to various locations throughout Australia, where they will be used in areas including construction, furniture, and wood panelling.

At commercial sites (professional floor, roof tiles and exterior coating applications), the finished surface coatings containing the assessed polymer at a concentration of less than 3% is expected to be applied by spray, roller, trowel, and similar application methods onto concrete floors, exterior concrete surfaces, and concrete tile roofs by coating operators wearing appropriate PPE. After the application, the exterior concrete surfaces and concrete tile roofs are left to cure at ambient temperature (typically takes less than one hour) and will then be left to further cure at ambient temperature for 8 hours prior to anyone walking on the coated exterior concrete surfaces and concrete roof tiles.

Human exposure

Workers

Reformulation

Dermal, ocular, and inhalation exposure (if aerosols or mists are formed) of workers to the assessed polymer at a concentration of 99% or less may occur during reformulation/blending. However, exposure is expected to be limited as the reformulation processes incorporate blending operations that are fully automated and occur in a fully enclosed/contained environment. Exposure will be further limited using a pump during packaging, and the use of PPE by the operator/quality analysis chemist, and during packaging. Given that the assessed polymer has relatively low vapour pressure, significant inhalation exposure is not expected, unless aerosols or mists are formed during the mixing process.

Professional End Use

The finished surface coatings containing the assessed polymer at a concentration of less than 3% will be used at industrial and commercial sites by coating operators. There is potential for dermal, ocular and inhalation exposure of workers at these sites to the assessed polymer at a concentration of less than 3% during applications. However, considering the use of PPE and engineering controls, exposure is expected to be minimal.

Given that the assessed polymer has relatively low vapour pressure, potential for significant inhalation exposure is not expected, unless during spray application without engineering controls.

Public

The end use products, containing the assessed polymer, are proposed for use in industrial and commercial settings only and are not intended to be used by consumers. As the coatings are cured following application, the assessed polymer will be bound within the dried coating matrix and is not expected to be available for exposure from products available to consumers. Therefore, indirect public exposure to the assessed polymer through industrial uses are not expected.

Health hazard information

Acute toxicity

No acute oral, dermal or inhalation toxicity data were provided for the assessed polymer. Analogue data are provided for acute oral and dermal toxicity.

Oral

In an acute oral toxicity study (OECD TG 401), two groups of Tif:RAI f1 rats (5 rats/group/sex) were administered a single dose of an analogue chemical by oral gavage at 2000 mg/kg bw in carboxymethylcellulose (in aqueous polysorbate). All animals survived until the end of the 14-day study period. No macroscopic findings were recorded at necropsy. The acute oral LD50 value was determined to be > 2000 mg/kg bw.

Dermal

In an acute dermal toxicity study (OECD TG 402), the analogue chemical was applied at a single dose of 2000 mg/kg bw evenly on the intact skin of Tif:RAI f1 rats (5 rats/group/sex) and covered with a semi-occlusive dressing for 24 hours. All animals survived until the end of the study period of 14 days. No macroscopic findings were recorded at necropsy. The acute dermal LD50 value was determined to be > 2000 mg/kg bw.

Corrosion/Irritation

Skin irritation

The assessed polymer was determined not to be irritating to the skin in an *in vitro* skin irritation test, using reconstructed human epidermis model (SkinEthic RHE® model) (OECD TG 439). The relative mean tissue viability of the test substance-treated tissues was 107.5% (considered as 100%). Under the conditions of this study and according to the test guideline, the assessed polymer was not considered to be irritating to the skin.

Eye irritation

The eye irritation potential of the assessed polymer was tested in an isolated chicken eye (ICE) test (OECD TG 438). The test item (30 µL) was applied to three enucleated chicken eyes for 10 seconds before being rinsed twice with 10 mL of saline solution. Damages by the test item were assessed by determination of corneal swelling, cornel opacity, and fluorescein retention at 30, 75, 120, 180 and 240 minutes after the post-treatment rinse. The observed maximal mean score for corneal opacity was 0 (ICE Class I), maximal corneal swelling observed was 8% (ICE Class II), and the observed mean score for fluorescein retention was 1 (ICE Class II). The combination of the three endpoints (2x II, 1x I) fall under the 'No Category' UN GHS classification. Under the conditions of this study and according to the test guideline, the assessed polymer does not require classification for serious eye damage.

Sensitisation

Skin sensitisation

The skin sensitisation potential of the assessed polymer was tested in a modified local lymph node assay (LLNA), which utilises non-radiolabelled 5-bromo-2-deoxyuridine (BrdU) in an Enzyme-Linked Immunosorbent Assay (ELISA) (OECD TG 442B).

Three groups of five female mice (CBA/J) (5 animals/dose) received topical applications (25 µL/ear) of the assessed polymer to the entire dorsum of each ear lobe at 25%, 50% and 100% (v/v) concentrations in 20% (v/v) olive oil in acetone for 3 consecutive days. On day 5, 0.5 mL (5 mg/mouse) of BrdU (10 mg/mL) solution was injected intra-peritoneally and the animals were killed humanely approximately 24 hours afterward for further processing.

No skin irritation and no significant treatment-related increase of ear thickness was reported in any treatment group. The assessed polymer showed an SI value of 1.8 at a concentration of 25.0% (v/v). This is a borderline result (SI between 1.6 and 1.9). A clear positive result was obtained with an SI of 2.1 at a concentration of 50.0% (v/v). However, at a concentration of 100% (v/v) the assessed polymer showed an SI value of 1.2. Under the conditions of this study and according to the test guideline, the assessed polymer is a skin sensitiser warranting hazard classification.

Repeat dose toxicity

Oral

Repeated dose toxicology information was not submitted for the assessed polymer, but analogue data were provided.

In a sub-chronic repeated dose toxicity study (OECD TG 408), the analogue chemical in propylene glycol was administered to groups of Crl:WI(Han) rats (10 animals/dose/sex) by oral gavage for 90 days, at doses of 0 (control), 30, 150 and 750 mg/kg bw/day. The control group were dosed with vehicle alone (propylene glycol).

There were no treatment-related deaths and no treatment-related changes observed in food consumption, body weight, functional observations tests (neurobehavioral tests), clinical signs, ophthalmological parameters, macroscopic, and microscopic examination in the animals at any tested dose level. The increased incidence of rales among animals at 750 mg/kg was of no toxicological relevance since this clinical sign remained of minimal severity and generally occurred on a few days only for each of the individual animals showing this symptom. Statistically significant clinical pathology changes were recorded in blood at 750 mg/kg bw/day with an increase of alanine aminotransferase activity in females, and a decrease in total protein and albumin level in males. However, as these changes occurred in the absence of supportive histopathological liver lesions, they were considered not to be adverse in nature.

The No Observed Adverse Effect Level (NOAEL) was established at 750 mg/kg bw/day in this study, based on no adverse effects noted in rats up to the highest tested dose.

Genotoxicity

While data on genotoxicity were not provided for the assessed polymer, based on information presented on analogue chemicals, the assessed polymer is not likely to be genotoxic.

In vitro

The analogue chemical was found to be non-mutagenic in a bacterial reverse mutation assay using *Salmonella typhimurium* strains TA98, TA100, TA1535 and TA1537 and *Escherichia coli* WP2 *uvr*A, with or without metabolic activation (OECD TG 471). No significant increases in the frequency of revertant colonies were recorded for any of the bacterial strains at any tested dose (185.2, 555.6, 1666.7 and 5000.0 µg/ plate).

The analogue chemical was assessed for its potential to induce structural chromosomal aberrations (clastogenic activity) and/or changes in the number of chromosomes (aneugenic activity) in Chinese hamster lung V79 cells in vitro, both in the absence and the presence of metabolic activation (OECD TG 473). Three independent experiments were conducted, with and without metabolic activation at concentrations up to 2000 µg/mL. The analogue chemical caused a slight but statistically significant and biologically relevant increase in the number of structurally aberrant metaphases after 18 hours treatment with sampling time at 28 hours without metabolic activation (2.5% vs 8.5%). The analogue chemical did not demonstrate any aneugenic activity as no relevant increase in the number of cells with changes in the number of chromosomes was demonstrated either without S9 mix or after the addition of a metabolizing system. Thus, under the experimental conditions described in this study and according to the test guideline, the analogue chemical is considered to have a clastogenic effect in the absence of metabolic activation.

In an *in vitro* mammalian cell gene mutation test (OECD TG 476) with Chinese hamster ovary (CHO) cells at the Hypoxanthine-Guanine Phosphoribosyl Transferase (HPRT) locus, the analogue chemical tested at concentrations up to 2000 µg/mL was negative in the presence or absence of metabolic activation.

In vivo

The analogue chemical was evaluated for its genotoxic potential (clastogenicity/aneugenicity) as measured by its ability to increase the incidence of micronucleated polychromatic erythrocytes (mnPCEs) in bone marrow (OECD TG 474). The analogue chemical was administered twice at 24 hours apart at doses of 250, 500, 1000, or 1500 mg/kg bw to male Crj:CD (SD) rats by oral gavage with concurrent negative and positive controls (5 rats/group). No mortality was observed at any dose level tested. Under the conditions of this study, the analogue chemical did not induce any statistically significant increases in the frequency of cells with micronuclei in polychromatic erythrocytes (PCEs) in bone marrow, indicating that the analogue chemical was neither clastogenic nor aneugenic. Even though the presence of the chemical was not demonstrated in the bone marrow, considering the high doses of administered chemical (up to 1500 mg/kg bw), it is likely that the chemical would have reached the bone marrow. Therefore, under these conditions, it can be concluded that the analogue chemical was neither clastogenic nor aneugenic.

Environmental exposure

The assessed polymer will be imported into Australia and will be reformulated into surface coating products before use. Typically, reformulation processes incorporate blending operations that are fully automated and occur in a fully enclosed/contained environment. This is followed by filling the end-use product into a variety of packages. This limits the potential for release. Any spills that occur during the blending process are expected to be collected for appropriate disposal.

Blended end products containing the assessed polymer will be applied to various surfaces by professional workers for the surface coating applications as indicated in the **Introduction and use** section. No significant environmental release is expected from the controlled industrial and commercial application of the surface coating products in various end uses. The assessed polymer is expected to be cured into an inert solid matrix following application as a surface coating on end use substrate materials. It is therefore expected to share the fate of the product it is incorporated onto, either being subjected to metal reclamation/recycling or disposed of to landfill at the end of their useful lives.

Given the controls on reformulation and application processes at industrial and commercial sites (as stated by the applicant), and the expectation for the assessed polymer to cure into the inert solid matrix of the surface coatings for the various end uses, no significant environmental release of the assessed polymer is expected in Australia. Any of the assessed polymer remaining as residues in empty containers is likewise expected to cure and not be released to the environment.

Environmental fate

Dissolution, speciation, and partitioning

The components of the assessed polymer contain an ionisable tertiary amine. The measured pKa of an acceptable analogue chemical is 8.6 indicating the assessed polymer exists largely in the cationic form in the environmental pH range (4–9). The assessed polymer is readily soluble, with a measured water solubility exceeding 1000 g/L. The predicted vapour pressure

(0.0098 Pa at 25 °C) and calculated Henry's Law constant (5 × 10^{-9} Pa.m^3/mol) both indicate that the components of the assessed polymer are only very slightly volatile, including from water and moist or dry organic matter. Therefore, exposure or partitioning to the air compartment is expected to be minimal. The measured log K_{OW} (-0.43) and calculated K_{OC} (0.4148 L/kg) values indicate the assessed polymer has very low lipophilicity and is hydrophilic, so minimal partitioning to soils and sediments is expected, where very high mobility is expected. Due to the ready water solubility, very slight volatility and high mobility in soil and sediment, most of the assessed polymer is expected to remain in the water compartment if released, and exposure to the soil and sediment compartments is expected to be minimal.

Degradation

The assessed polymer is predicted to be not readily biodegradable (BIOWIN v4.10 conservative estimates, US EPA 2012) and is conservatively categorised as persistent.

The assessed polymer is not expected to hydrolyse based on structural considerations, as it does not contain functional groups which are susceptible to hydrolysis under the environmentally relevant pH range (pH 4–9).

Bioaccumulation

Based on its low measured log K_{OW} value, the assessed polymer has low bioaccumulation potential and is not expected to be bioaccumulative.

No experimental bioaccumulation data were provided for the assessed polymer. The measured partition coefficient of the assessed polymer (log K_{OW} = -0.43, OECD 107) is below the domestic threshold of log K_{OW} = 4.2 for bioaccumulation in aquatic organisms

Predicted environmental concentration (PEC)

A predicted environmental concentration (PEC) has not been calculated as the assessed polymer is not expected to be released into environmental waters based on the assessed industrial uses in Australia.

Environmental effects

Effects on Aquatic Life

Acute toxicity

The following calculated median lethal concentration (LC50) and median effective concentration (EC50) values for model organisms were supplied by the applicant for the assessed polymer (for the a, b = 1 component):

Taxon	Endpoint	Method
Fish	96 h LC50 = 1082 mg/L	*In silico* methodology ECOSAR v1.11 (aliphatic amines ECOSAR class)
Invertebrate	48 h LC50 = 102 mg/L	*In silico* methodology ECOSAR v1.11 (aliphatic amines ECOSAR class) Daphnia
Algae	96 h EC50 = 133 mg/L	*In silico* methodology ECOSAR v1.11 (aliphatic amines ECOSAR class) Green algae

Consideration was given to the polymer composition and predicted ecotoxicity endpoints for the various components. The a, b = 1 component (refer to the ethoxylation on either side of the polymer using the a and b descriptors) (see **Chemical identity**, **Supporting information**) was found to be representative of the assessed polymers composition, based on the conservative ecotoxicity results. The aliphatic amines ECOSAR class is the most appropriate model based on structural considerations.

Predicted no-effect concentration (PNEC)

A predicted no-effect concentration (PNEC) of 0.102 mg/L was calculated for the assessed polymer in the aquatic environment. This value was derived using the lowest predicted acute ecotoxicity endpoint for invertebrates (Daphnia, calculated 96 h EC50 = 102 mg/L, aliphatic amines ECOSAR class). A conservative and protective assessment factor of 1000 was applied to this endpoint as the assessed polymer is assumed to be persistent in water, no measured chronic ecotoxicity data were provided, and the calculated acute ecotoxicity data provided for fish, invertebrates (Daphnia), and green algae are not considered as reliable as measured data and may not represent the most sensitive species in the Australian environment (EPHC 2009).

Categorisation of environmental hazard

The categorisation of the environmental hazards of the assessed polymer according to domestic environmental hazard thresholds is presented below:

Persistence

Persistent (P). Based on the *in silico* biodegradation prediction of being not readily biodegradable, the assessed polymer is categorised as persistent.

Bioaccumulation

Not Bioaccumulative (not B). Based on the low measured log K_{OW} value, the assessed polymer is categorised as not bioaccumulative.

Toxicity

Not Toxic (not T). Based on the *in silico* predicted ecotoxicity values above 1 mg/L for all three trophic levels, the assessed polymer is categorised as not toxic.

Environmental risk characterisation

The assessed polymer is categorised as persistent but does not meet all three PBT criteria and is hence unlikely to have unpredictable long-term effects (EPHC 2009). The Risk Quotient (PEC/PNEC) for the aquatic compartment was not calculated as release of the assessed polymer to the aquatic environment is not expected based on its assessed industrial uses.

Based on the predicted ecotoxicity, the expected low bioavailability, and the limited environmental exposure from the assessed industrial uses, the assessed polymer is not expected to pose a significant risk to the environment. As such, the environmental risks associated with the assessed polymer can likely be managed.

References

EPHC (2009) Environment Protection and Heritage Council, Environmental Risk Assessment Guidance Manual for industrial chemicals, Prepared by: Chris Lee-Steere Australian Environment Agency Pty Ltd, February 2009. ISBN 978-1-921173-41-7.

SWA (2012) Code of Practice: Managing Risks of Hazardous Chemicals in the Workplace, Safe Work Australia, https://www.safeworkaustralia.gov.au/doc/model-code-practice-managing-risks-hazardous-chemicalsworkplace

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US EPA (2012) Estimation Programs Interface (EPI) Suite™ for Microsoft Windows, v 4.1. US EPA. Available at https://www.epa.gov/tsca-screening-tools/epi-suitetm-estimation-program-interface.