File No: LTD/1581

March 2012

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

2-Propanamine, N,N-dimethyl-

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of Sustainability, Environment, Water, Population and Communities.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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Director
NICNAS

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette:*

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
LTD/1581	DuPont (Australia) Ltd	2-Propanamine, N,N-dimethyl-	Yes	< 1 tonne per annum	Component of automotive refinish paints

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification
As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)]. However, based on the information available, the notified chemical should be considered as though it is classified with the following risk phases:

R20/22 Harmful by inhalation and if swallowed.
R34 Causes burns.
R37 Irritating to respiratory system.

The classification of the notified chemical using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations 2009) is presented below.

	Hazard category	*Hazard statement*
Flammable Liquids	2	Highly flammable liquid and vapour
Acute Toxicity	4	Harmful if swallowed Harmful if inhaled
Skin Corrosion/Irritation	1	Causes severe skin burns and eye damage
Aquatic Environment	Acute Category 2	Toxic to aquatic life
	Chronic Category 2	Toxic to aquatic life with long lasting effects

Human health risk assessment
Under the conditions of the occupational settings described, the notified chemical is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified chemical is not considered to pose an unreasonable risk to public health.

Environmental risk assessment
On the basis of the PEC/PNEC ratio and the reported use pattern, the notified chemical is not considered to pose an unreasonable risk to the environment.

Recommendations

REGULATORY CONTROLS
Hazard Classification and Labelling

- The notified chemical should be classified as follows under the ADG Code:
  - Class 3 (flammable liquid)
  - Class 8 (corrosive)

CONTROL MEASURES
Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified chemical:
  - Enclosed, automated processes, where possible
  - Ventilation system, including local exhaust ventilation (and spray booths during application)

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical:
  - Avoid contact with skin and eyes
  - Avoid inhalation of vapours
  - Use of personal protective equipment
  - Minimise spillage during end use

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical:
  - Gloves, goggles or faceshield and chemical resistant clothing
  - Respiratory protection if aerosols or mists are generated (or if there is insufficient ventilation)

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Spray applications should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)] or relevant State and Territory Codes of Practice.

- A copy of the MSDS should be easily accessible to employees.

- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)] workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified chemical should be disposed of to landfill. Emergency procedures

- Spills or accidental release of the notified chemical should be handled by physical containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification
This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under Section 64(1) of the Act; if
  - the importation volume exceeds one tonne per annum notified chemical;
  - the concentration of the notified chemical exceeds or is intended to exceed 1% in coatings;

or

(2) Under Section 64(2) of the Act; if

- the function or use of the chemical has changed from component of automotive refinish paints, or is likely to change significantly;
- the chemical has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

Material Safety Data Sheet
The MSDS of the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
DuPont (Australia) Ltd (ABN 59 000 716 469)
7 Eden Park Drive
Maquarie Park NSW 2113

NOTIFICATION CATEGORY
Limited-small volume: Chemical other than polymer (1 tonne or less per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication: analytical data, import volume and identity of manufacturer/recipients.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed as follows: all physical-chemical properties.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

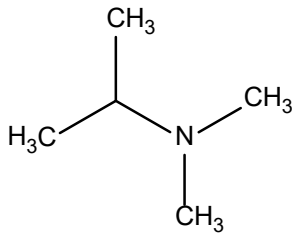
MARKETING NAME(S)
DMIPA

CAS NUMBER
996-35-0

CHEMICAL NAME
2-Propanamine, N,N-dimethyl-

MOLECULAR FORMULA
$C_5H_{13}N$

STRUCTURAL FORMULA



MOLECULAR WEIGHT
87.16 Da

ANALYTICAL DATA
Reference IR spectrum was provided.

3. COMPOSITION

DEGREE OF PURITY 99.2%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS

Chemical Name	2-Propanone		
CAS No.	67-64-1	*Weight %*	0.2
Hazardous Properties	Classification F; R11 Xi; R36 R67 Concentration cutoffs Conc≥20%: Xi; R36		

Chemical Name	2-Propanol		
CAS No.	67-63-0	*Weight %*	0.2
Hazardous Properties	Classification F; R11 Xi; R36 R66 R67 Concentration cutoffs Conc≥20%: Xi; R36		

Chemical Name	Methanamine, N-methyl-		
CAS No.	124-40-3	*Weight %*	0.2
Hazardous Properties	Classification F+; R12 Xn; R20/22 C; R34 Concentration cutoffs Conc≥15%: C; R34; R20/22 ≥10%Conc<15%: C; R34 ≥5%Conc<10%: Xi; R36/37/38		

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (> 1% by weight)

Chemical Name	Water		
CAS No.	7732-18-5	*Weight %*	0.2

ADDITIVES/ADJUVANTS None

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: colourless liquid, strong ammonia odour

Property	Value	Data Source/Justification
Melting Point/Freezing Point	-70 °C	MSDS
Boiling Point	66 °C (pressure unknown)	MSDS
Density	716 kg/m^3 (temperature unknown)	MSDS
Vapour Pressure	23 kPa at 25 °C	MSDS
Water Solubility	1000 g/L at 30 °C	Measured (Yaws et al, 2001 cited in US EPA, 2011)
Hydrolysis as a Function of pH	Not determined	Does not contain hydrolysable functionality
Partition Coefficient (n-octanol/water)	log Pow = 0.95	Calculated (KOWIN v1.68; US EPA, 2011)
Adsorption/Desorption	log K_{oc} = 1.38	Calculated (KOCWIN v2.00, from log Kow; US EPA, 2011)
Dissociation Constant	pKa = 10.1	Measured (Hine & Chou, 1981 cited in OECD, 2010)
Particle Size	Not determined	MSDS
Flash Point	-27 °C (pressure unknown)	MSDS
Flammability	Upper: 8.1% (volume) Lower: 1.0% (volume)	MSDS
Autoignition Temperature	190 °C	MSDS
Explosive Properties	Not expected to be explosive	Based on structural information and the lack of structural alerts.

DISCUSSION OF PROPERTIES

Reactivity

Stable under recommended storage conditions. Materials to avoid: acids, nitrous acid and other nitrosating agents, mercury.

Dangerous Goods classification

Based on the submitted physical-chemical data in the above table the notified chemical is classified as follows according to the Australian Dangerous Goods Code (NTC, 2007):

Class 3 (flammable liquid)

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be imported as component of finished paints at < 1%.

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 1	< 1	< 1	< 1	< 1

PORT OF ENTRY

Sydney, Melbourne and Brisbane

IDENTITY OF RECIPIENTS

DuPont (Australia) Ltd

TRANSPORTATION AND PACKAGING

The finished product (containing the notified chemical at < 1%) in 2L or 4 L Epon lined steel cans, will be imported in full container loads (FCLs) of paint products and transported to the warehouse before it is delivered to customers by road.

USE

Component of water borne automotive coatings (< 1%) for automotive repair workshops

OPERATION DESCRIPTION
The notified chemical will not be manufactured or reformulated in Australia.

At the automotive refinishing or repair sites, the paint containing the notified chemical (< 1%) may be mixed with other additives prior to application. The mixture will then be loaded into the spray equipment and applied to the car. The majority of spray applications will occur in a spray booth. The level of ventilation present in the spray booth will vary between workshops. In smaller automotive refinish repair shops spray applications may occur outside of a spray booth.

Once spraying is completed or the paint has been exhausted, the equipment will be drained and cleaned using solvents and rags.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

Category of Worker	*Exposure Duration (hours/day)*	*Exposure Frequency (days/year)*
Transport driver to warehouse ex wharf to Dupont warehouse	4	4
DuPont warehouse - inbound	1.0	4
DuPont warehouse - outbound	0.5	250
Transport driver warehouse to spray workshop	4.0	10,000
Refinish workshop store man inwards	0.1	40
Spray painter decanting paint to spray gun reservoir/pot	0.1	125
Spray painter spraying car	0.3	125
Spray painter cleaning gun and equipment	0.2	125

EXPOSURE DETAILS
Transport and storage workers may come into contact with the imported product containing the notified chemical (< 1%), only in the unlikely event of an accident.

Dermal, ocular and inhalation exposure to the notified chemical (< 1%) may occur during weighing, mixing and transfer of the automotive paint. Exposure should be minimised if personal protective equipment (PPE), consisting of coveralls, gloves, safety boots and eye protection goggles, are worn. The level of PPE will vary between workshops.

Dermal and ocular exposure to the notified chemical (< 1%) may occur during spray application of the finished paints to automobile parts and when cleaning spray gun equipment. Exposure should be minimised if PPE, consisting of coveralls, gloves, safety boots and eye protection goggles, are worn. The level of PPE will vary between workshops.

Due to the formation of aerosols, inhalation exposure is also likely during spray application, particularly where the level of ventilation within the spray booth is insufficient, application occurs outside of a spray booth and/or workers do not wear respirators.

When the paint containing the notified chemical is applied, most of the chemical will be eliminated by evaporation under drying lights/heated air and any remaining will be protected by 1 or 2 layers of fully catalysed polyurethane clear topcoat, and will therefore not be available. Workers may also be exposed to dried paint film containing the notified chemical before topcoat is applied.

6.1.2. Public Exposure

Coatings containing the notified chemical at < 1% are intended for industrial use only and will not be sold to the public. Furthermore, once the paint containing the notified chemical is applied, the coat will be dried and most of the chemical evaporated. Any remaining chemical will be protected by 1 or 2 layers of fully catalysed polyurethane clear topcoat, and will therefore not be available.

6.2. Human Health Effects Assessment

No toxicity data were submitted. Much of the discussion below regarding the health effects of the notified chemical, is based on information that was provided in the MSDS of the notified chemical (full study reports not provided).

Toxicokinetics

Based on the physicochemical properties of the notified chemical, percutaneous absorption is likely. Given the low molecular weight, absorption across the GI tract is possible, by passive diffusion through the aqueous pores or micellular solubilisation. The notified chemical may also be absorbed across the respiratory tract.

Acute toxicity

The MSDS for the notified chemical indicates that it is harmful via the oral (LD50 of 680-1360 mg/kg in rats) and inhalation routes (LC50 of 2.5 mg/L/4 hour in rats) and potentially harmful via the dermal route (LD50 of > 200 mg/kg in rabbits). Similar acute toxicity effects (classification: R20/22 Harmful by inhalation and if swallowed) have been reported for other similarly substituted amines (HSIS, 2010).

Irritation and sensitisation

The potential for the notified chemical to irritate the upper airways was evaluated in mice (Gagnaire *et al.*, 1989). The respiratory rate of each mouse was determined before and during a 15-minute exposure period (4 to 6 different exposure concentrations were used). The RD50 (concentration resulting in a 50% decrease in respiratory rate) of the notified chemical was 90 ppm. The notifier has classified the notified chemical as R37: Irritating to respiratory system.

The MSDS for the notified chemical indicates that it is corrosive to the skin and eyes and that there is inadequate evidence of sensitisation. The likely corrosivity of the notified chemical is supported by its classification in published sources (Barratt, 1998) and the classification (R34: Causes burns) of other similarly substituted amines (HSIS, 2010).

Mutagenicity

The MSDS for the notified chemical indicates that it was not mutagenic in bacterial assays.

Health hazard classification

As no toxicity data were provided, the notified chemical cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

Limited information was provided on the toxicological characteristics of the notified chemical. Based on the information provided, the notified chemical is likely to be harmful via the oral, dermal and inhalation routes, is likely to be corrosive to skin and eyes (and irritating to the respiratory system) and is likely to be sensitising. While the notified chemical will only be handled at concentrations (< 1%) that are below the concentration cut-offs for classification as a hazardous substance, given the absence of supporting toxicity studies, steps should be taken to avoid exposure to the notified chemical, particularly during spray application processes.

The notified chemical itself is classified as a Class 3 Dangerous Good according to the Australian Dangerous Goods Code (NTC, 2007), i.e. it is a flammable liquid. Transport, storage and handling of products containing the notified chemical in accordance with the above code and the *NOHSC National Code of Practice for the Storage and Handling of Workplace dangerous Goods* (NOHSC, 2001) should minimise the risk involved for transport and storage workers. However, it is noted that the notified chemical will be imported as a component of water borne paints.

Therefore, provided that control measures are in place to minimise worker exposure, including the use of ventilated environments, automated processes and PPE, the risk to the health of workers is not considered to be unreasonable.

6.3.2. Public Health

The notified chemical (at < 1% concentration) will not be available to the public. The public may come into contact with products to which the coatings have been applied and cured, and the notified chemical bound within a matrix. Therefore, as the notified chemical will be unavailable for exposure, the risk to the public from use of the notified chemical is not considered to be unreasonable.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified chemical will not be manufactured or reformulated in Australia; therefore, there will be no releases due to these activities. Environmental release during importation, transport and distribution may occur as a result of accidental spills. In the event of a spill, the notified chemical is expected to be contained and collected with an inert absorbent material and disposed of in accordance with local regulations. The notified chemical may volatilise to the air compartment in the event of a spill.

RELEASE OF CHEMICAL FROM USE

Paint products containing the notified chemical are expected to only be available to industrial automotive refinish repairers. Therefore, any losses from overspray (estimated at up to 50% of annual import volume) during industrial use are expected to be collected using standard engineering controls in spray booths such as water curtains and filters. Other wastes include liquid paint in mixing containers (5%), residues in product containers (5%) and residue in wash solutions (5%). Solid waste such as overspray collected on filters is expected to be disposed of to landfill. Notified chemical in wash solutions or water from water curtains may be partially separated out with polymeric masses during wastewater treatment and, together with liquid paint wastes, is expected to be either reused (in asphalt) or disposed of to landfill. Up to 5% of the import volume of notified chemical is estimated to remain in wastewater from use due to its high water solubility (European Commission, 2003a) and is expected to be released to sewers. The notified chemical is expected to volatilise to air from the applied paints during curing due to its high volatility.

RELEASE OF CHEMICAL FROM DISPOSAL

The notified chemical remaining in cured paints is trapped in the matrix due to overcoat and is expected to share the fate of automotive articles to which it has been applied. The notified chemical is likely to be either thermally decomposed during metal reclamation processes or disposed of to landfill at the end of the useful life of the article.

7.1.2. Environmental Fate

No environmental fate data were submitted. Up to 65% of the notified chemical could be released as wastes generated during use in industrial automotive refinish paints. Five percent of the import volume of the notified chemical is estimated to be disposed of to sewer in wastewater generated during use. The remaining notified chemical in waste is expected to either volatilise into air or be disposed of to landfill as solid wastes. Notified chemical in paints applied to articles is expected to volatilise to air as the paint cures or be physically bound within the inert polymeric matrix of the paint and trapped by overcoat. Notified chemical bound in paints adhering to articles is likely to be disposed of to landfill or metals reclamation.

The notified chemical will be moderately volatile in water based on the predicted Henry's Law Constant (log H = 0.302 Pa m^3/mol; European Commission, 2003b). The notified chemical is not expected to hydrolyse as it does not contain any readily hydrolysable functionality. It is not readily biodegradable (5% after 28 d, method not reported; Dupont, 2010) but shows potential for inherent biodegradability (20-30% after 28 d, OECD TG 302B; Dupont, 2010). The notified chemical has low potential for removal from the water column from adsorption to soil, sediment and sludge based on its calculated adsorption coefficient (log Koc = 1.38). The majority of notified chemical in sewage influent is expected to be released in effluent (98%, SimpleTreat; European Commission, 2003a) and either disposed of to surface waters or used for agricultural irrigation. The notified chemical is not expected to bioaccumulate based on its low partition coefficient. In the aquatic environment, the notified chemical is expected to disperse and degrade to form water and oxides of carbon and nitrogen.

The notified chemical is highly volatile, with a vapour pressure of 23 kPa, and may volatilise to air as the paint cures. The half-life of the notified chemical in air is calculated to be 1.5 h based on reactions with hydroxyl radicals (AOPWIN, v1.92; US EPA, 2011). Therefore, in the event of release to atmosphere, the notified chemical is not expected to persist in the atmospheric compartment.

Notified chemical disposed of to landfill is expected to be bound in cured paint adhering to articles to which it has been applied or in solid wastes. Some may also be disposed of to landfill in insoluble polymeric mass isolated from waste streams. The notified chemical is not expected to be bioavailable, biodegradable nor mobile in these forms. Over time, the notified chemical will gradually be released from the cured paint or polymeric masses. In landfill or agricultural soils, the notified chemical is likely to be very highly mobile in soil based on its estimated adsorption coefficient (log Koc = 1.38). While the notified chemical is not readily biodegradable, it is not expected to bioaccumulate based on its low partition coefficient. The notified chemical in solids will eventually degrade in landfill and agricultural soils, or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)

Based on the notified chemicals high water solubility, up to 5% of the import volume of the notified chemical is estimated to be released in wastewater disposed of to sewers following industrial use in water-based paints. Release to sewage treatment plants (STP) is assumed to occur on 260 days per annum across Australia based on its industrial use by automotive refinish repairers. Under a worst case scenario, no further removal of the notified chemical in the STP, the resultant Predicted Environmental Concentration (PEC) in sewage effluent on a nationwide basis is estimated as follows:

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	1,000	kg/year
Proportion expected to be released to sewer	5	%
Annual quantity of chemical released to sewer	50	kg/year
Days per year where release occurs	260	days/year
Daily chemical release:	0.192	kg/day
Water use	200	L/person/day
Population of Australia (Millions)	22.61	million
Removal within STP	0	%
Daily effluent production:	4,522	ML
Dilution Factor - River	1	
Dilution Factor - Ocean	10	
PEC - River:	0.0425	µg/L
PEC - Ocean:	0.0043	µg/L

STP effluent re-use for irrigation occurs throughout Australia. The agricultural irrigation application rate is assumed to be 1000 L/m^2/year (10 ML/ha/year). The notified chemical in this volume is assumed to infiltrate and accumulate in the top 10 cm of soil (density 1500 kg/m^3). Using these assumptions, irrigation with a concentration of 0.043 µg/L may potentially result in a soil concentration of approximately 0.2835 µg/kg. Assuming accumulation of the notified chemical in soil for 5 and 10 years under repeated irrigation, the concentration of notified chemical in the applied soil in 5 and 10 years may be approximately 1.417 µg/kg and 2.835 µg/kg, respectively. However, given the mobility and volatility of the notified chemical, these are maximum concentrations only.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. However, several ecotoxicological endpoints were reported in the provided Dupont MSDS for the notified chemical. The available information is summarised in the table below.

Endpoint	*Result*	*Assessment Conclusion*
Fish Toxicity		
Zebra fish	96h LC50 = 78 mg/L[1]	Harmful to fish
Golden Orfe	96h LC50 = 46 mg/L[1,2]	
Daphnia Toxicity		
Daphnia magna	48h EC50 = 3.8 mg/L - 38.4 mg/L[1]	Potentially toxic, at best harmful to aquatic invertebrates
Algal Toxicity		
Scenedesmus subspicatus	72h EC50 = 1.47 mg/L[1]	Toxic to algae

[1] Endpoint as reported in the Dupont Safety Data Sheet.
[2] Reported to be 22>EC50≤46 mg/L in supporting documentation (Dupont, 2010).

The above experimental results could not be assigned for reliability as reports were not available for the test studies. Therefore, predicted endpoints for aquatic organisms have been calculated using a reliable QSAR method and are reported in the table below.

Endpoint	*Result*
Fish Toxicity	96h LC50 = 65.8 mg/L[1]
Daphnia Toxicity	48h LC50 = 5.34 mg/L[1]
Algal Toxicity	96h EC50 = 1.63 mg/L[1]

[1] Modelled estimates (ECOSAR v1.00, class – aliphatic amines, log Kow = 0.95; US EPA, 2011).

The above predicted endpoints support the reliability of the provided endpoints for use in the environmental risk assessment using a weight of evidence approach.

Based on the reported endpoints, under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS; United Nations, 2009) the notified chemical is harmful to fish and toxic to aquatic invertebrates and algae, and is formally classified as 'Acute Category 2: Toxic to aquatic life'. The long-term hazard of the notified chemical is formally classified under the GHS on the basis of its acute toxicity to aquatic biota, and its lack of rapid degradability, as 'Chronic Category 2: Toxic to aquatic life with long lasting effects.

7.2.1. Predicted No-Effect Concentration

The predicted no-effect concentration (PNEC) has been calculated from the most sensitive acute algal toxicity endpoint reported for the notified chemical and an assessment factor of 100 to account for chronic toxicity and laboratory-to-field extrapolation.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
EC50 (Algal)	1.47	mg/L
Assessment Factor	100	
PNEC:	14.7	µg/L

7.3. Environmental Risk Assessment

Based on the above PEC and PNEC values, the following Risk Quotient (Q) has been calculated:

Risk Assessment	PEC µg/L	PNEC µg/L	Q
Q - River	0.043	14.7	0.003
Q - Ocean	0.004	14.7	< 0.001

The risk quotient for discharge of treated effluents containing the notified chemical to the aquatic environment indicates that the notified chemical is unlikely to reach ecotoxicologically significant concentrations based on its reported use pattern and annual importation quantity. The notified chemical may be released to the atmosphere as paint cures but it is unlikely to persist in the air compartment. The notified chemical has a low potential for bioaccumulation. Therefore, on the basis of the PEC/PNEC ratio, maximum annual importation volume and assessed use pattern in industrial automotive refinish paints, the notified chemical is not expected to pose an unreasonable risk to the environment.

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