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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in TEGO MR 2057

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Director
NICNAS

TABLE OF CONTENTS

FULL PUBLIC REPORT

Polymer in TEGO MR 2057

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
International Sales and Marketing (ABN 36 467 259 314) of 262 Highett Road, Highett VIC 3190; and
Lubrizol International, Inc. (ABN 002 747 944) of 28 River Street, Silverwater NSW 2128

NOTIFICATION CATEGORY
Synthetic Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical Name, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Monomer Residuals.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Polymer in TEGO MR 2057

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 10000

The molecular weight characterisation report states that the low molecular weight species are much higher than allowable for a polymer of molecular weight greater than 10000. However, the peaks at lower molecular weight have been identified as impurities and pre-polymers, and these completely account for the low molecular weight proportion, indicating that the notified polymer itself has extremely low proportions of low molecular weight species.

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Functional Group	Category	Equivalent Weight (FGEW)
Unsubstituted ortho or para position on phenol	High Concern	2342

Criterion	*Criterion met (yes/no/not applicable)*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Not applicable
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Not Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. 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
An emulsifying agent in fuels.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The imported liquid product containing the notified polymer (at a concentration of <1% w/w) will be imported through Sydney and Melbourne ports in 200 kg steel drums (20′ and 40′ containers) and stored in third party storage facilities. Drums will then be transported to the refineries for use in dilution equipment. At the refinery, the imported product containing the notified polymer will be mixed with fuel during the loading of the tank truck with refined fuel. The notified polymer will be present in the blended fuel at a concentration of <0.1%. The imported product containing the notified polymer will be injected together with refined gasoline into the tank truck to form the finished fuel before delivery to fuel stations for sale. The pumping and injection operation are carried out automatically in a closed pipeline system and the equipment only requires changeover on each drum. The operation will be carried out by 1-2 workers at each customer's site and will often be carried out by the same workers (the tank truck driver) who would normally load the tank truck. The facilities will be well-ventilated.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

The notified polymer will not be manufactured in Australia. No release of the notified polymer is expected at the customer sites during transport and blending, except in the event of an accidental spills. In case of spillage, the product containing the notified polymer is to be cleaned up through the use of the appropriate well-structured safety management procedures of the refineries and outlets. Release of the notified polymer to the atmosphere is unlikely to occur as the vapour pressure is expected to be low. The notifier indicates that approximately 400 g/200 kg drum will remain in the import containers after emptying. This equates to 200 kg per year, assuming the maximum yearly import volume of 100 tonnes. Drums are resealed following use and sent for recycling at approved drum re-conditioners. The residues are collected during recycling in hydrocarbon waste traps for processing prior to disposal by incineration.

The notified polymer is intended for use as an emulsifying agent for fuel, primarily petrol and diesel. No significant release of the notified polymer is expected at end use because the notifier expects the notified polymer to be combusted in the automotive engine along with the fuel to generate primarily carbon dioxide, silicon dioxide and water and thus disposal considerations will not be necessary.

There are expected to be minor spills at petrol stations, which would mostly fall to the ground. The fuel will evaporate with time leaving the residual polymer behind. The residual polymer is unlikely to undergo hydrolysis (due to low solubility and the absence of hydrolysable groups) but will slowly degrade through the agency of abiotic and biotic process.

6.2. Summary of Occupational Exposure

Transport and Storage

During transport of the product (containing the notified polymer), workers might come into dermal and ocular contact with up to 1% the notified polymer through accidental leaks and spillages of the drums and containers.

Formulation

During the automated formulation process, worker exposure to the notified polymer at up to 1% is expected to be negligible as compared to the inhalation exposure to the other more volatile components of the fuel. Dermal and ocular exposure to up to 1% notified polymer may occur as a result of accidental spills and splashes. Appropriate containment procedures (such as catching pans) and engineering controls (local exhaust ventilation) are expected to be in place at the refineries. Workers will wear personal protective equipment such as safety glasses, gloves and overalls. Exposure to the notified polymer in the final blended fuel will be <0.1%.

6.3. Summary of Public Exposure

Dermal and ocular exposure to <0.1% notified polymer may occur during the filling operation at the petrol station. However, little exposure will occur due to the low concentration of the notified polymer in finished fuels.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	Amber coloured liquid
Melting Point	< 20°C
Flash point	58°C
Density	1.02 g/cm^3
Water Solubility	Insoluble. The notified polymer contains approximately 50% hydrophilic functional groups which may confer limited (unspecified) water soluble despite high hydrophobic functionality.
Dissociation Constant	The notified polymer contains no dissociable groups within the environmental pH range of 4-9.
Reactivity	There is no specific reactivity
Explosive properties	Not applicable – there are no structural indications of explosive properties.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data was submitted.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

The following toxicological results were derived from the MSDS:

Endpoint	*Result and Conclusion*

Ready Biodegradability (OECD 301-type test data)	Not biodegradable. At least 25% of the components in this product are said to show moderate biodegradation based on OECD 302-type test data.

9.2. Environmental Hazard Assessment

No ecotoxicity studies were provided. However, the toxicity results are available on the MSDS for the Lubrizol product containing <1% notified polymer based on component data. The results indicate that the product is considered to be toxic to freshwater fish, freshwater invertebrates and algae. However, given the low amount of the notified polymer present in the product and the presence of the other components, it is likely that the toxicity exhibited is due to other components in the product.

10. RISK ASSESSMENT

10.1. Environment

Limited environmental release of the notified polymer is anticipated except in the case of accidental spills. The majority of the polymer will be burnt in engines along with the fuel. Any material lost as a result of spills, or remaining as residues in containers, is expected to be recovered and disposed of by incineration. The likely low release to water indicates that there is unlikely to be an environmental risk in the aquatic compartment under the proposed use pattern.

Given the low amount of the notified polymer present in the fuel, it is unlikely to have significant implication for fuel emissions. The notifier stated that the impact on particulate matter is negligible given the low % of the notified polymer.

10.2. Occupational Health and Safety

The notified polymer is of very high molecular weight. Worker exposure to the notified polymer is limited because of the engineering controls and personal protective equipment worn by workers. The notified polymer will be present in the product at a low concentration. Therefore, based on the information provided by the notifier and the use of PPE, occupational risk is from the use of the notified polymer is considered to be low.

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

10.3. Public Health

Members of the public may make dermal and ocular contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is present at low concentrations and unlikely to be bioavailable. Emissions (silicon dioxide and carbon dioxide) generated from combustion is not expected to be significant given the low % of the notified chemical in fuel.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- 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 MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

- Do not allow material or contaminated containers to enter drains, sewers or water courses.

Disposal

The notified polymer should be disposed of by incineration.

13.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under subsection 64(1) of the Act; if
  - the notified polymer is introduced in a chemical form that does not meet the PLC criteria; or
  - the notified polymer is introduced at >1% in the imported product or is present in the fuel at >0.1%; or
  - the import volume exceeds 100 tonnes.

or

(2) Under subsection 64(2) of the Act:
  - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

No additional secondary notification conditions are stipulated.