

File No PLC/872

October 2009

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

**FULL PUBLIC REPORT**

**Polymer in Setaqua 6801**

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, Water, Heritage and the Arts.

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:

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**Director  
NICNAS**

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**FULL PUBLIC REPORT****Polymer in Setaqua 6801****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANTS

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

De Beer Australasia Pty Ltd (ABN 41 080 461 230)  
11/8 Kerta Road  
Kincumber NSW 2251

## 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, Use Details, 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

None

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Setaqua 6801 (containing < 30% notified polymer)

## MOLECULAR WEIGHT (MW)

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

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION***Criterion*

Molecular Weight Requirements  
Functional Group Equivalent Weight (FGEW) Requirements  
Low Charge Density  
Approved Elements Only  
Stable Under Normal Conditions of Use  
Not Water Absorbing  
Not a Hazard Substance or Dangerous Good

*Criterion met*

Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes

The notified polymer meets the PLC criteria.

#### 4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Transparent to slightly milky aqueous dispersion (imported product)
Glass Transition Temp	5°C
Density	1080 kg/m <sup>3</sup>
Water Solubility	Not tested. Expected to be low based on the predominately hydrophobic chemical structure of the polymer
Dissociation Constant	Not determined. The notified polymer contains carboxylic acid functionality and may be ionised under normal environmental conditions
Reactivity	Stable under normal conditions of use. The notified polymer contains hydrolysable functionality but it is not expected to hydrolyse at environmental pH (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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	< 20	< 20	< 20	< 20	< 20

##### Mode of Introduction

Drums of resin solution containing the notified polymer (< 30% concentration) will be imported into Sydney by Nuplex Industries (Aust).

##### Use

The notified polymer will be imported as a resin solution and reformulated to produce automotive coatings containing the notified polymer at concentrations < 15%. The coatings will be used in the refinishing industry where they will be applied using manual spray guns.

#### 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.

The notified polymer is, however, a high molecular weight, insoluble polymer and the inhalation of respirable particles of this class of polymer has been linked with irreversible lung damage (US EPA, 2006). This lung damage has been attributed to 'lung overloading' and impaired clearance of the lungs, and was observed in animals exposed to high levels of toner particles.

US EPA (2006). High Molecular Weight Polymers in the New Chemicals Program.  
<http://www.epa.gov/opptintr/newchemicals/pubs/hmwtpoly.htm>. Accessed 24 September 2009.

##### Occupational Health and Safety Risk Assessment

Dermal and ocular exposure to the notified polymer (up to 30%) may potentially occur to workers involved in reformulation, quality control, packaging and equipment cleaning. However, exposure to significant amounts of the notified polymer is limited because of the automated reformulation processes, engineering controls and personal protective equipment (PPE) worn by workers.

Spray painters may come into contact with the notified polymer (< 15% concentration) through dermal and ocular routes. Inhalation exposure to aerosols of the notified polymer may also occur. Control measures in place to reduce exposure to paint solvents, such as spray booths and PPE (including full face respirators) would also reduce exposure levels, including inhalation exposure to respirable particles. Therefore, although the notified polymer belongs to a class of polymers (high molecular weight, insoluble) which have been linked with irreversible lung damage, the risk to workers is expected to be low if spray application is conducted in an adequately ventilated spray booth by workers wearing respiratory protection. Exposure and hence the risk of irreversible lung damage is greatest for workers conducting spray application without the use of engineering controls and appropriate PPE.

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

Although exposure to the notified polymer could occur, the risk to workers is not considered to be unacceptable due to the engineering controls, PPE and the assumed low hazard of the notified polymer.

#### **Public Health Risk Assessment**

The imported notified polymer will only be used by industry and will not be available to the public. The finished automotive coatings containing < 15% notified polymer is intended for use by professional spray painters in auto repair workshops only and will not be sold to the public. Whilst members of the public may make dermal contact with coated automotive parts, the notified polymer will become trapped within a film and will not be bioavailable. Therefore, the notified polymer is not considered to pose an unacceptable risk to public health.

### **7. ENVIRONMENTAL IMPLICATIONS**

#### **Hazard Characterisation**

No ecotoxicological data were submitted. Some classes of anionic polymers are moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed 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 and it is not expected to be a toxic hazard to algae.

#### **Environmental Risk Assessment**

Up to 2% of the notified polymer may be released during formulation as spills, container residues and waste material. These releases will be collected for disposal to landfill. A maximum of 3% will be released as container and equipment aqueous washings during use, for disposal to the sewer. The notified polymer is expected to be subsequently adsorbed to sludge, due to its predominately hydrophobic nature, at the sewage treatment plant. The main release (up to 30% as overspray during use) will mainly entail landfill disposal, after interception by spray booth filters, with minor amounts from cleaning equipment and containers discharged to sewer and subsequent adsorption to sludge. Discarded end use articles containing the notified polymer within the cured paint film will be disposed to landfill, or recycled for metals reclamation which will entail thermal decomposition of the paint to form oxides of carbon and nitrogen and water vapour. In landfill, the notified polymer is expected to slowly degrade by abiotic and biotic processes. Therefore, the notified polymer is not expected to pose a risk to the environment when it is used as proposed.

### **8. CONCLUSIONS AND RECOMMENDATIONS**

#### **Human health risk assessment**

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

#### **Environmental risk assessment**

Based on the reported use pattern, the notified polymer is not considered to pose a risk to the environment.

#### **Recommendations**

##### **CONTROL MEASURES**

##### **Occupational Health and Safety**

- No other specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself during reformulation, however, these should be selected on the basis of all ingredients in the formulation.
- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer in formulated paint products:
  - Spray application should be conducted in a down draft spray booth

- 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:
  - Avoid breathing aerosol
  - Spray application should be carried out in accordance with the Safework Australia *National Guidance Material for Spray Painting* [NOHSC (1999b)].
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer in formulated paint products:
  - Suitable respirators during spray application
- 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 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 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 a component in automotive coatings, or is likely to change significantly;
  - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
  - the notified polymer has begun to be manufactured in Australia;
  - 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.

#### *Material Safety Data Sheet*

The MSDS of the product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.