Australian Government
Department of Health
Australian Industrial Chemicals Introduction Scheme

Carbamic acid, *N*-[(dimethoxymethylsilyl)methyl]-, methyl ester

Assessment statement

29 March 2022

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AICIS assessment statement

Chemical in this assessment

Name	CAS registry number
Carbamic acid, *N*-[(dimethoxymethylsilyl)methyl]-, methyl ester	23432-65-7

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

Based on introduction, use and end use information described in the application, the exposure band of the introduction is 3 for human health (section 1, table item 4 of Schedule 1) and 2 for the environment (section 3, table item 2 of Schedule 1) of the *Industrial Chemicals (General) Rules 2019* (the Rules).

The assessed chemical has hazard characteristics in human health hazard band C (Schedule 1, clause 2) and environment hazard band A (Schedule 1, clause 4). In accordance with table item 4, section 28 and table item 16, section 29 of the Rules, the indicative human health risk for the proposed introduction is medium to high and the indicative environment risk for the proposed introduction is very low.

Defined scope of assessment

This chemical has been assessed:

- as imported into Australia for up to 1 tonne/annum;
- as introduced for reformulation in the manufacture of industrial adhesives and sealants; and
- for use only by industrial and professional workers at less than or equal to 1% concentration in non-spray end-use products.

Summary of assessment

Summary of introduction, use and end use

The assessed chemical will be imported into Australia in the neat form (97% w/w) for use in the manufacture of one-part adhesives and sealants.

Following reformulation, the maximum end use concentration of the assessed chemical will be less than 1%. However, as the assessed chemical reacts with other raw materials during the

blending process, the concentration of the assessed chemical at end use is expected to be significantly less than 1%.

Products containing the assessed chemical will be for industrial and professional use only and will not be made available to the public.

Human health

Summary of health hazards

Based on the available data, the assessed chemical is suspected of damaging fertility and suspected of damaging the unborn child (see **supporting information** section) warranting hazard classification.

In a reproduction/developmental toxicity screening study, dose dependent adverse effects on delivery index, number of littering dams, number of live pups and post-implantation loss were observed. Reduced testes and epididymides weight and effects on spermatogenesis were also reported. A no observed adverse effect level (NOAEL) for developmental effects could not be established as adverse effects were observed at all dose levels tested. A NOAEL for reproductive toxicity was established at the lowest dose level of 100 mg/kg bw/day based on effects on spermatogenesis at the higher tested dose levels.

The available data indicates that the assessed chemical:

- is likely to be of low acute oral and dermal toxicity;
- is non-irritating to the skin or eyes, and not a skin sensitiser;
- is not likely to cause systemic toxicity following repeated oral exposure up to 150 mg/kg bw/day; and
- is not considered to be genotoxic.

No inhalation toxicity data were provided on the assessed chemical.

Health hazard classification

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

Health hazards	Hazard category	Hazard statement
Reproductive and developmental	Repr. 2	H361fd: Suspected of damaging fertility; Suspected of damaging the unborn child

Summary of health risk

Public

When introduced and used in the proposed manner, it is unlikely that the public will be exposed to the chemical. The public may come into contact with the assessed chemical through contact with the treated articles; however, once the adhesive/sealant has cured, the assessed

chemical will be chemically bound and will not be available for exposure in the article's service life.

No risks are identified for public health during this assessment that require specific risk management measures if the assessed chemical is introduced and used in accordance with the terms of the assessment certificate.

Workers

Potential exposure of workers to the assessed chemical at various concentrations, including in its neat form, may occur during various operations. Given that risks of critical systemic health effects of the chemical may be present, control measures to minimise dermal exposure are needed to manage the risk to workers (see **means for managing risk** 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 chemical is:

- not persistent (not P)
- not bioaccumulative (not B)
- not toxic (not T)

Environmental hazard classification

The chemical satisfies the criteria for classification under the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS, United Nations 2017) as Acute category 3 and Chronic Category 3 based on the critical endpoint for classification. The critical EC50 value for chemical is between 10 and 100 mg/L. The chemical is not considered to be rapidly degradable in aquatic ecosystems for the purposes of this aquatic hazard classification as the chemical is not readily biodegradable and, despite being hydrolytically unstable, the hydrolysis products are considered hazardous (acute category 3).

Environmental Hazard	Hazard Category	Hazard Statement
Acute Aquatic	Acute aq. – Cat. 3	H402: Harmful to aquatic life
Chronic Aquatic	Chronic aq. – Cat. 3	H412: Harmful to aquatic life with long lasting effects

Summary of environmental risk

No significant release of the assessed chemical is expected to occur as a result of its use as a cross linking agent in adhesives/sealants. The assessed chemical is expected to share the fate of the product into which it is incorporated and be disposed of to landfill at the end of its useful life.

The assessed chemical is not readily degradable, but is hydrolytically unstable and therefore, not persistent in the environment. The assessed chemical has a low potential for bioaccumulation and is harmful to aquatic organisms.

Based on its low hazards and assessed use pattern, the assessed chemical is unlikely to cause environmental risk.

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 the classification relevant to work health and safety (see **health hazard classification** section).

Information relating to safe introduction and use

- The information in this statement includes recommended hazard classifications and should be used by a person conducting a business or undertaking (PCBU) 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 handling or reformulation activities:

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

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

    - Workers should wear the following personal protective equipment (PPE)
        - Impervious gloves
        - Respiratory protection where local ventilation may be inadequate
        - Protective clothing

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

    - Workers should wear the following personal protective equipment (PPE)
        - Impervious gloves
        - Protective clothing

- Model codes of practice, available from the Safe Work Australia website, provide information on how to manage the risks of hazardous chemicals in the workplace, prepare an SDS and label containers of hazardous chemicals. Your Work Health and

Safety regulator should be contacted for information on Work Health and Safety laws and relevant Codes of Practice in your jurisdiction.

Conclusions

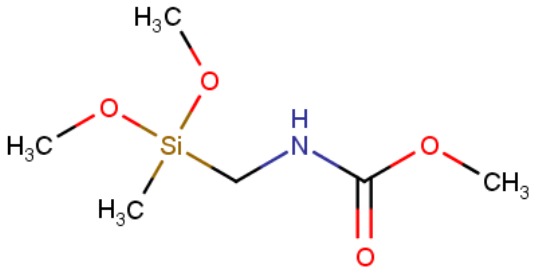
The conclusions of this assessment are based on the information described in this statement.

Considering the proposed means of managing risks, the Executive Director is satisfied that when the assessed chemical 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 proposed means for managing the risks identified during this assessment are implemented.

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

Supporting information

Chemical identity

Chemical name	Carbamic acid, *N*-[(dimethoxymethylsilyl)methyl]-, methyl ester
CAS No.	23432-65-7
Synonyms	Methyl *N*-{[dimethoxy(methyl)silyl]methyl}carbamate
Structural formula	
Molecular formula	C6H15NO4Si
Molecular weight (g/mol)	193.27
SMILES	O=C(OC)NC[Si](OC)(OC)C
Chemical Description	The assessed chemical has a typical degree of purity of greater than 97%.

Relevant physical and chemical properties

All measured values are based on the studies provided on the assessed chemical and conducted according to OECD test guidelines.

Calculations were supplied to give qualitative water solubility and log Kow information, as the assessed chemical hydrolyses rapidly in water into hydrolysis products (methanol and methyl-*N*-{[dihydroxy(methyl)silyl]methyl}carbamate). Calculated data indicate that both the assessed chemical and hydrolysis product are readily water soluble.

Physical form	Colourless liquid
Melting point	< 100 °C
Boiling point	211.2 °C
Density	1.103 g/cm^3 at 20 °C
Vapour pressure	0.6 Pa at 20 °C and 1.1 Pa at 25 °C
Water solubility	Readily soluble

Flash point	112 °C
Autoflammability	250 °C
Ionisable in the environment?	N/A
PKa	N/A
log K_{ow}	Expected to partition to water

Introduction and use

The assessed chemical will not be manufactured in Australia and will be imported and distributed in 180 kg steel drums or 1000 kg in intermediate bulk containers (IBCs). While no reformulation activity will occur at the applicant's facility in Australia, the drums or IBCs containing the assessed chemical will be transported by road directly to industrial customers from the customs warehouse. At the reformulation sites, processes are expected to be highly automated. The assessed chemical will be fed automatically from storage vessels into a closed mixing vessel where it will be blended with other raw materials. During mixing, quality assurance (QA) chemists will take aliquots of samples for testing. Once blending is complete, final adhesives/sealants products will be packaged into 300 mL cartridges and 600 mL sausages directly from the mixing vessel using closed and automated filling systems.

Human exposure

Workers

Reformulation

Typically, reformulation processes incorporate blending operations that are highly automated and occur in a fully enclosed/contained environment. This is followed by automated filling using sealed delivery systems into end use cartridges or sausages. Dermal, ocular, and inhalation exposure (if aerosols or mists are formed) of workers to the assessed chemical in its neat form (97% w/w) or at various concentrations may occur during weighing and transfer stages, blending, quality control analysis and routine cleaning and maintenance of equipment.

Given that the assessed chemical has relatively low vapour pressure, significant inhalation exposure is not expected, unless aerosols or mists are formed during the mixing process. Exposure to the assessed chemical is expected to be further minimised through the use of mechanical ventilation and/or enclosed systems, and through the use of PPE such as protective clothing, eye protection, impervious gloves and appropriate respiratory protection.

Professional end use

Typical professional end use includes use as weather sealants, and window/door sealants. End-users are expected to apply adhesives/sealants manually using a cartridge gun, or a manual/battery-operated caulking gun. Dermal and ocular exposure to the assessed chemical at concentrations of up to 1% are expected to be the main routes of potential exposure and may occur when manually changing cartridges/sausages and during routine cleaning and maintenance of application equipment. Exposure of adhesive/sealant operators to the

assessed chemicals is expected to be minimised through the use of suitable PPE, including protective googles, clothing, gloves and footwear.

The end use adhesives/sealants will be formulated for curing at ambient temperature. During this process, the assessed chemical will react with moisture in the air, non-metallic substrates, or other polymers present. The hydrolysis product, methanol, will be released during curing. Once the adhesive/sealant has cured, the assessed chemical will be bound in the final dry formulation and will not be available for exposure.

Public

Products containing the assessed chemical will be for industrial and professional use only and will not be made available to the public.

Health hazard information

Acute toxicity

Oral

In an acute oral toxicity study (OECD TG 423), fasted Wistar rats (n=3/sex/group) were administered a single dose of 200 or 2000 mg/kg bw of the assessed chemical via oral gavage. The animals were observed for 14 days after administration. No signs of clinical toxicity and no mortalities occurred during the observation period. All animals showed the expected body weight gains over the study period. No treatment related gross necropsy findings were observed. The acute oral LD50 was determined to be >2000 mg/kg bw.

Dermal

In an acute dermal toxicity study (OECD TG 402), no mortality and no clinical signs of toxicity were observed at the limit dose of 2000 mg/kg bw. Furthermore, no skin reactions to the assessed chemical were reported after the 24-hour treatment period under an occlusive dressing. The LD50 of the assessed chemical was determined to be >2000 mg/kg bw.

Corrosion/Irritation

Skin irritation

The assessed chemical was tested for skin irritation potential in rabbits (OECD TG 404). Treatment of 3 female New Zealand White rabbits under semi-occlusive conditions with 0.5 mL undiluted assessed chemical induced no skin reactions in any animal at any time point. Furthermore, no clinical signs of systemic toxicity nor effects on body weight were reported.

Eye irritation

The assessed chemical was tested for eye irritation potential in rabbits (OECD TG 405). Treatment of 3 female New Zealand White rabbits with 0.1 mL undiluted test substance to the lower conjunctival sac of one eye resulted in no effects on cornea and iris in any animal at any time point. Slight conjunctival redness (grade 1-2) and chemosis (grade 1-2) were reported and were fully reversible within 6 days. No signs of systemic toxicity nor effects on body weight were observed. Under the conditions of this test, the assessed chemical was determined to be a slight eye irritant in rabbits.

Sensitisation

Skin sensitisation

The skin sensitisation potential of the assessed chemical was tested using a guinea pig maximisation test (OECD TG 406). Following preliminary tests, an intradermal induction concentration of 5% and topical induction and challenge concentrations of 100% were selected. The positive control substance induced positive reactions in 8/10 animals (80%), thus meeting the reliability criteria for the GPMT test (≥ 15% positive response).

Induction (intradermal: 5%; topical: 100%) and challenge (100%) with the assessed chemical resulted in no skin reactions in the treatment group (n=10). No skin reactions were observed in the negative controls (induction with corn oil, topical challenge with 100% test item). There were no deaths or signs of systemic toxicity, and body weights were comparable to controls. The assessed chemical was not considered to be sensitising under the conditions of the study.

Repeat dose toxicity

Oral

A repeated dose toxicity study was performed to examine the systemic toxic potential of the assessed chemical in rats (OECD TG 407). Three treatment groups and a control group were formed (n=5/sex/dose) which received the assessed chemical in corn oil by oral gavage at doses of 0 (control), 150, 500 and 1000 mg/kg bw/day for 28 days. The control group were dosed with vehicle alone (corn oil).

There were no deaths during the study and there were no treatment-related changes in behavioural parameters, functional performance tests, sensory reactivity assessment and urinalysis and food consumption. Treatment-related adverse effects on clinical chemistry (decreased total protein) were recorded in animals in the 500 and 1000 mg/kg bw/day treatment groups.

Mean absolute and relative adrenal weights were significantly reduced in male rats at 500 and 1000 mg/kg bw/day. Mean absolute and relative thymus weights were reduced in males in all treatment groups and females at 500 and 1000 mg/kg bw/day. Mean absolute and relative testes and epididymides weights were significantly reduced in male rats at 1000 mg/kg bw/day. These findings (reduced organ weights of adrenal, thymus, testes, and epididymides) showed a clear dose dependency.

Macroscopic abnormalities including white deposits on the spleen surface were reported in two males at 500 mg/kg bw/day, three females and all male rats at 1000 mg/kg bw/day. This finding is supported by histopathological assessment and attributed to treatment with the assessed chemical. Treatment-related lesions in the spleen and thymus of both sexes and thyroid (2/5 and 4/5 at 500 and 1000 mg/kg bw/day respectively), epididymides (5/5 at 1000 mg/kg bw/day) and testes (5/5 at 1000 mg/kg bw/day) of male rats were recorded. Significant incidences of splenic peritonitis and thymic atrophy were limited to the 1000 mg/kg bw/day treatment group.

The systemic NOAEL was determined to be 150 mg/kg bw/day, based on

- histopathological lesion in spleen, thymus, thyroid, testes, and epididymides;
- reduced organ weights (adrenals, thymus); and
- changes in clinical biochemistry (reduced total protein) at 500 and 1000 mg/kg bw/day.

In a reproduction/developmental toxicity screening study conducted in rats (OECD TG 421) (see **reproductive and developmental toxicity** section), a NOEAL for general systemic toxicity was established at 300 mg/kg bw/day based on reductions in body weight and food consumption at the highest dose level (1000 mg/kg bw/day).

Genotoxicity

The assessed chemical was found to be non-mutagenic in a bacterial reverse mutation assay using *Salmonella typhimurium* strains TA98, TA100, TA102, TA1535 and TA1537, 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 dose (31.6, 100, 316, 1000, 2500, 5000 µg/plate), with or without metabolic activation (S9-mix).

An *in vitro* study was performed to assess the potential chromosomal mutagenicity of the assessed chemical on cultured mammalian cells (Chinese hamster V79 cells) in both the absence and presence of S9 mix (OECD TG 473). Results for the assessed chemical were considered to be inconclusive. In experiment 1, the test item induced statistically significant increases in the frequency of cells with chromosomal aberrations at the two highest doses with metabolic activation. Increases were not dose dependent. To confirm results, a tighter dose range was selected for experiment 2. Although the number of aberrant cells were above historical values, the increase did not reach significance compared to the concurrent solvent control with metabolic activation. An increase in the frequency of cells with chromosomal aberrations was also reported at the highest dose tested without metabolic activation, however, did not reach biological significance.

The assessed chemical did not induce the formation of micronuclei in an *in vitro* micronucleus test in Chinese hamster V79 cells (OECD TG 487). The selection of the concentrations used in experiments 1 (5000 µg/mL with and without metabolic activation) and 2 (4000 µg/mL with metabolic activation and 5000 µg/mL without metabolic activation) were based on data from the pre-experiments. All the positive control chemicals induced a demonstrable positive response and confirmed the validity and sensitivity of the assay and the integrity of the S9 mix. The test item did not induce any statistically significant increases in the frequency of cells with micronuclei, indicating that the assessed chemical was neither clastogenic nor aneugenic.

The assessed chemical was tested for its potential to induce mutations at the mouse lymphoma thymidine kinase locus in mouse lymphoma L5178Y cells (OECD TG 490). The concentrations used in the main experiment (0.10, 0.25, 0.5, 1.0, 2.5, 5.0, 7.5 and 10 mM, with and without metabolic activation) were based on data from a pre-experiment. No growth inhibition was observed in the experiment with and without metabolic activation. The positive control chemicals induced a demonstrable positive response and confirmed the validity and sensitivity of the assay and the integrity of the S9 mix. No biologically relevant increase of mutants was found after treatment with the test item (with and without metabolic activation). The mutation frequency did not exceed the global evaluation factor (GEF) of 126 mutants/10^6 cells at any concentration. Additionally, the percentage of small colonies did not exceed 40% at any dose, with or without metabolic activation. The assessed chemical was considered to be non-mutagenic and non-clastogenic under the conditions of the experiment.

Reproductive and development toxicity

In a reproduction/developmental toxicity screening study conducted in rats (OECD TG 421), the assessed chemical was administered to rats (n=10/sex/dose) by oral gavage for up to 54 days in females (14 days pre-mating, a maximum of 14 days mating, during the gestation period and up to post-natal day 3) and for 28 days in males (including 14 days pre-mating) at 0, 100, 300 and 1000 mg/kg bw/day.

After 14 days of treatment of both males and females, animals were mated (1:1) for a maximum of 14 days. Animals of an additional control group were handled identically but received the vehicle alone (corn oil). Males were sacrificed after completion of the mating period (day 29) and the females along with their pups were sacrificed on post-natal day 4.

There were no deaths during the course of this study. At a dose level of 1000 mg/kg bw/day, statistically significantly reduced body weights were reported at terminal sacrifice and at the end of the gestation period, in male and female rats, respectively. This correlated with significantly reduced food consumption in male and female rats during the pre-mating period and at the end of the gestation period, respectively. No effect was noted during the lactation period.

Dose dependent adverse effects were noted on:

- delivery index (no. of dams with live pups born/no. of pregnant dams x 100) – 100%, 90%, 78% and 0% in the 0, 100, 300 and 1000 mg/kg bw/day treatment groups, respectively;
- the mean number of live pups born – 10.4, 8.2, 7.1 and 0.0 in the 0, 100, 300, and 1000 mg/kg bw/day groups, respectively;
- post-implantation loss – 9.5%, 25.1%, 32.3% and 100% in the 0, 100, 300 and 1000 mg/kg bw/day groups, respectively;
- number of littering dams – 10, 10, 9 and 1 dams in the 0, 100, 300 and 1000 mg/kg bw/day groups, respectively; and
- The mean number of total pups delivered (live and dead) per group was markedly reduced at 1000 mg/kg bw/day (0.3 compared to 10.5 pups in the control group).

Testes and epididymides were recorded to be of a small size in all males dosed with 1000 mg/kg bw/day and this was associated with markedly reduced testes weight and epididymides weight. Histopathologically, this was correlated to test item induced effects on spermatogenesis. At 300 mg/kg bw/day, tubular oedema with tubular degeneration due to loss of round and elongated spermatids in stage IV to X tubules was observed. At 1000 mg/kg bw/day, massive tubular degeneration associated with oligospermia or aspermia in the epididymides was noted.

Based on the developmental effects observed (e.g. post-implantation loss) at all dose levels of 100, 300 and 1000 mg/kg bw/day, no NOAEL for developmental toxicity can be established. The NOAEL for reproductive toxicity is 100 mg/kg bw/day as indicated by effects on spermatogenesis at the higher dose levels. Under the conditions of this reproduction/developmental toxicity screening test, the NOAEL for general systemic toxicity can be established at 300 mg/kg bw/day based on statistically significantly reduced body weight and food consumption at the highest dose evaluated.

Environmental exposure

The assessed chemical is imported in sealed containers and reformulated using highly automated processes intended to limit release from spills. Therefore, significant releases of this chemical are not expected during reformulation, transportation, or storage.

Based on the assessed use as a component of industrial sealants, the assessed chemical is expected to have limited exposure to the aquatic environment as once the product is cured, the assessed chemical will be bound in a polymer matrix. The assessed chemical is expected to share the fate of the product into which it is incorporated and be disposed of to landfill at the end of its useful life.

Environmental fate

Partitioning

The assessed chemical is hydrolytically unstable, however both the chemical and its hydrolysis products are estimated to be highly water soluble. If the chemical is released into the terrestrial environment it is expected to be very highly mobile in soils based on the calculated log K_{OC} values for the parent chemical and its hydrolysis products (log $K_{OC} \leq 1.3$).

Degradation

The assessed chemical is hydrolytically unstable with a half-life of 6.5 minutes at pH 7 according to OECD TG 111. However, according to a ready biodegradation test conducted according to OECD TG 301F, only 19.5% removal of the hydrolysis products was observed in 28 days. Therefore, while the assessed chemical will have a short half-life in the environment, the hydrolysis products are expected to persist.

Bioaccumulation

The assessed chemical and its hydrolysis products have a low calculated log Kow values (estimated log Kow < 1.1), therefore the assessed chemical is not considered to have bioaccumulation potential.

Predicted environmental concentration (PEC)

A predicted environmental concentration has not been calculated as the assessed chemical is not released into environmental waters under the assessed use.

Environmental effects

Effects on Aquatic Life

As the assessed chemical is hydrolytically unstable, all ecotoxicity effects are attributed to the hydrolysis products of the assessed chemical.

Acute toxicity

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

Taxon	Endpoint	Method
Fish	LC50 > 100 mg/L	*Oncorhynchus mykiss* (rainbow trout) OECD TG 203 Static conditions Nominal concentration
Invertebrate	EC50 > 100 mg/L	*Daphnia magna* (water flea) Immobility OECD TG 202 Static conditions Nominal concentration
Algae	ErC50 = 85.16 mg/L	*Desmodesmus subspicatus* (green algae) Growth rate OECD TG 201 Static conditions Nominal concentration

Algae is the critical endpoint used for GHS classification as it is the most sensitive trophic level.

Predicted no-effect concentration (PNEC)

A Predicted No-Effect Concentration (PNEC) was calculated based on the above acute endpoint for algae using an assessment factor of 100 as three acute trophic endpoints are available. The resulting PNEC is 851.6 µg/L.

Categorisation of environmental hazard

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

Persistence

Not Persistent (Not P). Based on demonstrated instability in water, the assessed chemical is categorised as Not Persistent.

Bioaccumulation

Not Bioaccumulative (Not B). Based on low calculated log k_{ow} values, the chemical is categorised as Not Bioaccumulative.

Toxicity

Not Toxic (Not T). Based on available ecotoxicity values above 1 mg/L, the chemical is categorised as Not Toxic.

Environmental risk characterisation

The assessed chemical is not PBT 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 chemical to the aquatic environment is not expected based on its assessed use pattern.

Therefore, based on the low toxicity, hydrolytic instability and limited environmental exposure from the assessed use pattern, the assessed chemical is unlikely to cause environmental risk.

References

EPHC (Environment Protection and Heritage Council) (2009), 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.

United Nations (2017), Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 7th revised edition, United Nations Economic Commission for Europe, Geneva, Switzerland.