File No PLC/1033

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Setaqua 8953

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

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 2012

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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/1033	Nuplex Industries (Aust.) Pty Ltd Resene Paints (Australia) Ltd	Polymer in Setaqua 8953	No	< 1000 tonnes per annum	Component of water based architectural paints

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
Based on the assumed low hazard and 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 MSDS should be easily accessible to employees.

- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

- If the notified polymer is proposed for use in coatings to be sprayed by the public, precautions to reduce inhalation exposure should be recommended as part of the directions for use.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency Procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

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 component of water based architectural paints, or is likely to change significantly;
- the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
- the method of manufacture of the notified polymer in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the notified polymer on occupational health and safety, public health, or the environment;
- 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 MSDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Nuplex Industries (Aust) Pty Ltd (ABN 25 000 045 572)
49-61 Stephen Road
BOTANY NSW 2019

Resene Paints (Australia) Limited (ABN 65 050 034 529)
7 Production Avenue,
MOLENDINAR QLD 4214

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities, use details and introduction volume

2. IDENTITY OF POLYMER

Marketing Name(s)
Polymer in Setaqua 8953

Molecular Weight
Number Average Molecular Weight (Mn) is > 10,000 Da

Reactive Functional Groups
The notified polymer contains only low concern functional groups.

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	Clear colourless film
Melting Point/Glass Transition Temp	12°C
Density	1050 kg/m^3 at 25°C
Water Solubility	Not determined. The notified polymer may be dispersible given the presence of inorganic and dissociable functional groups.
Dissociation Constant	Not determined. The notified polymer is expected to be ionised and have a pKa value of about 4 based on the presence of inorganic and dissociable functional groups.
Reactivity	Stable under normal environmental conditions. Hydrolysis is not expected in the environmental pH range of 4 – 9 despite the presence of hydrolysable functional groups in the notified polymer.
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	< 500	< 1000	< 1000	< 1000	< 1000

Use
The notified polymer will be imported into Australia as a component of paint at < 60%. The polymer may also be manufactured within Australia at < 60%. The notified polymer will be blended with other additives to form water based decorative paints (< 60%) used by the industry and public.

6. HUMAN HEALTH RISK ASSESSMENT

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

Water insoluble high molecular weight polymers used in respirable size range (< 10 μm) have the potential to cause lung overloading. No information is available on the particle size or inhalation toxicity of the polymer.

For workers and members of the public spraying the paint containing the notified polymer, appropriate controls to reduce inhalation exposure and respiratory protection would reduce the risk.

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

No ecotoxicological data were submitted. 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 is when the acid is on alternating carbons of the polymer backbone. This does not apply to the notified polymer. In addition, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

The notified polymer will be imported for further reformulation in Australia to produce water based architectural paints. The notified polymer may also be manufactured in Australia. Release from the cleaning of equipment used in manufacturing and reformulation is estimated to be up to 2% of the annual import volume of the notified polymer, which is expected to be collected for disposal to landfill.

Paint products containing the notified polymer will be used predominantly by tradesmen and also some household customers for do-it-yourself (DIY) purposes. The common method for trade application will be via a spray gun. The amount of overspray can vary from 20% to 60%, which is expected to be captured for disposal to landfill with used packaging. Other methods for application of the paints may include brushes and rollers. The release of the notified polymer to the environment from washing of application equipments and incorrect disposal of residues in empty containers is estimated to be up to 5%, which may be released to sewer.

Under a worst case scenario it will be assumed that 5 % of the notified polymer will be washed into sewers. Assuming 50 % of the notified polymer will be removed via absorption to sludge in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 15.14 μg/L [PECriver = 136.99 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. The PEC is well below the EC50 for algae of the most toxic anionic polymers (EC50 > 1 mg/L). Given the high molecular weight (> 10,000 Da), the notified polymer is not expected to be readily bioavailable or bioaccumulative.

Following application of the paint products to building substrates (timber, plastic, etc.), and once dried, the notified polymer in the paint will be trapped in the cured inert coating matrix. In this form, the notified polymer is not expected to be bioavailable or mobile.

In conclusion, most of the notified polymer will be sent to landfill either as collected formulation waste, washing waste from application or coated building substrates at the end of their useful lives. In landfill or water, the notified polymer is expected to eventually degrade to form water and oxides of carbon, nitrogen and sulphur.

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