File No PLC/1060

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Bayhydrol UH XP 2648/1

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. 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 Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This 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

May 2012

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette:*

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1060	Bayer Material Science Pty Ltd	Polymer in Bayhydrol UH XP 2648/1	No	≤100 tonnes per annum	Component of coatings

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard, the assessed use pattern and the use of adequate engineering controls and personal protective equipment during spray applications, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- Employers should ensure that the following engineering controls and personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
  - Spray booths (and/or spray application in adequately ventilated areas)
  - Respiratory protection during spray applications

  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.

- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

- 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.

Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

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.

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, 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 notified polymer 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 was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

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

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities, use details and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
Bayhydrol UH XP 2648/1 (≤40% notified polymer)

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

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	Milky liquid (aqueous dispersion)*
Density	1050 kg/m^3 at 20 °C*
Water Solubility	Not determined. Expected to be water dispersible based on the presence of polar functionality and the use pattern in water containing solvent systems.
Dissociation Constant	Not determined. The notified polymer is a salt and is expected to be ionised under environmental conditions.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

* Bayhydrol UH XP 2648/1 containing the notified polymer at ≤40%.

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	10-100	10-100	10-100	10-100	10-100

Use
The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia at a concentration of up to 40% and will be reformulated into water-borne automotive refinish coatings (at a concentration of up to 30%). The notified polymer may also be imported as a component of the finished coatings. The coatings will be used by professionals only and will be applied by spray. Spray application is expected to occur in spray booths (and/or other adequately ventilated areas).

6. HUMAN HEALTH RISK ASSESSMENT

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 contains a residual monomer that is present above the cut off concentration for classification as a hazardous substance. However, the classification is not relevant to the notified polymer as introduced.

The notified polymer has a high molecular weight (Mn >10,000 Da) and expected low water solubility and will be introduced as an aqueous dispersion. As such, the notified polymer may present a concern

for lung damage following respiration of particles. Inhalation exposure of workers to the notified polymer may occur during spray application of paints. However, such exposure is expected to be lowered by the use of personal protective equipment (PPE).

Provided that appropriate PPE is used by workers during spray application, the risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

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. This does not apply to the notified polymer and it is therefore unlikely to pose an over-chelation hazard to algae.

The notified polymer will be imported into Australia as a raw material as a dispersion in water at a 40% concentration. It will be reformulated into an automotive coating system containing <30% of the notified polymer. Release of the notified polymer from accidental spills is estimated to be 0.2% of the import volume. Reformulation wastes from cleaning of equipment and container residues containing the notified polymer (<2%) are expected to be sent to a licensed waste facility for disposal in accordance with local regulations. The main release as overspray (approximately 30%) during use will typically entail landfill disposal following interception by spray booth filters or paper sheeting. In the case that coating residues are washed to sewer from cleaning of reformulation, mixing and application equipment, the notified polymer is likely to partition to sludge at sewage treatment plants (STP) and is expected to be disposed of to landfill.

Once cured, the coatings containing the notified polymer will form an inert polymer matrix, and the incorporated notified polymer will not be bioavailable. Discarded end use articles containing the notified polymer are expected to be disposed of to landfill, or recycled for metal reclamation which will entail thermal decomposition of the coating to form water vapour and oxides of carbon and nitrogen. In landfill, the notified polymer is not expected to be mobile or bioavailable and will eventually degrade by abiotic and biotic processes into water, methane, oxides of carbon and nitrogen. The notified polymer is not expected to be readily biodegradable, but bioaccumulation is not likely based on its high molecular weight. Therefore, the notified polymer is not considered to pose an unreasonable risk to the aquatic environment based on its assessed use pattern.