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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in QRXP-1651 PMN

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT

Polymer in QRXP-1651 PMN

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Rohm and Haas Australia Pty of 969 Burke Road CAMBERWELL VIC 3124

NOTIFICATION CATEGORY
Synthetic 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
- Polymer constituents
- Import volume

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, 2002.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
QRXP-1651 PMN (20% notified Polymer)

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
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	<3	<30	<30	<30	<30

USE
The notified polymer is used as a component in aqueous base paints.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

QRXP-1651 PMN containing 20% notified polymer will be imported into Australia.

At the formulation site, QRXP-1651 PMN will be used as an ingredient in the formulation of aqueous paints for buildings. The paint products will contain approximately 0.3% notified polymer.

The formulated paint products will be used by painting contractors and Do-It-Yourself painters, and will be applied mainly by brush or roller.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

Manufacture
There is potential for release of the notified polymer during paint formulation through accidental spills. Paint formulation will take place in bunded areas enabling spills to be collected for disposal. Additional wastes may be generated during equipment cleaning and from residues in used containers. Wash-water from cleaning is expected to be re-used in subsequent paint batches. Approximately 400 kg per year (based on 10 customer sites) of notified polymer in liquid waste may be treated on-site or collected by waste disposal contractors, and will ultimately end up in landfill. A further 75 kg of container residues are also expected to end up in landfill following collection by licensed drum reconditioners.

Paint Application
Professional house painters and DIY users are expected to apply the paint predominantly by brush or roller. The notifier estimates that up to 750 kg of notified polymer could end up in the sewer each year when paint equipment is cleaned by users.

6.2. Summary of Occupational Exposure

Exposure Details

Category of Worker	*Number*	*Maximum Exposure Duration Hrs/day*	*Maximum Exposure Days/year*
Transport workers	10-15	0.5	50
Warehouse workers	10-15	0.5	50
Paint makers	15-20	4-6	80
Paint QC technicians	10-15	0.5	80
Paint packers	20-30	6-8	150
Paint salespeople	>100	0.5	200
Contract painters	>500	6-8	150
Do-it-yourself painters	>10,000	4-6	5

Dermal and ocular exposure can occur during certain formulation processes. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls and personal

protective equipment worn by workers.

After application and once dried, the paint containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

6.3. Summary of Public Exposure

The formulated painting products containing the notified polymer are for sale to the general public. Members of the public will make dermal contact and possibly accidental ocular contact with products containing the notified polymer. However, exposure will be low because the notified polymer is present at low concentrations.

Once the paint is dried, the notified polymer is trapped within an inert film and not bioavailable.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	Clear to hazy, colourless to pale yellow liquid.
Melting Point	Not determined.
Density	1020 kg/m^3
Water Solubility	Readily soluble in water
Dissociation Constant	The polymer is not ionic
Hydrolysis	The polymer contains carbamate groups which could undergo hydrolysis, but this is not anticipated under the normal environmental pH range.
Reactivity	Stable under normal environmental conditions
Degradation Products	Not stated.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were 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

No data were submitted for the notified polymer. Data was provided for an analogue polymer with a similar structure and which is expected to have similar toxicity. These results are provided in the table below.

Endpoint	*Result and Conclusion*
Fish Toxicity	96 h EC50 = 741mg/L; NOEC = 118 mg/L
Daphnia Toxicity	48 h EC50 = 992 mg/L; NOEC = 563 mg/L
Algal Toxicity	72 h EC50 = 229 mg/L; NOEC = 125 mg/L

All results were indicative of a low toxicity. Using the lowest EC_{50} for algae exposed to the analogue, and assuming a safety factor of 100 the predicted no effect concentration (PNEC) is 2.29 mg/L.

9.2. Environmental Hazard Assessment

Most of the polymer will be incorporated into the paint matrix on the surfaces of buildings and will not be available for release or exposure. Approximately 475 kg of notified polymer will be disposed of in landfill in a diffuse manner. These wastes are expected to be disposed of in a cured and solid form, and hence will be immobile and not bioavailable.

A further 750 kg of notified polymer may end up in the sewer when painting equipment is cleaned. From this estimate, we calculated a daily PEC being discharged to sewer each year of $5.3x10^{-4}$ mg/L. This value assumes diffuse release with no attenuation within the sewage systems, and a population of 19.5 million people using 200 L water/person/day (3900 ML/day for total population). Based on dilution factors of 0 and 10 for inland and ocean discharges of STP-treated effluents, the predicted daily PEC of the notified chemical in fresh water is approximately $5.3x10^{-4}$ mg/L and in marine surface waters, approximately $5.3x10^{-5}$ mg/L.

In aquatic environments, the notified polymer is expected to remain in solution, eventually reach sediments and degrade by hydrolysis and micro-organisms. Due to its high molecular weight, the polymer is not expected to cross biological membranes and bioaccumulate in organisms.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer is an additive in architectural coatings, and as such, most of the polymer will be incorporated into the inert paint matrix, posing little risk to the environment. Wastes generated during paint formulation are typically allowed to harden, where the polymer is bound within the paint matrix in an inert manner, hence environmental risks are low, particularly in landfills with leachate collection and treatment plants.

With potential for aquatic release during application, the predicted daily PEC of the notified chemical assuming diffuse release of 750 kg/annum of the notified polymer is approximately $5.3x10^{-4}$ mg/L in fresh water and $5.3x10^{-5}$ mg/L in marine surface waters. The PEC/PNEC ratios, based on surrogate data for the most sensitive species, are $2.3x10^{-4}$ and $2.3x10^{-5}$ respectively, indicating a low hazard to aquatic organisms.

10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low due to the expected low toxicity of the polymer and the low potential for exposure.

10.3. Public health

Paint products containing the notified polymer may be available to DIY enthusiasts, who may have dermal contact with products containing the polymer. However, the risk to public health will be low because the notified polymer is of a non-hazardous nature and present at low concentrations (0.3%).

Following application, the notified polymer will become trapped within a film and will not be bioavailable. Therefore, the risk to public from exposure to the painted articles containing notified polymer is considered negligible.

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

10.2. Environmental risk assessment

The notified polymer is not considered to pose a risk to the environment based on the PEC/PNEC and its reported use pattern.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

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

10.3.2. Public health

There is Low Concern to public health when the notified polymer is used based on the use pattern.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The notifier has provided MSDS complied in accordance with the NOHSC MSDS Code of Practice. The accuracy of the information on the MSDS remains the responsibility of the applicant.

12. 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

Disposal

- Wastes generated during industrial formulation should be disposed of by on-site treatment or through a licensed waste contractor. Wastes generated during domestic use should be disposed of according to the following instructions: “Do not pour unwanted paint down the drain. Keep unwanted paint in sealed containers for disposal via special chemical waste collections. Empty paint containers should be left open in a well-ventilated area to dry out. When dry, recycle steel containers via steel can recycling programs. Disposal of empty paint containers via domestic recycling programs may differ between local authorities. Check with your local council first.”

Emergency procedures

- Spills/release of the notified chemical should be soaked up with inert absorbent material and disposed of in accordance with State regulations. Do not allow spills to enter drains.

12.1. 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.

(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.