File No PLC/1247

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Poly[oxy(methyl-1,2-ethanediyl)], α-methyl-ω-methoxy-

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government 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

February 2015

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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
PLC/1247	Dow Chemical Australia Pty Ltd, Rohm and Haas Australia Pty Ltd, Fuchs Lubricants (Australasia) Pty Ltd	Poly[oxy(methyl-1,2-ethanediyl)], α-methyl-ω-methoxy-	No	< 100 tonnes per annum	Lubricant

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment
On the basis of the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself. However, these should be selected on the basis of all ingredients in the formulation.

  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 polymer 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 polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
  - Store in a segregated and approved area.

Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

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 polymer 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 polymer, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer 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 notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from use as a lubricant, or is likely to change significantly;
- the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
- the notified polymer has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the notified polymer 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 a product containing the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Dow Chemical Australia Pty Ltd (ABN: 72 000 264 979)
Level 17, 8 Exhibition St
MELBOURNE VIC 3000

Rohm and Haas Australia Pty Ltd (ABN: 29 004 513 188)
Level 17, 8 Exhibition St
MELBOURNE VIC 3000

Fuchs Lubricants (Australasia) Pty Ltd (ABN: 88 005 681 916)
49 McIntyre Rd
SUNSHINE VIC 3020

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: molecular weight, polymer constituents and residual monomers/impurities

2. IDENTITY OF POLYMER

Marketing Name(s)
XZ 97039.00 Experimental Lubricant (contains the notified polymer at > 95% concentration)

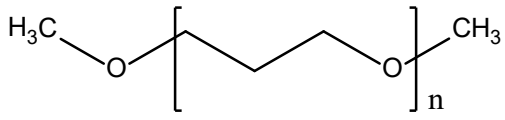
Chemical Name
Poly[oxy(methyl-1,2-ethanediyl)], α-methyl-ω-methoxy-

CAS Number
24991-61-5

Other Name(s)
Polypropylene glycol dimethyl ether
Glycols, polypropylene, dimethyl ether
Polyoxypropylene dimethyl ether
Polyoxypropylene glycol dimethyl ether
XZ 97039.00

Molecular Formula
$(C_3H_6O)_nC_2H_6O$

Structural Formula



Molecular Weight
Number Average Molecular Weight (Mn) is > 1,000 Da

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Liquid
Density	982 kg/m^3 at 25 °C
Water Solubility	Insoluble (MSDS)
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 100	< 100	< 100	< 100	< 100

Use
The notified polymer will be imported into Australia in 200 kg steel drums. No reformulation will occur. The notified polymer has end use as a refrigeration lubricant at > 95% concentration. The notified polymer will have industrial use only and will not be available for public use.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by tests submitted on the following toxicological endpoints.

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*
1. Rat, acute oral	LD50 > 2000 mg/kg bw	no	OECD TG 425
2. Rat, acute dermal	LD50 > 2000 mg/kg bw	no	OECD TG 402
3. Rabbit, skin irritation	non-irritating	no	OECD TG 404
4. Rabbit, eye irritation	non-irritating	no	OECD TG 405

All results were indicative of low hazard.

The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

7. ENVIRONMENTAL RISK ASSESSMENT

PLCs without significant ionic functionality are of low concern to the aquatic environment.
The notified polymer will not be manufactured, reformulated or repackaged in Australia. It will be imported into Australia as a finished lubricant formulation. Significant release of the notified polymer to the environment is not expected during transport and storage except in the unlikely event of accidental spills or leaks. Any spilt product is expected to be contained and disposed of in accordance with local regulations.

The notified polymer will be imported into Australia in the compressor as the fill fluid or taken from the drum and then used to fill the compressor. Empty drums are expected to have approximately 1% notified polymer. Releases during use are expected from spills when pouring lubricants into the compressor, which are expected to be negligible. Any spills when released to soil are expected to adsorb to soil particles based on the hydrophobicity of the polymer. A proportion of the notified polymer may enter the aquatic environment through transport of soil particles contaminated with the lubricant formulation containing the notified polymer. The notified polymer is expected to be associated with the sediment compartment where it is unlikely to be bioavailable. The notified polymer is not expected to cross biological membranes due to its high molecular weight and it is therefore not expected to bioaccumulate. The notified polymer is not expected to be supplied to the general public. Therefore, Do It Yourself (DIY) use is not expected.

The results from an ecotoxicological investigation conducted on the notified polymer are summarised in the table below.

Endpoint	*Result*	*Assessment Conclusion*
Daphnia Toxicity (48 h)	EL50 > 120 mg/L	Not harmful to aquatic invertebrates

Based on the above reported endpoint for the notified polymer, it is not considered to be harmful to daphnia. Therefore, the notified polymer is not harmful to aquatic organisms. Consequently, under the Globally Harmonised System of Classification and Labelling of Chemicals (GHS; United Nations, 2009), the notified polymer has not been formally classified for acute and chronic toxicities.

Based on its use as a refrigeration lubricant, the notified polymer is expected to have limited potential for release to the aquatic environment.

The used lubricant formulation containing the notified polymer is expected to be disposed of in accordance with the State/Territory regulations. In landfill, the notified polymer is not expected to be mobile due to its low water solubility. The notified polymer is not readily biodegradable. However, the notified polymer is expected to degrade by slow biotic and abiotic processes in landfill or by thermal decomposition during use, to form water and oxides of carbon.

Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.