File No PLC/969

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN FULL PUBLIC REPORT

Ester 041125

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 Full Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

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

February 2011

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1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Quaker Chemical (Australasia) Pty Ltd (ABN: 92 000 465 949)
Building I, Suite 15, 22 Powers Road
Seven Hills, NSW 2147

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

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, manufacture/import volume and site of manufacture/reformulation.

2. IDENTITY OF POLYMER

Marketing Name(s)
Ester 041125

Molecular Weight
Number Average Molecular Weight (Mn) is >1,000 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:	Amber liquid
Melting Point	<-35 °C
Density	931 kg/m^3 at 15 °C
Water Solubility	5.84 × 10^{-2} g/L. Notified polymer (100 mL) in distilled water (1 L) was stirred for 1 hour at room temperature then left to stand. Two layers separated and the water phase was collected into a pre-weighed flask and evaporated. The remaining dried residue was weighed.
Dissociation Constant	Not determined. pK_a ~4. The notified polymer contains functionality that is expected to ionise in the environmental pH range (4-9).
Reactivity	Stable under normal environmental conditions
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	≤500	≤500	≤500	≤500

Use
The notified polymer will be manufactured and reformulated in Australia.
The notified polymer will be used as a component of hydraulic fluid at a concentration of 97-98%. The hydraulic fluid containing the notified polymer will primarily be used in steel mills and industrial equipment. The notified polymer is intended to be used in industrial settings only and it will not be available to the general 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. The risk of the notified polymer to occupational and public health is not considered to be unacceptable given the assumed low hazard.

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, which 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 manufactured in Australia and there is potential for release of the notified polymer during manufacturing and packaging. It is estimated that a maximum 5% of the manufactured notified polymer will be lost due to spills, leaks and cleaning of equipments. All effluent will be treated at an on site treatment plant, and collected wastes are expected to be disposed of to landfill.

The hydraulic fluids containing the notified polymer will be used in sealed units, which will be topped up or emptied and refilled at intervals depending on the application. When hydraulic fluids containing the notified polymer are disposed of in accordance with State/Territory regulations the notified polymer is expected to be recycled, re-refined or used as low grade burner fuel. If combusted, the notified polymer is likely to form oxides of carbon and water vapour. Notified polymer disposed of to landfill is expected to be slowly degraded *in situ.* It is not expected to bioaccumulate due to its high molecular weight, although no significant release of the polymer to the aquatic environment is expected when used as proposed.

Therefore, the notified polymer is not expected to pose an unacceptable risk to the environment based on its assumed low toxicity to aquatic organisms and the low potential for aquatic exposure resulting from its industrial use as component of hydraulic fluid.

8. RECOMMENDATIONS

Human Health Risk Assessment
When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to the health of workers and the public.

Environmental Risk Assessment
Based on the assumed low hazard and the reported use pattern, the notified polymer is not expected to pose an unacceptable 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.

- 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.

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Disposal
- The notified polymer should be disposed of to landfill.

Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- 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 a component of hydraulic fluid, 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 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 notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.