File No: LTD/1794

December 2014

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

1-Decanamine, *N*,*N*-dimethyl-, *N*-oxide

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (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 conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment.

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 CHEMICAL	INTRODUCTION VOLUME	USE
LTD/1794	Bralson Pty Ltd (trading as MotorActive)	1-Decanamine, *N*,*N*-dimethyl-, *N*-oxide	ND*	≤ 0.31 tonnes per annum	Component of automotive wheel cleaner

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification
As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

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

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical as introduced:
  - Avoid eye contact

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

- A copy of the (M)SDS should be easily accessible to employees.

- If products and mixtures containing the notified chemical are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified chemical in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Emergency procedures

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

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;

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the chemical has changed from component of automotive wheel cleaner, or is likely to change significantly;
  - the amount of chemical being introduced has increased, or is likely to increase, 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 (M)SDS of the product containing the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Bralson Pty Ltd trading as MotorActive (ABN: 15 050 094 650)
Unit 35, Slough Business Park
Holker Street
Silverwater NSW 2128

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

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
No details are claimed exempt from publication.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed for all physico-chemical endpoints

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
G9524 Hot Rims Factory Equipped Wheel Cleaner (imported product containing the notified chemical at 1.5% concentration)

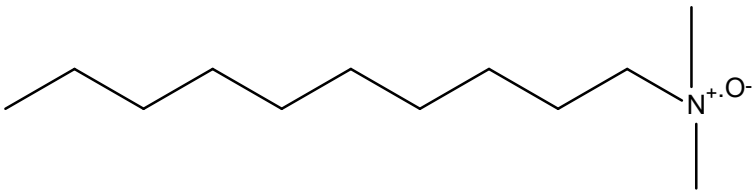
CAS NUMBER
2605-79-0

CHEMICAL NAME
1-Decanamine, *N*,*N*-dimethyl-, *N*-oxide

OTHER NAME(S)
Decylamine oxide

MOLECULAR FORMULA
$C_{12}H_{27}NO$

STRUCTURAL FORMULA



MOLECULAR WEIGHT
201.35 Da

3. COMPOSITION

DEGREE OF PURITY
> 95%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS
None

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (> 1% BY WEIGHT)
None

ADDITIVES/ADJUVANTS
None

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: White powder

Property	Value	Data Source/Justification
Melting Point/Freezing Point	152.6 °C	Calculated (MPBVP v1.43; US EPA, 2011)
Boiling Point	403.41 °C	Calculated (MPBVP v1.43; US EPA, 2011)
Density*	1,020-1,030 kg/m^3	MSDS
Vapour Pressure	4.58 x 10^{-8} kPa at 25 °C	Calculated (MPBVP v1.43; US EPA, 2011)
Water Solubility	3.0 x 10^{-4} g/L	Calculated using WSKOW v1.41 (US EPA, 2009)
Hydrolysis as a Function of pH	Not determined	The notified chemical contains hydrolysable functionalities. It is expected to hydrolyse under environmental conditions (pH 4–9)
Partition Coefficient (n-octanol/water)	log Pow = 3.69	Calculated using KOWWIN v1.67 (US EPA, 2009)
Adsorption/Desorption	log Koc = 2.9	Calculated using KOCWIN v2.00 (US EPA, 2009)
Dissociation Constant	Not determined	The notified chemical is a salt and will dissociate in water
Flash Point*	> 93 °C	MSDS
Autoignition Temperature	Not determined	Not expected to autoignite
Explosive Properties	Not determined	Not expected to be explosive based on structure
Oxidising Properties	Not determined	Not expected to be oxidising based on structure

* For imported product containing the notified chemical at 1.5% concentration

DISCUSSION OF PROPERTIES

Reactivity
The notified chemical is expected to be stable under normal conditions of use.

Physical hazard classification
Based on the submitted physico-chemical data depicted in the above table, the notified chemical is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified chemical will be imported into Australia as a component of an end-use automotive wheel cleaning product at 1.5% concentration.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	0.25	0.27	0.28	0.29	0.31

PORT OF ENTRY
Sydney

IDENTITY OF RECIPIENTS
Bralson Pty ltd (trading as MotorActive)

TRANSPORTATION AND PACKAGING
The notified chemical will be imported in the automotive cleaning product (at a concentration of 1.5%) by sea freight, packaged within 710 mL plastic spray bottles and transported by road within Australia.

USE
The notified chemical will be used as a component of an automotive wheel cleaning product at 1.5% concentration.

OPERATION DESCRIPTION
The notified chemical will not be manufactured in Australia. No reformulation or repackaging of the automotive wheel cleaning product containing the notified chemical at a concentration of 1.5% will occur.

The automotive wheel cleaning product containing the notified chemical at 1.5% concentration will be applied to car wheels by hand spray. After ~15 seconds the cleaning product will be removed by rinsing with water and the tyre may then be dried with a chamois.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure
Exposure to workers during transport and storage of the imported automotive wheel cleaning product containing the notified chemical at 1.5% concentration is not expected except in the unlikely event of an accident.

The automotive wheel cleaning product containing the notified chemical at 1.5% concentration may be used in occupational settings. PPE may be used by workers to minimise exposure. If PPE is used, worker exposure to the notified chemical at 1.5% concentration is expected to be of a similar or lesser extent than that experienced by consumers using the wheel cleaning product containing the notified chemical.

6.1.2. Public Exposure
The public may be exposed to the notified chemical at a concentration of 1.5% when applying the automotive wheel cleaner product. The main route of exposure is expected to be dermal although ocular exposure may also occur. Inhalation exposure is expected to be limited given the low vapour pressure of the notified chemical and the method of application is not expected to generate droplets of inhalable size. The safety directions on the product label indicate that users should wear eye protection and gloves when using given the corrosive nature of the product. Where worn the potential for exposure will be limited.

6.2. Human Health Effects Assessment
No toxicity data were submitted.

The notified chemical is ionic and highly water soluble therefore dermal absorption may be limited. Absorption across the gastrointestinal tract is expected to occur.

The notified chemical is a surfactant and therefore may have the potential to be irritating. Indeed the notified chemical has been classified on ECHA's Classification and Labelling Inventory as a Category 2 skin irritant (H315: Causes skin irritation) and a Category 1 eye irritant (H318: Causes serious eye irritation) .

Health hazard classification
As no toxicity data were provided, the notified chemical cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety
The notified chemical may have the potential to be irritating to the skin and severely irritating to the eye. Based on its physico-chemical properties, the notified chemical is likely to have limited potential for dermal absorption; hence systemic toxicity by the dermal route is expected to be limited.

Workers may be exposed to the notified chemical at 1.5% concentration as a result of accidental release or when using the wheel cleaning product containing the notified chemical. At this proposed use concentration the notified chemical is only expected to present at most as a slight eye irritant. Therefore, based on the low use concentration, the risk to workers from use of the notified chemical is not considered to be unreasonable.

6.3.2. Public Health
The public may be exposed to the notified chemical at 1.5% concentration during use of the wheel cleaning product containing the notified chemical. At this proposed use concentration the notified chemical is only expected to present at most as a slight eye irritant. Therefore, based on the low use concentration, 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 be imported as the finished product. It will not be manufactured in Australia. Any notified chemical that is released during transport is assumed to be contained and disposed of according to local regulations.

RELEASE OF CHEMICAL FROM USE
The product containing the notified chemical will be used for factory equipped wheel cleaning. Therefore, the majority of the notified chemical is expected to be released to sewer as the result of disposal of used water in cleaning wheels.

RELEASE OF CHEMICAL FROM DISPOSAL
The notified chemical contained in product residues remaining in empty containers is expected to be disposed of to landfill.

7.1.2. Environmental Fate
The majority of the notified chemical is expected to be released to sewer at the end of its useful life. During waste water treatment processes in sewage treatment plant (STP), a large proportion of the notified chemical is expected to be removed from waste waters via degradation or by sorption to sludge based on its cationic properties. The sludge is expected to be disposed of to landfill or applied to agricultural soils. A proportion of the notified chemical may remain in the water column in STP effluent and be released to the aquatic compartment. Based on its expected water solubility the notified chemical is not expected to bioaccumulate in aquatic organisms. In water and landfill, the notified chemical is expected to degrade by biotic and abiotic processes to form water, oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)
The calculation for the predicted environmental concentration (PEC) is summarised in the table below assuming that 100% of the notified chemical will be released to sewer on a nationwide basis over 365 days per year. It is also assumed, under a worst-case scenario, that there is no removal of the notified chemical during STP processes.

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	310	kg/year
Proportion expected to be released to sewer	100%	
Annual quantity of chemical released to sewer	310	kg/year
Days per year where release occurs	365	days/year
Daily chemical release:	0.85	kg/day
Water use	200.0	L/person/day
Population of Australia (Millions)	22.613	million
Removal within STP	0%	
Daily effluent production:	4,523	ML
Dilution Factor - River	1.0	
Dilution Factor - Ocean	10.0	
PEC - River:	0.19	µg/L
PEC - Ocean:	0.02	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 0.188 µg/L may potentially result in a soil concentration of approximately 0.0012 mg/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 0.006 mg/kg and 0.012 mg/kg, respectively.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. As there is the potential for high aquatic exposure from the use and disposal of the notified chemical, modelled estimates for ecotoxicological endpoints for the notified chemical were calculated using (ECOSAR (v4.00), using the class specific for the functional groups the notified chemical contains and the user entered log Kow = 3.61. The endpoints are tabulated below.

Endpoint	Result	Assessment Conclusion
Acute Toxicity		
Fish (96 h)	LC50 = 2.99 mg/L	Toxic -harmful to fish
Daphnia (48 h)	EC50 = 0.43 mg/L	Very toxic to aquatic invertebrates
Algal (96 h)	EC50 = 0.24 mg/L	Very toxic to algae

The modelled endpoints used here were derived from the ECOSAR, using a class that was the best fit for the notified chemical, and are considered useful to provide a general indication of potential environmental effects for the notified chemical. However, the number of chemicals in the training set used to develop the ECOSAR class is considered to be insufficient to confidently classify the notified chemical. Therefore, these modelled endpoints are not considered sufficient to formally classify the acute hazard of the notified chemical under the Globally Harmonised System for the Classification and Labelling of Chemicals (United Nations, 2009).

7.2.1. Predicted No-Effect Concentration

The predicted no-effect concentration (PNEC) has been calculated from the estimated acute algae toxicity of the notified chemical and an assessment factor of 500. A more conservative assessment factor of 500 is appropriate, in this case, as although acute endpoints for three trophic levels are available as a general indication of potential toxicity, these endpoints are modelled estimates from a classed-based model which has a low number of chemicals in the training sets.

Predicted No-Effect Concentration (PNEC) for the Aquatic Compartment		
E_rC50	0.24	mg/L
Assessment Factor	500	
PNEC:	0.86	µg/L

Environmental Risk Assessment

Risk Assessment	PEC µg/L	PNEC µg/L	Q
Q - River	0.19	0.86	0.22
Q - Ocean	0.019	0.86	0.02

The risk quotient for discharge of the notified chemical to the aquatic environment indicates that the notified chemical is unlikely to reach ecotoxicologically significant concentrations based on its annual importation quantity. The notified chemical is calculated to be biodegradable and due to its calculated moderate solubility in water is expected to have a low potential for bioaccumulation. On the basis of the PEC/PNEC ratio, low import volume and assessed use pattern, the notified chemical is not expected to pose an unreasonable risk to the aquatic environment.

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NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

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