

File No PLC/626

8 May 2006

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer in Rhodoclean MSC

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 the Environment and Heritage.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

Library
Australian Safety and Compensation Council
25 Constitution Avenue
CANBERRA ACT 2600
AUSTRALIA

To arrange an appointment contact the Librarian on TEL + 61 2 6279 1162 or email ascc.library@dewr.gov.au

This Full Public Report is 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:

| | |
|-----------------|--|
| Street Address: | 334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA. |
| Postal Address: | GPO Box 58, SYDNEY NSW 2001, AUSTRALIA. |
| TEL: | + 61 2 8577 8800 |
| FAX: | + 61 2 8577 8888. |
| Website: | www.nicnas.gov.au |

**Director
NICNAS**

TABLE OF CONTENTS

| | |
|---|----|
| FULL PUBLIC REPORT..... | 3 |
| 1. APPLICANT AND NOTIFICATION DETAILS | 3 |
| 2. IDENTITY OF CHEMICAL | 3 |
| 3. PLC CRITERIA JUSTIFICATION | 4 |
| 4. PHYSICAL AND CHEMICAL PROPERTIES | 4 |
| 5. INTRODUCTION AND USE INFORMATION..... | 4 |
| 6. HUMAN HEALTH IMPLICATIONS..... | 5 |
| 6.1. Exposure Assessment | 5 |
| 6.2. Toxicological Hazard Characterisation | 5 |
| 6.2.1. Toxicology..... | 5 |
| 6.2.2. Discussion of Observed Effects..... | 6 |
| 6.3. Human Health Risk Assessment..... | 7 |
| 7. ENVIRONMENTAL IMPLICATIONS | 7 |
| 7.1. Exposure Assessment | 8 |
| 7.2. Environmental Hazard Characterisation..... | 8 |
| 7.3. Environmental Risk Assessment | 8 |
| 8. CONCLUSIONS..... | 9 |
| 8.1. Level of Concern for Occupational Health and Safety..... | 9 |
| 8.2. Level of Concern for Public Health | 9 |
| 8.3. Level of Concern for the Environment..... | 9 |
| 9. MATERIAL SAFETY DATA SHEET..... | 9 |
| 9.1. Material Safety Data Sheet | 9 |
| 10. RECOMMENDATIONS | 9 |
| 10.1. Secondary Notification..... | 10 |

FULL PUBLIC REPORT**Polymer in Rhodoclean MSC****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Rhodia Australia Pty Ltd (ABN 24 050 029 000)
352 Ferntree Gully Road
Clayton, VIC 3168

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name

Other names

CAS number

Molecular formula

Structural formula

Means of identification

Number average molecular weight

Weight-average molecular weight

Weight percentage of polymer species with MW < 1000 and MW < 500

Charge Density

Polymer Constituents

Residual Monomers and impurities

Reactive Functional Groups

Site of reformulation

Purity

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

Canada (New Substance Notification, NSN 9351, 1999)

US (TS – HPC991, 1999)

2. IDENTITY OF CHEMICAL

OTHER NAME(S)

Ethoxylated-propoxylate fatty alcohol (Block co-polymer)

Nopol 30P/60E/150P

MARKETING NAME(S)

Rhodoclean

Rhodoclean HP

Rhodoclean ASP

Rhodoclean DF

3. PLC CRITERIA JUSTIFICATION

| <i>Criterion</i> | <i>Criterion met (yes/no/not applicable)</i> |
|--|--|
| 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 | Clear yellow liquid |
| Melting Point/Glass Transition Temp | 100°C |
| Density | 1040 kg/m ³ at 20°C |
| Water Solubility | > 500 g/L |
| Dissociation Constant | Not determined. There are no dissociable groups present. |
| Particle Size | Not applicable as it is a liquid. |
| Reactivity | Rhodoclean is stable under normal handling and storage conditions. |
| Degradation Products | Oxides of carbon |

5. INTRODUCTION AND USE INFORMATION

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

| <i>Year</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|---------------|----------|----------|----------|----------|----------|
| <i>Tonnes</i> | 50 | 50 | 50 | 50 | 50 |

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will not be manufactured in Australia. It will be imported in 200 kg metal drums, as a component of Rhodoclean MSC at < 60% solution in water.

Reformulation/manufacture processes

Transport and storage

The notified polymer will be imported into Australia in a finished product at < 60% concentration in aqueous solution, in 200 kg metal drums by ship. It will be transported from the wharf to the notifier's site in Victoria for warehousing by truck where it will be stored before it is distributed to the customers in the metal finishing industry. It will be stored at the customer site prior to use.

Metal Finishing Industry

At the customer site, the notified polymer in solution will be transferred to an enclosed mixing tank from the 200 L drums through the use of pumping equipment. Other ingredients are then added to the mixing tank containing the Rhodoclean. The final solution, an alkaline cleaning solution for metal, contains < 0.5% of the notified polymer. During the formulation process, samples are taken to the laboratory for batch adjustment and quality control testing. The notified polymer will also be handled in small quantities under laboratory conditions, by 2 laboratory chemists. The finished metal cleaning fluid is then filtered and pumped into the holding tank ready for use.

The final fluid will be stored in holding tanks, and will be used at the same sites to clean metal surfaces and to remove metal shavings during metal working processes. Metal cleaning fluid

containing the notified polymer will be directed onto the metal via a nozzle. The fluid will move over the worked metal, cooling it and removing metal fragments produced during cutting etc. The fluid is then trapped and returned to the holding tank for recirculation.

The metal parts are then distributed to end-users (such as the car manufacturing industry).

Use

Used as a metal cleaning agent.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Transport and storage

Transport and storage workers are not expected to be exposed to the imported notified polymer, as they will be handling closed containers. The notified polymer will be supplied in 200 L drums and transported in secure pallets. Exposure is possible only in the event of an accidental spill where the packaging is breached.

Formulation and Application of Rhodoclean at Metal Working Facility

At the customer's site, Rhodoclean MSC is incorporated into an alkaline cleaning solution for metal. The polymer solution (< 60%) is transferred to a mixing tank via a sealed pipe. Skin contact may occur during the opening of the drums and connection of the transfer pipes. Incidental skin contact with the notified polymer solution may also occur during the dilution stage of the notified polymer with other ingredients and QC sampling and testing. Tank operators will wear overalls or PVC apron, gloves and safety glasses with side shields. Laboratory technicians will wear laboratory coats, gloves and eye protection during sampling and testing.

The mixing process is a closed and automated system and therefore there is negligible exposure to workers.

Dermal exposure to low concentrations (< 0.5%) of the notified polymer in metal cleaning fluid may occur when workers are cutting or working metal, as residues of the fluid will remain on the metal surface. Inhalation exposure to the notified polymer may also occur, as mists of the fluid may form during metal working processes. If the fluid mists or spatters, ocular exposure may also occur. Workers will wear overalls or PVC apron, gloves and safety glasses with side shields to prevent exposure. Workers will work under local exhaust ventilation.

The cleaning of holding tanks, lines and equipment is likely to be infrequent or not needed at all, so exposure to the notified polymer due to these processes is likely to be negligible.

PUBLIC EXPOSURE

The public is unlikely to be exposed to the notified polymer during transport, storage, and application except in the accident of an accidental spillage.

The notified polymer will only be used in an industrial environment and no residual polymer will remain on the metal at the completion of the production process. Therefore negligible public exposure is expected to occur.

6.2. Toxicological Hazard Characterisation

6.2.1. Toxicology

The following toxicological studies were submitted on a solution containing < 60% of the notified polymer.

| <i>Endpoint</i> | <i>Result</i> | <i>Classified?</i> | <i>Effects Observed?</i> | <i>Test Guidance</i> |
|-------------------------|---------------------|--------------------|--------------------------|----------------------|
| Rabbit, skin irritation | Slightly-irritating | no | yes | OECD TG 404 |

Rabbit, eye irritation Slightly-irritating no yes OECD TG 405

6.2.2 Discussion of Observed Effects

Application of 0.5 ml of the preparation Rhodoclean MSC containing < 60% on the shorn skin of 3 rabbits under a semi-occlusive bandage for 4 hours, causing the appearance of very slight erythema one hour after bandage removal in all the animals. Reversibility was complete in less than 24 hours in two rabbits and in less than 48 hours in the third.

Instillation of Rhodoclean MSC containing < 60% of the notified polymer into the eye of 3 rabbits at a dose of 0.1 ml resulted in the appearance of diffused crimson erythema accompanied by tearing in all animals. Congestion of the iris, completely reversible in less than 48 hours, was also observed in 2 rabbits. Twenty-four hours after instillation, only tearing decreased, but grade 1 and 2 opacification of the cornea was observed at this time in two of the animals. Reversibility of all effects was complete by Day 7. The results of eye irritation were summarised as follows:

| <i>Lesion</i> | <i>Mean Score*</i> | | | <i>Maximum Value</i> | <i>Maximum Duration of Any Effect</i> | <i>Maximum Value at End of Observation Period</i> |
|-------------------------------|--------------------|-----|-----|----------------------|---------------------------------------|---|
| | <i>Animal No.</i> | | | | | |
| | 1 | 2 | 3 | | | |
| <i>Conjunctiva: redness</i> | 2.0 | 1.7 | 1.3 | 2 | 6 d | 0 |
| <i>Conjunctiva: chemosis</i> | 0 | 0 | 0 | 0 | - | 0 |
| <i>Conjunctiva: discharge</i> | 1.0 | 0.3 | 0 | 1 | 3 d | 0 |
| <i>Corneal opacity</i> | 1.7 | 1.3 | 0 | 2 | 5 d | 0 |
| <i>Iridial inflammation</i> | 0.3 | 0.3 | 0 | 1 | 1 d | 0 |

*Calculated on the basis of the scores at 24, 48, and 72 hours for EACH animal.

Although the irritating effects of the <60% solution were not sufficient for classification as a hazardous substance, the irritating potential of the polymer itself is not known.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

Based on toxicity data provided, the notified polymer at < 60% is slightly irritating to rabbit skin and eyes.

Exposure is unlikely to the polymer during transportation and storage. Exposure may result in case of an accidental spill or leak in the container. No controls are required. Workers are expected to wear gloves, coveralls and goggles.

At the customer's site, the polymer solution (< 60%) is transferred to a mixing tank via a sealed pipe. Skin contact may occur during the opening of the drums and connection of the transfer pipes. Incidental skin contact with the notified polymer solution may also occur during the dilution stage of the notified polymer with other ingredients and QC sampling and testing. Tank operators will wear overalls or PVC apron, gloves and safety glasses with side shields. Laboratory technicians will wear laboratory coats, gloves and eye protection during sampling and testing.

The reformulation and mixing process is a closed and automated system and therefore there is negligible exposure to workers.

Dermal, inhalation and ocular exposure to the metal working fluid may also occur. Dermal exposure to low concentrations of the notified polymer (< 0.5%) in metal working fluid may occur when workers are cutting or working metal, as residues of the fluid will remain on the metal surface. Inhalation exposure to the notified polymer may also occur, as mists of the fluid may form during metal working processes. If the fluid mists or spatters, ocular or inhalation exposure may also occur. Workers will work under local exhaust ventilation, and wear overalls or PVC apron, gloves and safety glasses with sideshields to prevent exposure.

The cleaning of holding tanks, lines and equipment is likely to be infrequent or not needed at all, so exposure to the notified polymer due to these processes is likely to be negligible.

On the basis of the above information, the risk to workers presented by the notified polymer is expected to be low. The control measures in place will reduce exposure to the notified polymer.

PUBLIC HEALTH

Given that the intended use of the notified polymer will be restricted to industrial metal finishing industry, no public exposure is anticipated except in the event of an accidental spill during transport. Based on very low exposure, it is considered that the notified polymer will not pose a significant hazard to public health when used in the proposed manner.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Since the notified polymer will not be manufactured or reformulated for resale in Australia, there will be no environmental release due to these stages. At the site of use it will be blended with other ingredients and stored until use in a holding tank. The metal cleaning fluid is applied via nozzles to the immediate area it is required, thus minimising overspray. Any overspray or splash will be directed to collection points with the fluid being returned to the circuit. The fluid will be perpetually recirculated, with filtering to remove any metal particles, until the end of its useful life. If the equipment needs to be cleaned it will be cleaned with clean fluid that is then added to the holding tank.

The notifier indicates that accidental spillage of the notified polymer occurs during the blending process will be contained and soaked up with earth or sand before being transported off-site to an approved industrial facility for appropriate disposal. It is estimated that 1% of the notified polymer (up to 500 kg annually) will remain in the empty import containers when disposed of, generally by incineration as drum washings during the reconditioning of the containers.

The collected metal shavings and particles, containing some of the cleaning fluid (thus the notified polymer), will be disposed of as solid waste and will go to landfill.

Small amounts of the fluid, containing the notified polymer, will remain on the metal article until they are cleaned. This cleaning will generally be done using a solvent, with the dirty solvent being collected and sent for recycling. Since the notified polymer is very water soluble it is likely that it will remain in the resultant effluent that will be disposed of to sewer.

Once the fluid has reached the end of its useful life it will either be disposed of via a licensed waste contractor or it will undergo physical separation via ultra filtration, with the resultant effluent going back to the process circuit for reuse and the 'solids' (including oil/grease/metal) will be collected and burnt as a fuel. It is considered by the notifier that virtually all of the notified polymer in the used lubricant will be disposed of appropriately either by recycling, burning or re-refining.

However, limited information is available on Australian metal working industry practices, particularly those for small and medium enterprises, relating to disposal of waste fluids. The problem for environmental exposure, as identified in the NICNAS report, is the potential for inappropriate disposal of the notified polymer by small metal working companies. According to the EU Technical Guidance Document a worst case release to water could amount to 31.6% of the polymer used as water based fluids in the industries. As there are believed to be no significant differences in industry practices between Europe and Australia, this will be assumed in the initial worst case PEC calculation for Australia in the Risk Assessment Section.

ENVIRONMENTAL FATE

No environmental fate data for the notified polymer were submitted. Due to its expected water solubility, the notified polymer will be mobile in landfill. Eventually it will slowly degrade by abiotic and biotic processes in the environment.

7.2. Environmental Hazard Characterisation

| <i>Endpoint</i> | <i>Result</i> | <i>Effects Observed</i> |
|------------------|-----------------|-------------------------|
| Daphnia Toxicity | EC50 = 104 mg/L | no |

Since this is for only one trophic level and is not supported by a study report, a safety factor of 1000 will be used in the estimation of a PNEC of 0.104 mg/L.

7.3. Environmental Risk Assessment

From the above use pattern, the worst-case scenario daily PEC in the sewer can be calculated assuming:

- usage of the maximum import volume of 50 tonnes is evenly distributed over a 365 day period;

- usage is nationwide, with a population of 20 million contributing 200 L of water per person per day to the sewer,
- there is no adsorption or degradation in the sewer prior to release,
- all will be released from small operators with a worst case release to sewer of 31.6% per year.

The resultant PEC_{sewer} is 0.011 mg/L.

In an STP the notified polymer is likely to remain in the effluent due to its expected water solubility. Thus, it will be eventually be released to the environment with a resultant inland PEC of 0.011 mg/L and an ocean PEC of 0.0011 mg/L.

An aquatic risk quotient (RQ) can be estimated for the use of the notified polymer as follows, $RQ = PEC/PNEC$, RQ for inland waters is 0.106 and for ocean waters is 0.0106. Since these values are below 1 the use of the notified polymer is not expected to pose a risk to the aquatic environment.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

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

8.2. Level of Concern for Public Health

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

8.3. Level of Concern for the Environment

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

9. MATERIAL SAFETY DATA SHEET

9.1. Material Safety Data Sheet

The notifier has provided a MSDS for the solution of the notified polymer as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer as introduced and in metal cleaning solutions:

- Local exhaust ventilation (LEV) for all open operations where mists or aerosols may be generated.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced:
 - Avoid direct handling.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer as introduced and in metal cleaning solutions:
 - Protective clothing, gloves and safety goggles.
 - Personal respiratory protection for any worker subject to inhalation exposure in the absence of LEV.

- 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
- The following control measures should be implemented by manufacturers of the end product to minimise environmental exposure during use of the notified polymer:
 - All drains in process areas must go to an on-site treatment plant.
- Disposal
- Disposal procedures should be in accordance with State and local Government regulations. It is recommended that waste liquids be collected with a liquid binding substance, and all waste materials should be disposed of either through a licensed waste disposal contractor to a regulated landfill or incinerated in an approved incinerator.
- Emergency procedures
- Spills/release of the notified polymer should be handled by containment and collection with absorbent material and then stored in a labelled container ready for disposal.

10.1. 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.
 - The notified polymer is introduced at concentration > 60% in solution or in pure form.
 - Toxicological data on the eye irritation potential of the notified polymer itself become available.

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.