File No SAPLC/48

14 July 2006

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Acusol OP-305

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and Ageing and the Department of the Environment and Heritage has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Rohm and Haas Australia Pty. Ltd. ABN 29 004 513 188
4th Floor, 969 Burke Road, Camberwell, VIC. 3124

NOTIFICATION CATEGORY
Self Assessment: 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 Formula, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

Polymer in Acusol OP-305

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

REACTIVE FUNCTIONAL GROUPS

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met (yes/no/not applicable)*
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	The product is a milky, white aqueous emulsion.
Melting Point/Glass Transition Temp	Not applicable; the polymer is not isolated from solution.
Specific Gravity	Approximately 1.03 as a 40 % w/w emulsion of the notified polymer in water
Water Solubility	The notified polymer has a solubility of 7.6 ppm in water at pH 7. The product is dispersible in water.
Dissociation Constant	The notified polymer has an anionic group expected to have typical acidity; pKa 4.5
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

Comments

The notified polymer will be imported as a component of the Acusol OP-305 product. It will be diluted upon reformulation and will not be isolated from the emulsion in water during its end use.

5. INTRODUCTION AND USE INFORMATION

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

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

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The intended use of the notified polymer is as an additive in household cleaners. The notified polymer will not be manufactured in Australia. It will be imported as a 40% w/w dispersion in water in 200 litre plastic drums.

Currently no end customers have been established, although it is expected that up to five reformulators in Melbourne and/or Sydney will use the polymer at a later date.

Drums containing the notified polymer will be transported from the wharf by road to the importer's warehouse where they will be stored under cover in a bunded area until such time that it is sold and transferred by road to the reformulator's factory where they will be stored in a bunded area until such time that it is reformulated into household cleaners.

Finished household cleaners will be stored at the individual reformulators' warehouse until such time that it is transported to distributors and retailers for sale to the public.

Reformulation/manufacture processes

Typically during reformulation, the notified polymer will be manually weighed and then transferred using a mechanical drum lifter to a stainless steel mixing vessel. Once combined with other ingredients and blended into finished household cleaner products, it will be pumped into a holding tank prior to packing into retail containers. The finished household cleaner products will be packaged into 1 litre to 5 litre plastic containers via a semi-automated packaging line.

The concentration of the notified polymer in household cleaners will be <1%.

Use

It is intended that the notified polymer will be used as an additive in household cleaners such as toilet and floor cleaners.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Transport and warehousing workers may come into dermal and ocular contact with the notified polymer through accidental leaks and spillages of the drums and containers.

During reformulation, workers will manually weigh and transfer the dispersion containing the notified polymer to the mixing vessels. Workers will wear impermeable gloves, eye protection and coveralls. Exposure from the notified polymer to these workers can occur by either dermal or ocular routes, however significant exposure will be limited due to the workplace practices and personal protective equipment used.

During operation of the filling line (filling of packaging containing household cleaning product), the reformulated household-cleaning product containing the notified polymer will be pumped from holding tanks to semi-automated filling equipment. Filling line workers will wear impermeable gloves, eye protection and coveralls. Exposure to the notified polymer to these workers can occur during filling line operation and cleaning, by either dermal or ocular routes, however significant exposure will be limited due to the workplace practices and personal protective equipment used.

Some cleaning product will be used in work situations where workers will come into contact with the notified polymer via dermal or ocular routes during use of the cleaning product.

PUBLIC EXPOSURE

The imported product containing the notified polymer will not be sold directly to the public.
However, the public may come into dermal and ocular contact with the notified polymer through use of household cleaning products containing it.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by the notified polymer is expected to be low, based on low hazard and low exposure as well as the personal protective equipment used by workers.

PUBLIC HEALTH

Members of the public who use household cleaning products containing the notified polymer will make dermal contact and possible accidental ocular contact with the notified polymer. However, the risk to public health will be low because the polymer presents a low health hazard, is present at low concentrations and is unlikely to cross biological membranes due to its high molecular weight.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Release to the environment during shipping, transport and warehousing will only occur through accidental spills or leaks of the drums or steel packaged containers.

During formulation and packaging, spills are expected to be minimal. When spills occur, they will be contained by bunding, collected with absorbent material and sent to a licensed off site waste disposal centre. Empty drums from import will be sent to drum reconditioners.

Reformulation and packaging equipment will be cleaned by flushing with water. Cleaning water and product residues will be transferred to the on site waste paint treatment facility where solids will be precipitated and later disposed of to a licensed waste landfill site.

The total amount of waste polymer produced during reformulation and packaging due to spills, drum residues and cleaning is expected to be approximately 3 % or 150 kg of the maximum import volume. Approximately 5% or 250kg of the notified polymer will remain as residues in consumer packaging and will be disposed of to landfill via domestic waste.

The vast majority (>90% or 4,500kg) of the notified polymer will be released to sewerage systems throughout Australia through flushing of toilets and rinsing mops.

ENVIRONMENTAL FATE

The notified polymer is expected to be stable to hydrolysis, except under severe conditions, and to not be readily biodegradable. Due to its high molecular weight and likely inability to cross biological membranes, the notified polymer is not expected to bioaccumulate.

Due to its relatively low water solubility, the notified chemical is expected to become immobilised via adsorption onto soil particles and sediments in landfill and sewage treatment plants, eventually degrading through biotic and abiotic processes to form oxides of carbon.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted.

The notified polymer contains acid groups. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity to algae is when the acid is on alternating carbons of the polymer backbone, which does not apply to the notified polymer. The algae toxicity is likely to be further reduced due to the presence of calcium ions in natural waters, which will bind to the acidic functional groups (Boethling and Nabholz, 1997).

7.3. Environmental Risk Assessment

Given the relatively low water solubility of the notified polymer, it is likely that a significant amount would be removed from the water column through adsorption to sludge and sediments. Furthermore, as the notified polymer is expected to be of low concern to the aquatic organisms, the environmental risk is expected to be low in the aquatic compartment.

In landfill, the notified polymer contained in sludge will degrade slowly via biotic or abiotic processes. Therefore, the environmental risk from the reported use pattern of the notified polymer is likely to be low.

Following its use in Australia, it is assumed that 90% of the notified polymer (4,500 kg) is eventually released to the sewer and not removed during sewage treatment processes. The daily release on a nationwide basis to receiving waters is 12.3 kg/day using the maximum import volume of 5 tonnes/annum.

Based on a national population of 20 million and a daily water consumption of 200 litres/day the Predicted Environmental Concentration (PEC) is calculated as follows:

PEC_{sewer} = (4,500 x 1x 10^6) mg/20,000,000 x 200 x 365 L
= 0.0031 mg/L
= 3.1 µg/L

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 an MSDS 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

- 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

- The following control measures should be implemented by the reformulator to minimise environmental exposure during reformulation of the notified polymer:
  – *Bunding*

Disposal

- Spillages and container residues containing notified polymer should be disposed of to landfill, and/or liquid waste either treated on-site or collected by licensed waste contractors for treatment at authorised waste treatment plants.

Storage

- The following precautions should be taken by the importer and reformulators regarding

storage of the notified polymer:

– *Bunding*

Emergency procedures

- Spills or accidental release of the notified polymer should not be flushed into sewers or waterways. Spills should be taken up with absorbent material and disposed of to a licensed waste landfill site.

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.

– [list of circumstances]

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.