File No PLC/505

16 December 2005

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in SIK 1001

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 Heritage.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

Library
National Occupational Health and Safety Commission
25 Constitution Avenue
CANBERRA ACT 2600
AUSTRALIA

To arrange an appointment contact the Librarian on TEL + 61 2 6279 1161 or + 61 2 6279 1163.

This Full Public Report is 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
Chemicals Notification and Assessment

TABLE OF CONTENTS

Polymer in SIK 1001

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Sika Australia Pty Ltd (ABN: 12001342329)
55 Elizabeth Street
Wetherill Park, NSW 2164

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
- Molecular formula
- Structural formula
- Means of identification
- Number average molecular weight
- Weight-average molecular weight
- Weight percentage of polymer species with MW < 1000 and MW < 500
- Charge Density
- Polymer Constituents
- Residual Monomers and impurities
- Reactive Functional Groups
- Manufacture Volume
- Purity

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
TSCA, 2004

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Polymer in SIK 1001

CAS NUMBER
Not available

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Functional Group	Category	Equivalent Weight (FGEW)
None	Moderate/High Concern	N/A

Criterion	*Criterion met (yes/no/not applicable)*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Not 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

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified polymer will be imported and used in the manufacture of other polymers, which will be manufactured in 20 tonnes batches.

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<300	<300	<300	<300	<300

USE
The polymer is intended to be used in the manufacture of superplasticiser additives for concrete.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

Sika Australia will import the notified polymer and use it in the manufacture of other polymers locally. Raw materials, including the notified polymer, are loaded from storage tanks into the reactor in a closed circuit, and polymerisation occurs in a closed system. Fumes generated by the process are collected by an appropriate scrubber.

The manufacturing process is not expected to generate wastewater. The Viscocrete plant is internally bunded. Any spillages would be collected, analysed routinely and tested for quality and transferred into a suitable container before being either recycled into appropriate product or discharged to sewer in accordance with Sydney Water trade waste specifications. Spill kits containing booms and absorbent material are incorporated into the site. The tank farm is bunded and is designed according to clause 5.7 of Australian standard AS 3780.

The Viscocrete plant will have features designed to minimise waste through packaging and damaged/split product. Wastewater generated during the manufacturing process is recycled back into the dilutor and recovered in the finished product.

Flexible hoses are used for connecting various pipes and hence decoupling and flushing of hoses, fittings, filter bags etc will generate wastewater consisting of dilute Viscocrete finished products (5-

10% solids). It is estimated that this will produce 1000 L wastewater per week for all products made.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

At this stage the products containing polymer manufactured from the notified polymer have not been marketed in Australia, and therefore customers have not been identified. Consequently the following categories and numbers of workers that may be exposed to the notified polymer during manufacture are broadly estimated for the typical types of workers (and exposure scenarios), independent of the specific application process, as shown in the Table below:

Number and Category of Workers			
Category of Worker	*Number*	*Exposure Duration Hours/Day*	*Exposure Frequency*
Sika Australia – Manufacture and Formulation			
Warehouse/Storage	5	8	48 weeks/year
Transport	2	4	12 days/year
Plant Operators	3	8	48 weeks/year

Transport and warehousing

Transport workers will transport the shipping containers containing the notified polymer form the dock to the notifier's site. Warehouse workers will transfer the shipping containers within the site using forklifts. The notified polymer is then transferred by using metered dosing from the shipping containers to the reactor when required for manufacture of another polymer. Transport workers will only come into contact with the notified polymer during transport from the dock to the notifier's site and only in the event of an accidental spill. Warehousing workers may be exposed in the event of spills during transfer operations. Exposure is possible in the event of an accident or in the event of spillage or damage to containers. Warehouse personnel will wear personnel protective clothing when conducting their tasks.

Manufacturing and Formulation Processes

The production occurs in an enclosed system. The final product is a semi-viscous liquid with low vapour pressure. It is not expected to be an inhalation hazard. General ventilation is present. Some spillage will occur during connecting various pipes and hence decoupling and flushing of hoses, fittings, filter bags etc. Workers will be exposed in the event of a spillage primarily through the dermal route.

During formulation, workers will wear coveralls, safety goggles, boots and impervious gloves.

End-use operations

Not applicable.

Cleaning and maintenance work

Cleaning of pump and transfer lines and maintenance work on the equipment used to dispense the liquid containing the notified polymer is rarely required. Personnel undertaking maintenance tasks are required to wear gloves, overalls, safety glasses and a respirator if necessary.

6.2. Summary of Public Exposure

The notified polymer is intended only for use in industry. As it will not be used off-site, the public is unlikely to be exposed to the notified polymer.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

RELEASE OF CHEMICAL DURING MANUFACTURE AND FORMULATION.

The notified polymer will be imported and used in the manufacture of another notified polymer. The notifier is not intending to market this polymer and thus no environmental risk would arise. During reformulation, release of the notified polymer to the environment may occur from residues in transport containers, spills and leaks, and cleaning of equipment. The release from these sources, assuming a

worst case scenario are estimated to be as follows:
Spills during manufacture, occurring during transfer from dilutor tank to holding tank and then to reactor tank are estimated as up to 150 kg* notified polymer/year.
Cleaning of equipment: 120 kg* notified polymer/year.

Total: up to 270 kg/year

Note: * some of these quantities will be recycled.

These calculations are based on up to 750 tonnes of product being manufactured and the polymer is at a concentration of <50%. Spillages during the production process would be contained by plant bunding, collected and routinely sampled and tested for quality and transferred into a suitable container before being either recycled into appropriate product or will be soaked up with absorbent material before being transported off-site for disposal by landfill. All washings from cleaning of equipment are collected, analysed for quality and disposed of to a liquid waste treatment facility by a licensed waste contractor. There is no release to sewer.

RELEASE OF CHEMICAL FROM USE.
Not applicable.

6.3.2. Environmental Fate

The notified chemical is expected to be highly water soluble and, as a result, would be mobile in both terrestrial and aquatic compartments. No environmental studies will be performed. In landfill the notified polymer is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes to water vapour and oxides of carbon and nitrogen. The notified polymer is not expected to cross biological membranes due to its high molecular weight, and as such should not bioaccumulate.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear liquid.
Boiling Point	Not measured.
Density	Approximately 1000 kg/m^3.
Water Solubility	Not determined. Expected to be soluble in water.
Dissociation Constant	The dissociation constant was not determined.
Reactivity	Stable under normal conditions and polymerisation will not occur. Avoid contact with acids and strong oxidising agents.
Degradation Products	Hazardous decomposition products are oxides of carbon. In the event of fire the following can be released: carbon monoxide and carbon dioxide.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological studies were included with the application. The notified polymer meets the Polymer of Low Concern criteria and is not expected to be hazardous to health.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The polymer is not intended for marketing. It is specifically used for the manufacture of another polymer that is being notified. The polymer has a relatively high molecular weight and is unlikely to absorb across the skin or other biological membranes. Furthermore it contains no reactive functional groups of moderate or high concern. Thus it is not expected to have any significant toxicity to humans.

The polymer has a low pH. However, standard methods were used to determine that low acid reserves are present, and thus the polymer is not classified as irritant to skin or eyes. The notified polymer is not classified as hazardous to human health.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No ecotoxicological studies were submitted with the application. The notified polymer does not contain any atoms that may be protonated under environmental pH. The use pattern and expected routes of release indicate that environmental exposure will be minimal.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer will be used in the manufacture of a superplasticier used in concrete. The polymer will be imported into Australia in an aqueous solution consisting of <50% polymer. The manufacturing process takes place in an automated enclosed system and hence, environmental release of liquid containing the notified polymer is expected to be minimal during the manufacturing process. The manufacturing plant is fully bunded and equipped to contain spills and prevent release to the sewer system.

It is estimated that up to 270 kg per annum of waste polymer will be generated from accidental spills. Spills if not able to be recycled will be collected by absorbent inert material and placed in containers and taken to landfill by licensed waste contractors.

Since there is no direct release to natural receiving waters the risk to the environment from the notified polymer will be negligible. In landfill the notified polymer is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes to water vapour and oxides of carbon and nitrogen.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low.

Dermal and ocular exposure may occur as a result of drips and spills during the transfer of SIK 1001 from the dilutor to the holding tank on the tank farm. Exposure may occur during the maintenance and cleaning of the manufacture equipment.

Worker exposure will be minimised by use of the appropriate personal protection equipment. When installing the drum and IBCs and during maintenance work workers will wear eye protection, impermeable gloves and overalls, as required. The manufacturing process will occur in well-ventilated areas, where local ventilation will be used.

Worker exposure during the transport, storage, and distribution of the notified polymer is unlikely to occur unless there is an accidental spillage or packaging breach.

10.3. Public Health

As there will be no exposure of the public to the notified polymer the risk to the public from exposure to the notified polymer is considered low.

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

11.1. Environmental Risk Assessment

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

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

There is No Significant Concern to public health as the notified polymer is not marketed. It is imported to be used in the manufacture of another polymer.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS in accordance with the schedule item B 12 of the *ICNA Act*. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Personnel should wear overalls, safety goggles, impervious gloves and work boots during manufacture and during routine maintenance and repairs.

  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.

Disposal

- Spills will be collected by absorbent material, placed in appropriate containers and sent to landfill..

Emergency procedures

- If spills are not possible to recycle then the spill should be handled by covering with some inert absorbent and sweeping material up into containers for disposal to landfill.

13.1. 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.

or

(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.