Australian Government
Department of Health, Disability and Ageing
Australian Industrial Chemicals Introduction Scheme

2-Propenoic acid, telomer with 2,5-furandione and oxomineral acid, sodium salt, peroxydisulfuric acid ([(HO)S(O)2]2O2) disodium salt initiated

Assessment statement (CA09337)

18 March 2026

Table of contents

AICIS assessment (CA09337)

Chemical in this assessment

AICIS Approved Chemical Name (AACN)
2-Propenoic acid, telomer with 2,5-furandione and oxomineral acid, sodium salt, peroxydisulfuric acid ([(HO)S(O)2]2O2) disodium salt initiated

Reason for the assessment

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

Certificate Application type

AICIS received the application in a Very Low to Low Risk type.

Defined scope of assessment

The chemical has been assessed:

- as imported into Australia at up to 100 tonnes/year
- as imported in solid (granular) and liquid formulations at up to 60% concentration for local reformulation
- as reformulated into finished products for end use in laundry and dishwashing products at up to 5% concentration
- for both use by professional workers and consumer end use

Summary of assessment

Summary of introduction, use and end use

The assessed chemical is a polymer and has functional use as dispersant. The assessed chemical will not be manufactured in Australia. It will be imported as solid (granular) and liquid formulations at up to 60% concentration for local reformulation of end use products in various package sizes. The assessed chemical has end use in laundry and dishwashing products at up to 5% concentration. The end use products containing the assessed chemical are proposed for both use by professional workers and consumer end use.

Human health

Summary of health hazards

Limited toxicological data were submitted on the assessed chemical. Toxicological data were submitted on analogues. Based on the available data (see **Supporting information**) the assessed chemical is:

- of low acute oral toxicity
- of low acute dermal toxicity
- a slight skin irritant
- a slight eye irritant
- not a skin sensitiser
- of low repeated dose toxicity based on a study in rats
- not likely to be genotoxic
- not likely to cause adverse effects on foetal development

No inhalation toxicity data were provided for the assessed chemical.

Hazard classifications relevant for worker health and safety

Based on the data provided by the applicant, the assessed chemical does not satisfy the criteria for classification according to the *Globally Harmonized System of Classification and Labelling of Chemicals* (GHS) (UNECE 2017) for hazard classes relevant for worker health and safety as adopted for industrial chemicals in Australia.

Summary of health risk

Public

Laundry and dishwashing end use products, containing the assessed chemical at up to 5% concentration will be available to the public at retail stores. The main route of exposure will be dermal, while incidental ocular exposure is possible during measuring and dispensing of the laundry product or when handling the dishwashing tablets. Inhalation exposure may also occur if dust is present with tablets and if products are applied by spray.

The assessed chemical is slightly irritating to skin and eyes. However, the risk to public is low because of the low concentration in end use products, and the likelihood that spilt material would be washed from the skin. Exposure from washed and dried clothing/linen is not anticipated, as any chemical residues are expected to be removed during washing and rinsing.

No inhalation toxicity data were provided for the assessed chemical. Due to low concentrations of the assessed chemical in the end use products, it is not expected to pose health risk through inhalation when the assessed chemical is used according to the assessed use scenarios

This assessment does not identify any risks to public health that require specific risk management measures.

Workers

Exposure of workers to the assessed chemical at up to 60% concentration may occur during reformulation to end use products. Workers may experience dermal, ocular and perhaps

inhalation exposure to the assessed chemical if dusts, aerosols or mists are formed. The assessed chemical is slightly irritating to skin and eyes, and it is anticipated by the applicant that the engineering controls such as enclosed and automated processes and local ventilation will be implemented where possible. Use of appropriate personal protective equipment (PPE) will reduce worker exposure (see **Means for managing risk** section).

Professional workers in washing businesses may experience dermal, inhalation and accidental ocular exposure to the assessed chemical up to a concentration of 5%. The professional workers may wear some PPE (including gloves and coveralls). If PPE is used, exposure of such workers is expected to be of a similar or lesser extent than that experienced by public using the same end use products containing the assessed chemical, requiring no specific risk management measures for these workers.

Environment

Summary of environmental hazard characteristics

According to the *Australian Environmental Criteria for Persistent, Bioaccumulative and/or Toxic Chemicals* (DCCEEW 2022) and based on the read-across data, the assessed chemical is:

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

Environmental hazard classification

Based on the ecotoxicological information available for the assessed chemical and acceptable analogues, the assessed chemical is not expected to be harmful to aquatic life. Therefore, the assessed chemical does not satisfy the criteria for classification under the *Globally Harmonized System of Classification and Labelling of Chemicals* (GHS) for acute and chronic aquatic toxicities (UNECE 2017).

Summary of environmental risk

The assessed chemical will be introduced as a dispersant for use in laundry and dishwashing products. This use will result in the release of the assessed chemical to sewers. In these compartments, the assessed chemical is expected to partition to the waters and become mobile.

Based on data supplied for the acceptable analogues, the assessed chemical is not readily biodegradable and is considered persistent, has a low potential to bioaccumulate, and is not toxic to aquatic organisms.

Although the assessed chemical is persistent according to the *Australian Environmental Criteria for Persistent, Bioaccumulative and/or Toxic Chemicals* (DCCEEW, 2022), it does not meet all three PBT criteria. It is hence unlikely to have unpredictable long-term effects, and its risk may be estimated by the risk quotient method (RQ = PEC ÷ PNEC). Based on the expected RQ values < 1 for the river and ocean compartments, it is expected that the environmental risk from the introduction of the assessed chemical can be managed.

Means for managing risk

Workers

Information relating to safe introduction and use

The information in this statement, should be used by a person conducting a business or undertaking at a workplace (such as an employer) to determine the appropriate controls under the relevant jurisdiction Work Health and Safety laws.

The following control measures could be implemented to manage the risk arising from exposure to the assessed chemical during reformulation:

- Use of engineering controls such as
  - Enclosed and automated systems where possible
  - Adequate workplace ventilation to avoid accumulation of dusts, mists or aerosols
- Use of safe work practices to
  - Avoid contact with skin and eyes
  - Avoid inhalation of dusts, mists or aerosols
- Use of personal protective equipment (PPE)
  - Respiratory protection where local ventilation may be inadequate

Conclusions

The Executive Director is satisfied that the risks to human health or the environment associated with the introduction and use of the industrial chemical can be managed.

Note:

1. Obligations to report additional information about hazards under s 100 of the *Industrial Chemicals Act 2019* apply.
2. A person introducing this chemical should be aware of their obligations under environmental, workplace health and safety and poisons legislation as adopted by the relevant state or territory.

Supporting information

Chemical identity

AACN	2-Propenoic acid, telomer with 2,5-furandione and oxomineral acid, sodium salt, peroxydisulfuric acid ([(HO)S(O)2]2O2) disodium salt initiated

Relevant physical and chemical properties

Studies to characterise the physical and chemical properties of the assessed chemical were not technically feasible.

Physical form	Colourless, clear liquid with no odour OR White, granular solid with mild odour
Water solubility	Fully miscible in water
Ionisable in the Environment	Yes

Health hazard information

Limited toxicological data were provided for the assessed chemical. Toxicological data on analogue chemicals, which contain common structural features in the same relative positions, were used as read-across for toxicological endpoints.

Acute toxicity

Oral

In a non-guideline *in vivo* acute oral toxicity range-finding study, Analogue 1 was administered to male CRCD rats (n = 3/dose) at 500 mg/kg bw (diluted in water) and 5,000 mg/kg bw (undiluted) via oral gavage. All animals survived the 14-day observation period, and no signs of systemic toxicity were noted. All animals showed expected body weight gains and no treatment-related gross necropsy findings were observed. The median lethal dose (LD50) of the analogue was determined to be > 5,000 mg/kg bw.

In another identical acute oral toxicity range-finding study of Analogue 3 at 500 mg/kg bw and 5,000 mg/kg bw, all animals survived the 14-day observation period. At 5,000 mg/kg bw, salvation (1/3) and stained muzzles (2/3) were observed in animals on Day 0 post exposure but were resolved by Day 1. All animals showed expected body weight gains and no treatment-related gross necropsy findings were observed. The LD50 of the analogue was determined to be > 5,000 mg/kg bw.

As the LD50s of the analogues are above 5,000 mg/kg bw, the assessed chemical is likely to be of low acute oral toxicity, according to the GHS criteria.

Dermal

In a non-guideline *in vivo* acute dermal toxicity range-finding study, Analogue 1, was applied to male New Zealand White rabbits (n = 2) at 5,000 mg/kg bw (undiluted) and continuously held for 24 hours via a patch in contact with closely clipped skin. All animals survived the 14-day observation period. Well-defined erythema (2/2) was observed on day 1 post exposure but was resolved by day 3. The body weight of the animals remained normal throughout the study and no treatment-related gross necropsy findings were observed. The LD50 of the analogue was determined to be > 5,000 mg/kg bw.

In another, identical study on Analogue 3, no mortalities or any signs of systemic toxicity were noted during the 14-day observation period in two rabbits treated at 5,000 mg/kg bw. Well-defined erythema (2/2) was observed on day 1 post exposure but was resolved by day 2. The body weight of the animals remained normal throughout the study and no treatment-related gross necropsy findings were observed. The LD50 of the analogue was determined to be > 5,000 mg/kg bw.

As the LD50 of the analogues are above 5,000 mg/kg bw, the assessed chemical is likely to be of low acute dermal toxicity, according to the GHS criteria.

Corrosion/Irritation

Skin irritation

In an *in vivo* skin irritation range-finding study (EPA, Guideline Reference No. 81-5), 0.5 mL (undiluted) of Analogue 4 was applied to the intact skin of six New Zealand White rabbits (2 males and 4 females) and continuously held for 4 hours. No erythema or oedema was observed in any animal until the end of the 72-hour observation period.

In another similar non-guideline study, 0.5 mL (undiluted) of Analogue 1 was administered to two male New Zealand White rabbits. Erythema (grade 1) and skin dryness were observed in one rabbit at 24-hour and 72-hour observations, respectively. However, all signs of irritation were reversible within the 7-day observation period.

In a third non-guideline study, using the same protocol as the previous study, Analogue 3 was tested. No erythema or oedema was observed in the both animals during the 7-day observation period.

In a 21-day cumulative human skin irritation test (non-guideline study), 100% and 10% w/v concentration of Analogue 8 and 10, and 7% w/w concentration of Analogue 4 administered under occlusive conditions for 23 hours to 13 human volunteers. For 21 days (except Day 17), new patches were applied each day after the site had been evaluated for irritation. The average irritation score was 0.

In another 21-day cumulative skin irritation test (non-guideline study) conducted in 30 human volunteers, Analogue 5 was applied neat under occlusive conditions for 24 hours. For 21 days, new patches were applied each day after the site had been evaluated for irritation. The normalised irritation score was 0. Based on the results of the *in vivo*, human and dermal acute toxicity studies, the assessed chemical is likely to be slightly irritating to skin. However, the available data does not support classification of the assessed chemical for skin irritation according to the GHS criteria.

Eye irritation

In an *in vivo* eye irritation range-finding study (non-guideline), 0.1 mL (undiluted) of Analogue 1 was administered to the corneal surface of each of 2 male New Zealand white rabbits. During the 7-day observation period, irritation of the conjunctivae (irritation score of 2) was observed in both rabbits 4 hours after the exposure However, the irritation was reversible by day 1.

In another identical study on Analogue 3, irritation of the cornea and conjunctivae in both animals and irritation of the iris in one animal were observed 4 hours after the exposure. Irritation to the cornea and iris was reversed in both animals by day 1. Irritation to the conjunctivae was reversed by day 2 in both animals. Based on the results of the two range-finding studies, the assessed chemical is likely to be slightly irritating to the eyes.

Sensitisation

Skin sensitisation

A direct peptide reactivity assay (DRPA, OECD TG 442C) and an ARE-NrF2 luciferase assay (KeratinoSens, OECD TG 442D) on the assessed chemical were provided. These tests are part of an Integrated Approach to Testing and Assessment (IATA) which addresses specific key events of the Adverse Outcome Pathway (AOP) leading to the development of skin sensitisation (OECD GL 497). The DRPA aims to address the first key event (KE1, molecular initiation) of the AOP. The KeratinoSens aims to address the second key event (KE2, keratinocyte activation) of the AOP. The assessed chemical tested negative for both KE1 and KE2. Using the '2 out of 3' Defined Approach in the OECD Defined Approaches for Skin Sensitisation (OECD GL 497), the assessed chemical is not a skin sensitiser.

The skin sensitisation potential of neutralised Analogue 4 was assessed using a modified Buehler test in 10 male Hartley guinea pigs (similar to OECD TG 406). The animals were topically administered 0.4 mL of 100% concentration of the analogue chemical for 6 hours once a week for a total of 3 exposures, followed by a topical challenge two weeks later. No erythema or oedema was observed after either the induction or challenge phases.

The delayed contact hypersensitivity potential of a neutralised Analogue 4 was assessed using Buehler test in male and female Hartley guinea pigs (similar to OECD TG 406). Twenty animals (n = 10/sex) were administered 0.4 mL of 100% concentration of the analogue chemical for 6 hours once a week for a total of 3 exposures, followed by a topical challenge two weeks later. The analogue chemical did not elicit any sensitising reaction in the animals.

In a modified human repeated insult patch test (HRIPT), 137 subjects were treated under occlusive conditions with Analogue 4 (at 7% w/w concentration) and Analogue 8 and Analogue 10 (both at 100% and 10% w/v concentrations) for a total of 9 applications. In the challenge phase, one subject showed mild erythema and/or oedema to Analogue 10 at 100% concentration. However, this reaction was reversed by 96 hours, and no response was observed upon rechallenge. Under the conditions of the study, the analogues did not elicit a positive sensitisation response.

In another HRIPT, the skin sensitisation potential of Analogue 5 was tested at 100% (w/w) concentration with 103 subjects. In the induction phase, one subject showed definite erythema on the treatment site on day 7 and no such response was observed in the challenge phase. Under the conditions of the study, the analogue did not elicit a positive sensitisation response.

Based on the results of the rabbit and human studies on the analogues, the assessed chemical is not a skin sensitiser.

Repeat dose toxicity

Oral

In a non-guideline repeat dose oral toxicity study, Analogue 4 was administered to groups of male Crl:CDBR rats (n = 6/dose) in drinking water at doses of 0 (vehicle control), 100, 500, 1,000, 5,000, 10,000, 50,000 and 100,000 ppm (equivalent to 0, 10, 50, 100, 500, 1,000, 5,000 and 10,000 mg/kg bw/d) for 2 weeks.

There was one mortality observed in the 10,000 mg/kg bw/d group after two weeks of treatment. Decreased food consumption and mean body weights (23% reduction in week 1 and 35% reduction in week 2 compared to control animals) were also noted in animals of this group. Increased water consumption was observed in both 5,000 mg/kg bw/d and 10,000 mg/kg bw/d groups.

At 10,000 mg/kg bw/d, treatment-related systemic toxicity included diarrhea (6/6), red stained cage liner (2/6), brown stained cage liner (6/6), red and/or brown stained anogenital area (5/6) and wet anogenital area (4/6). Soft faeces (6/6) and brown crusty material on the tail (2/6) was observed in the 5,000 mg/kg bw/d group.

At necropsy, animals in the 10,000 mg/kg bw/d group had enlarged cecums (6/6), enlarged intestines (2/6), red stomach mucosa (2/6) and black or brown foci in the pyloric region of the stomach (2/6) and grey patches on the spleen (1/6). No other treatment-related changes were observed in any other group.

Changes in body weight, food consumption, water consumption, clinical and pathological observations at 5,000-10,000 mg/kg bw/d were considered to be treatment-related. No histology, biochemistry or haematology analysis was carried out as a part of the study. Under the conditions of this study, the no-observed-adverse-effect level (NOAEL) is established as 5,000 mg/kg bw/d for systemic toxicity in this study.

Genotoxicity

The applicant provided a journal article on *in vitro* and *in vivo* non-guideline genotoxicity studies conducted on three analogues, sodium hydroxide neutralised polyacrylic acid (MW = 2,000 g/mol), sodium hydroxide neutralised polyacrylic acid (MW = 4,500 g/mol) and copolymer of maleic and acrylic acid (MW = 12,000 g/mol) for read across purposes (Thompson et al. 1989).

All 3 analogues were not mutagenic in the bacterial reverse mutation assay when tested in *Salmonella typhimurium* strains (TA98, TA100, TA1535, TA1537 and TA1538). No statistically significant increases in the frequency of the revertant colonies were recorded for any of the bacterial stains at any tested concentration with or without metabolic activation, for any of the three analogues.

The same analogues were tested *in vitro* for the potential to induce mutations at the thymidine kinase locus in mouse lymphoma L5178Y cells. No biologically relevant increase in mutation frequency was found after treatment with the analogues at any of the tested concentration ranges, with or without metabolic activation.

A mammalian chromosome aberration test, using Chinese hamster ovarian (CHO) cells, was conducted to assess the clastogenic potential of the 2 analogue chemicals. Sodium hydroxide neutralised polyacrylic acid (MW = 4,500 g/mol) was tested at up to 77 µg/mL in the absence or presence of metabolic activation. The copolymer of maleic and acrylic acid (MW = 12,000 g/mol) was tested at up to 58 µg/mL in the presence of metabolic activation and 77 µg/mL in the absence of metabolic activation. The analogues did not induce any statistically significant increases in the frequency of cells with chromosome aberrations. Therefore, under the conditions of this study, the analogues were not clastogenic.

An unscheduled DNA synthesis assay, using rat hepatocytes, was conducted to assess the mutagenic potential of sodium hydroxide neutralised polyacrylic acid (MW = 2,000 g/mol), sodium hydroxide neutralised polyacrylic acid (MW = 4,500 g/mol) and copolymer of maleic and acrylic acid (MW = 12,000 g/mol). The highest concentration level for the analogues were 5 µg/mL, 20 µg/mL and 4 µg/mL, respectively. No unscheduled DNA synthesis was observed after treatment with the analogues at any tested concentration.

In vivo

In a mammalian erythrocyte micronucleus test using mice (n = 15/sex), sodium hydroxide neutralised polyacrylic acid (MW = 2,000 g/mol) was orally administered as a single dose of 13.85 mg/kg bw. The test animals showed symptoms of toxicity after the administration of the analogue and 3/15 animals died within 72 hours. No statistically significant increase in micronucleated polychromatic erythrocytes was noted after the treatment.

Based on the results of the *in vitro* and *in vivo* tests on the analogues, the assessed chemical is not likely to be genotoxic.

Reproductive and development toxicity

The applicant provided a journal article (Nolen et al. 1989), on reproductive and development toxicity studies conducted on analogues - sodium hydroxide neutralised polyacrylic acid (MW = 90,000 g/mol), copolymer of maleic, acrylic acid sodium salt (MW = 12,000 g/mol) and sodium hydroxide neutralised polyacrylic acid (MW = 4,500 g/mol).

In a non-guideline developmental toxicity study, sodium hydroxide neutralised polyacrylic acid (MW = 90,000 g/mol) was administered to female Sprague-Dawley rats (n = 30/dose) via oral gavage at dose levels of 0, 125, 375 and 1,125 mg/kg bw, once daily from Day 6 to Day 19 of pregnancy. Three treatment-related deaths were observed at 1,125 mg/kg bw/day. No other treatment-related adverse reproductive and development effects were noted including maternal body weights, gestation body weight changes, food intake, corpus lutea and implants count, litter size and weights at the highest dose tested. Based on these findings, a NOAEL of 1,125 mg/kg bw/day was reported for both reproductive and developmental toxicity.

In the second non-guideline developmental toxicity study, copolymer of maleic, acrylic acid sodium salt (MW = 12,000 g/mol) was administered to female Sprague Dawley rats (n = 25/dose) via oral gavage at dose levels of 0, 67, 667, 6,670 mg/kg bw, once daily from Day 6 to Day 15 of pregnancy. No treatment-related mortalities, body weight changes or changes to overall food intake during pregnancy were observed at any dose level. No significant differences in reproductive or embryonic characteristics were observed. One litter of 8 foetuses in the 67 mg/kg bw/d group in one dam was malformed with short-thickened bodies. However, this effect was reported as not treatment-related due to the lack of a dose-response relationship. No treatment-related abnormalities were reported in foetuses at any dose level. A NOAEL of 6,670 mg/kg bw/d was reported in the study for reproductive and developmental toxicity.

In the third non-guideline developmental toxicity study, sodium hydroxide neutralised polyacrylic acid (MW = 4,500 g/mol) was administered to female Sprague Dawley rats (n = 30/dose) via oral gavage at dose levels of 0, 500, 1,000 and 3,000 mg/kg bw once daily from Day 6 to Day 15 of pregnancy. No treatment-related mortalities, body weight changes or changes to overall food intake during pregnancy were observed at any dose. Animals in the 3,000 mg/kg bw/d dose level had soft or liquid stools during the treatment period. No significant differences in reproductive or embryonic characteristics were observed. No treatment-related abnormalities were observed at any doses. The NOAEL was reported as 3,000 mg/kg bw/d, as no adverse effects were observed at any dose level.

Based on the results of the *in vivo* tests on the analogues, the assessed chemical is not likely to cause adverse effects on foetal development.

Environmental exposure

Reformulation and repackaging will occur in closed processes. Significant releases of the assessed chemical to the environment are not expected during reformulation, transport or storage. Release of the assessed chemical is only expected to occur from accidental spills during the transport, storage and product transfer stages. Accidental spills and wastes generated during the reformulation process are expected to be collected and disposed of in accordance with local government regulations.

Consumer and professional end-use of the assessed chemical in laundry and dishwasher products is expected to result in the release of the assessed chemical “down the drain” and into the sewers. Consequently, the assessed chemical will be treated at sewage treatment plants (STPs) before release to surface waters.

Environmental fate

Partitioning

The assessed chemical is completely miscible in water and expected to remain in water compartment when entering water environments. Based on high adsorption/desorption coefficient (Koc = 1,825) the assessed chemical is expected to have low mobility in soil.

Degradation

Based on the biodegradation results read across from analogues, the assessed chemical is considered persistent.

Degradation studies conducted on Analogue 11 and 12 showed 0.8% and 8.2% biodegradation, respectively in 28 days (OECD TG 302B). This is less than the criterion of 20% for being considered as biodegradable. Analogue 11 and 12, and hence the assessed chemical, are not inherently biodegradable.

Bioaccumulation

Based on the expected low log K_{OW} value and large molecule size, the assessed chemical does not have the potential to bioaccumulate.

No bioaccumulation information was provided for the assessed chemical. The assessed chemical is completely miscible in water and expected to have a log K_{OW} less than the threshold value of 4.2 for being bioaccumulative. Additionally, the assessed chemical is not

expected to cross cell membrane to accumulate based on its number average molecular weight (NAMW) > 1,000 g/mol.

Predicted environmental concentration (PEC)

Based on its use in laundry or dishwashing products, a predicted environmental concentration (PEC) for Australian waters was calculated assuming 100% of the introduction volume of the assessed chemical is released into sewage treatment plants (STP) over 365 days per annum. The extent to which the assessed chemical is removed from the effluent in STP processes is based on its physical-chemical properties and biodegradability, modelled by SimpleTreat 4.1 (Struijs 2014) which has been adjusted to suit Australian STP conditions.

In Australia, about 20% of sewage is treated to primary levels which then is discharged to ocean, and 80% of Australian sewage is treated to at least secondary levels which then is discharged to both ocean and rivers (Blue Environment 2020). Removal at the primary stage, and total removal percentages were calculated. A dilution factor of 1 was applied to river discharge and a dilution factor of 10 was applied to ocean discharge (EPHC 2009). PEC calculation for river and ocean discharges is summarised in the table below.

Total Annual Import Volume	100,000	kg/year
Proportion expected to be released to sewer	100 %	
Days per year where release occurs	365	days/year
Emission rate	547.95	kg/day
Water use	200	L/person/day
Population of Australia	25.423	Million
Removal from primary treatment	13.24 %	Mitigation
Removal from secondary treatment	20.26 %	Mitigation
Daily effluent production	5,085	ML/day
PEC - River	42.96	µg/L
PEC - Ocean	4.67	µg/L

Environmental effects

Effects on aquatic life

Acute toxicity

The following measured median lethal concentration (LC50) and median effective concentration (EC50) values for model organisms were supplied for acceptable analogues and assessed chemical.

Taxon	Endpoint	Method
Fish	Analogue 4: 96 h LC50 = 310 mg/L	*Salmo gairdneri* (Rainbow trout) Acute Toxicity test, US EPA-660/3-75-009, static bioassay test Nominal concentration
Fish	Analogue 4: 96 h LC50 > 443.2 mg/L	*Lepomis macrochirus* (Bluegill sunfish) Acute Toxicity test, US EPA-660/3-75-009, static bioassay test Nominal concentration
Fish	Analogue 6: 96 h LC50 = 328.5 mg/L	*Salmo gairdneri* (Rainbow trout) Acute Toxicity test, US EPA-660/3-75-009, static bioassay test Nominal concentration
Invertebrates	Analogue 4: 48 h LC50 > 443.2 mg/L	*Daphnia Magna* (water flea) Acute Toxicity test, US EPA-660/3-75-009, static bioassay test Nominal concentration
Invertebrates	Analogue 6: 48 h LC50 > 438 mg/L	*Daphnia Magna* (water flea) Acute Toxicity test, US EPA-660/3-75-009, Static bioassay test Nominal concentration
Invertebrates	Analogue 7: 120 h EC50 = 550 mg/L	*Abra alba* (white furrow shell) PARCOM Ring test Nominal concentration
Invertebrates	Assessed chemical: 48 h EC50 > 100 mg/L	*Daphnia Magna* (Water flea) Immobilisation test OECD TG 202, static condition Nominal concentration
Algae	Analogue 6: 96 h ErC50 = 16.9 mg/L	*Selenastrum capricoruntum (*fresh water green algae*)* US EPA OTX inhibition of growth, static condition Nominal concentration
Algae	Analogue 7: 72 h ErC50 = 480 mg/L	*Skeletonema costatum (*marine algae*)* ISO/IDS 10253, Marine algal growth inhibition, static test Nominal concentration

Chronic toxicity

The following measured no observed effect concentration (NOEC) values for model organisms were supplied for an acceptable analogue.

Taxon	Endpoint	Method
Fish	Analogue 2: 32 d NOEL = 124 mg/L	*Pimephales promelas* (Fathead minnow) Early life toxicity TSCA 797.1600, flow through test Measured concentration
Invertebrates	Analogue 2: 21 d NOEC = 12 mg/L	*Daphnia manga* (water flea) Daphnia chronic toxicity 797.1330, flow through test Measured concentration
Algae	Analogue 6: 96 h NOE_rC = 1.0 mg/L	*Selenastrum capricoruntum (*fresh water green algae*)* US EPA OTX inhibition of growth, static condition Nominal concentration

Effects on terrestrial Life

The following measured lethal concentration (LC50) value for model organisms was provided for the acceptable analogue chemical:

Taxon	Endpoint	Method
Soil macroorganisms	Analogue 2: 14 d LC50 > 1,000 mg/kg dry weight	*Eisenia foetida* (Earthworm) OECD TG 207 Nominal concentration

Predicted no-effect concentration (PNEC)

A predicted no-effect concentration (PNEC) of 100 µg/L was calculated for the assessed chemical in the aquatic environment. This value was derived using the most conservative read-across endpoint for algae (96 h NOE_rC = 1 mg/L). An assessment factor of 10 was applied as read-across data from analogues are available on acute and chronic toxicity for three trophic levels (EPHC, 2009).

Categorisation of environmental hazard

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

Persistence

Persistent (P). Based on degradation studies measured on analogues, the assessed chemical is categorised as Persistent.

Bioaccumulation

Not Bioaccumulative (Not B). Based on its high molecular weight and expected low log Kow, the assessed chemical is categorised as Not Bioaccumulative.

Toxicity

Not Toxic (Not T). Based on ecotoxicity studies with all measured acute endpoints above 1 mg/L and above 0.1 mg/L for chronic endpoints for the assessed chemical and acceptable analogues, the assessed chemical is categorised as Not Toxic.

Environmental risk characterisation

Although the assessed chemical is persistent, it does not meet all three PBT criteria. It is hence unlikely to have unpredictable long-term effects (EPHC 2009). An estimate of risk may therefore be determined using the risk quotient method.

Based on the PEC and PNEC values determined above, Risk Quotients (RQ = PEC ÷ PNEC) have been calculated for release of the assessed chemical to waters:

Compartment	PEC	PNEC	RQ
River	42.96	100	0.43
Ocean	4.67	100	0.047

For the river and ocean compartments, an RQ less than 1 indicates that introduction of the assessed chemical, in line with the defined scope of assessment, is not expected to pose a risk to the environment. As such, the risk from the assessed chemical can be managed, based on consideration of the environmental hazard characteristics and estimated releases.

References

Blue Environment Pty Ltd (2022), National Waste Report, accessed 18 December 2025.

DCCEEW (2022) Australian Environmental Criteria for Persistent, Bioaccumulative and/or Toxic Chemicals, DCCEEW, accessed 16 October 2025.

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.

Nolen G.A., Monroe A., Hassall C.D., Iavicoli J., Jamieson R.A., Daston G.P. (1989) Studies of the Developmental Toxicity of Polycarboxylate Dispersing Agents, Drug and Chemical Toxicology, 12:2, 95-110.

Struijs, J. (2014). SimpleTreat 4.0: A model to predict fate and emission of chemicals in wastewater treatment plants. The Netherlands, National Institute of Public Health and the Environment.

Thompson E.D., Aardema M.J., LeBoeuf R.A. (1989) Lack of Genotoxicity With Acrylate Polymers in Five Short-Term Mutagenicity Assays. Environmental and Molecular Mutagenesis, 14:98-106.

UNECE (United Nations Economic Commission for Europe) (2017). Globally Harmonized System of Classification and Labelling of Chemicals (GHS), Seventh Revised Edition. UNECE.