File No PLC/728

29 November 2007

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Setaqua 6520

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 Water Resources.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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:

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

Polymer in Setaqua 6520

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Nuplex Industries (Aust.) Pty Ltd (ABN 25 000 045 572)
8 Abbott Road
Seven Hills, NSW 2147

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 and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details and Manufacture 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
Not known

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Polymer in Setaqua 6520

CAS NUMBER
Not Available

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) >1000

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	N/A
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: White liquid (dispersion)

Melting Point/Glass Transition Temp	Not determined. The polymer is never isolated from solution.
Density	1120 kg/m^3 at 20°C
Water Solubility	The polymer is fully miscible in water, but of low solubility limited by its molecular weight and largely hydrophobic structure.
Dissociation Constant	The polymer contains a small amount of dissociable anionic functionality.
Reactivity	Stable under normal environmental conditions. While the notified polymer contains hydrolysable functionality, hydrolysis is not expected in the environmental pH range of 4-9.
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	10-30	10-30	10-30	10-30	30-100

Mode of Introduction
The notified polymer will be manufactured at Nuplex Industries (Aust) Pty Ltd, 1-5 Gibson Street, Wangaratta, VIC. It will also be imported through Sydney wharf as a 45% aqueous dispersion. At the manufacturing site, the raw materials are charged to the reactor, which is a closed 5000 L vessel fitted with a condenser to collect water or monomer vapours produced. After polymerisation is complete the notified polymer is pumped through a filter into 20-30 tonne intermediate bulk storage tanks or directly into 1000 L intermediate bulk containers or 200 L drums for transport to customer sites where it is reformulated.

Reformulation processes
Setaqua 6520 containing notified polymer at a 45% concentration will be reformulated at a number of sites throughout Australia. The concentration of the notified polymer in the finished coating products is expected to be between 4.5 - 40.5%.

Use
The notified polymer is used in the formulation of water-based coatings and paints designed for use on timber substrates.
Application of the coatings and paints containing the notified polymer by industry and the public is expected to be primarily via spray painting, but also via brush and roller.

6. HUMAN HEALTH IMPLICATIONS

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

Occupational Health and Safety Risk Assessment
Dermal and ocular exposure to the notified polymer at a concentration of 45% may potentially occur during the manufacture and reformulation. However, exposure should be minimised through the automation of the process and the use of PPE by workers.

Industrial and trade applicators of the coatings may come into contact with the notified polymer through dermal, inhalation and ocular routes. After application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable to exposure.

Although exposure to the notified polymer could occur during manufacture, reformulation and use, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer and the controls in place to minimise exposure.

Public Health Risk Assessment
Since the notified polymer will be in products sold to the general public, there is the potential for dermal, and to a lesser extent oral and ocular exposure to the notified polymer at concentrations up to 40.5%. Inhalation exposure is also possible if products containing the notified polymer are used for spray painting. Exposure is likely to be limited by personal protective equipment, for example overalls and protective footwear. After application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable to exposure.

Although the public will potentially be exposed to the notified polymer during use of water based surface coatings and paint, the risk to public health is considered to be low due to the predicted low hazard of the notified polymer and the expected low exposure.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation
No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer. However, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

Environmental Risk Assessment
During local manufacture, up to 5% of the total annual production volume of notified polymer may be released as liquid trade waste from the cleaning of reaction vessels. During local reformulation, up to 2% of the total annual volume of notified polymer may be released as liquid trade waste from the cleaning of mixing vessels. In the trade waste treatment plant, it is expected that the notified polymer will be removed by flocculation and be disposed of to landfill.

Formulated coatings products containing the notified polymer are expected to be applied mainly by spray, with allowances for 30-70% overspray, but also by brush and roller. As the formulated products are expected to be applied mainly in industrial situations, overspray is expected to be captured, and be disposed of to landfill. Cleaning of application equipment and residual within containers is expected to account for up to 5% of the total annual volume of notified polymer, and this is expected to be disposed of as trade waste, ultimately being disposed of to landfill. There may be some release to the aquatic compartment through washing of brushes and rollers, but this will be widely dispersed and at low concentrations due to partitioning to sediment. Timber substrates, to which the notified polymer has been applied, are expected to be disposed of by incineration or to landfill at the end of their useful life.

Notified polymer disposed of by incineration is expected to be thermally decomposed to form various oxides of carbon and nitrogen, as well as water vapour. Notified polymer that is disposed of to landfill is expected to associate with soil and organic waste and be largely immobile, inert and biologically unavailable, entrapped within a cured coatings matrix. Over time, the notified polymer should eventually degrade via biotic and abiotic process to form various simple organic and nitrogen based compounds.

Therefore, the proposed use of the notified polymer is not expected to pose an unacceptable risk to the environment.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment
Under the conditions of the occupational settings described, the risk to workers is considered to be acceptable.

When used in the proposed manner the risk to the public is considered to be acceptable.

Environmental risk assessment

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

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.

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced and in formulated paint products:
  - Use of spray paints containing the notified polymer should be in accordance with the National Guidance Material for Spray painting (NOHSC, 1999).

- 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 *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.

Regulatory Obligations

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 chemical 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 chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical 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 chemical has changed from a component of water-based coatings and paints designed for use on timber substrates, or is likely to change significantly;
  - the amount of chemical being introduced has increased from 100 tonnes, or is likely to increase, significantly;
  - the method of manufacture of the chemical 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 chemical 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 chemical 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.

No additional secondary notification conditions are stipulated.

Material Safety Data Sheet
The MSDS of a product containing the notified chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.