

File No PLC/952

October 2010

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

FULL PUBLIC REPORT

Bayhydrol UH 2593/1

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 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**

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FULL PUBLIC REPORT**Bayhydrol UH 2593/1****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Bayer MaterialScience (ABN: 18 086 237 765)
17-19 Wangara Road
Cheltenham, VIC 3192

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 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)

Bayhydrol UH 2593/1 (<40% notified polymer)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1,000 Da

REACTIVE FUNCTIONAL GROUPS

Functional Group	Category	Equivalent Weight (FGEW)
Amine	High Concern	>5,000

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	Water miscible liquid
Density	1030 kg/m ³ at 20 °C
Water Solubility	>350 g/L at 20°C
Dissociation Constant	The notified polymer is expected to dissociate at environmental pH (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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Tonnes	≤30	≤100	≤100	≤100	≤100

Use

Bayhydrol UH 2593/1 (<40% notified polymer) will be used as a binder in the formulation of water-reducible coatings and sealers for wood and wood substrates such as floors and furniture during manufacture.

Mode of Introduction and Disposal

The notified polymer will be imported as a component of Bayhydrol UH 2593/1 (<40%) and will then undergo reformulation (<35% notified polymer in end-use products). The majority of the product will be used for floor coatings. The reformulated product will be applied by professionals to surfaces using brush, roller and spray.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

No toxicological data were submitted.

Occupational Health and Safety Risk Assessment

Dermal and ocular exposure to the notified polymer may potentially occur during certain processes at the reformulation site. These processes include transfer steps, sampling for quality control, packaging, cleaning and maintenance.

Exposure of workers to significant amounts of the notified polymer is expected to be limited by the wearing of personal protective equipment (PPE: impervious gloves, goggles, coveralls and respiratory protection) and through the engineering controls in place. Such controls include the use of spray booths during application and exhaust extraction during the formulation process.

Professional tradesmen may encounter dermal, inhalation and ocular exposure to finished coatings containing the notified polymer (<35%) during application by spray, brush and roller. Spray application represents the worst-case scenario of exposure as the spraying process will produce a dense aerosol of coating particles.

Workers may also be exposed to triethylamine, which is released upon drying of the applied coatings. Triethylamine is classified as harmful by inhalation, in contact with skin and if swallowed (R20/21/22) and as a corrosive (R35). The Safe Work Australia short- and long-term exposure standard for triethylamine is 17 mg/m³ (STEL) and 8 mg/m³ (TWA), respectively (HSIS, 2010). The extent of exposure to triethylamine released during drying will vary with the quantity of product used and the level of ventilation in the application area. Spray application should be carried out in accordance with the Safe Work Australia National Guidance Material for Spray Painting [NOHSC (1999)]. Where spray application is not conducted in spray booths, good ventilation should be provided to eliminate the risk of health effects from inhalation of triethylamine vapour and respiratory protection should be worn by workers when applying the coatings in confined less ventilated areas.

Overall, the OHS risk presented by the notified polymer is not considered to be unacceptable, due to the measures in place to reduce exposure to workers and the assumed low hazard of the polymer.

Public Health Risk Assessment

The notified polymer will not be available to the public. Members of the public may come into contact with the dried surface coatings, containing the notified polymer. Triethylamine release is not expected from dried coatings. However, once the coatings are cured and dried the polymer will be bound to an inert matrix and will not be bioavailable. Therefore, when used in the proposed manner, the risk to public health from the notified polymer is not considered to be unacceptable.

7. ENVIRONMENTAL IMPLICATIONS

Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer in solid wastes resulting from spills and application of the coating will be disposed of to landfill. The small amount of wastes generated from the cleaning of equipment, such as brushes, rollers and spray guns, used in the application of the coating formulation will be disposed either to the sewer or landfill.

ENVIRONMENTAL FATE

The minor amount of uncured notified polymer which is released to the environment is miscible in water and is expected to be mobile in soil and to partition to the water compartment. Some of the uncured notified polymer in the water compartment will eventually partition to sediment and slowly decompose to give water vapour and oxides of carbon and nitrogen.

Overspray is expected to be trapped by filters which are disposed to landfill. After application, the coating containing the notified polymer is cured into an inert matrix. At the end of their useful lives, objects such as flooring and furniture to which the coating containing the notified polymer has been applied, will be disposed to landfill. In landfill, the cured notified polymer is expected to eventually become part of the soil matrix and decompose through the processes described above.

The polymer is not expected to cross biological membranes, due to its high molecular weight, and as such should not bioaccumulate.

Environmental Hazard Characterisation

No ecotoxicological data for the notified polymer 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 and it is therefore unlikely to present an overchelation hazard to algae.

Environmental Risk Assessment

The majority of the notified polymer will be incorporated into a stable cured varnish formulation applied to the wooden floors and furniture. Based on limited environmental exposure, the likely risk to the environment is expected to be low.

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 expected to pose a risk to the environment.

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.
- Spray applications should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)] or relevant State and Territory Codes of Practice.
- 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.

- Respiration protection is recommended if coatings are applied in non-ventilated areas to protect workers from inhalation of triethylamine vapour. Employers should ensure that the Safe Work Australia exposure standard for triethylamine [8 mg/m³ (TWA), 17 mg/m³ (STEL)] is not exceeded.

Environment

- The following control measures should be implemented by end users to minimize environmental exposure during use of the notified polymer:

Do not pour leftover paint down the drain. Unwanted paint should be brushed out on newspaper, allowed to dry and then disposed of via domestic waste collections. Empty paint containers should be left open in a well ventilated area to dry out. When dry, recycle steel containers via steel can recycling programs.

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 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 coatings for wood and wood substrates at <35% for use by professional applicators, 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 a 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.