

File No PLC/394

20 August 2003

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

**FULL PUBLIC REPORT**

**Substance HPA16B**

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.

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**Director  
Chemicals Notification and Assessment**

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## **FULL PUBLIC REPORT**

### **Substance HPA16B**

#### **1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Orica Australia Pty Ltd

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name, CAS number, molecular formula, structural formula, means of identification, number-average molecular weight, weight-average molecular weight, polymer constituents, residual monomers and impurities and import volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Melting point, flammability, autoignition temperature

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

No

NOTIFICATION IN OTHER COUNTRIES

USA, South Korea, Canada and Japan

#### **2. IDENTITY OF CHEMICAL**

MARKETING NAME(S)

Substance HPA16B

#### **3. COMPOSITION**

PLC CRITERIA JUSTIFICATION

| Functional Group | Category                     | Equivalent Weight (FGEW) |
|------------------|------------------------------|--------------------------|
| Carboxylic acid  | Moderate/High Concern<br>Low | Not required             |

| <i>Criterion</i>   | <i>Criterion met<br/>(yes/no/not applicable)</i> |
|--|--|
| Meets Molecular Weight Requirements                          | Yes  |
| Meets Functional Group Equivalent Weight (FGEW) Requirements | Yes  |
| Low Charge Density   | Yes  |
| Approved Elements Only                                       | Yes  |
| No Substantial Degradability                                 | Yes  |
| Water Absorbing  | Yes  |
| Low Concentrations of Residual Monomers                      | Yes  |
| Hazard Substance or Dangerous Good                           | Yes  |

The notified polymer meets the PLC criteria.

#### **4. INTRODUCTION AND USE INFORMATION**

The notified polymer is manufactured and imported as a 30% aqueous dispersion.

The notified polymer is a polymeric thickener used in water based automotive and general industrial coatings (paints). The concentration of the notified polymer in the final paint is up to 1%.

The notifier indicates that customers include paint companies, automotive repair shops and industrial coating companies located throughout Australia. Approximately 90% of the notified polymer will be used in spray applications and 10% in rollercoating applications.

Up to 10 tonnes of notified polymer will be imported in the first year, and up to 30 tonnes in years 2-5.

## 5. PROCESS INFORMATION

### *Coatings Manufacture*

The notified polymer, will be formulated into paints at 5-10 reformulation sites, mixed in 100 batches per year. Batch ingredients are either metered directly to the mixer or manually added from drums. The notified polymer is stored and transported in 25 kg and 200 kg tighthead steel drums, and transported by road and rail.

### *Automotive/Industrial Coating application*

The notifier states that automotive/industrial coatings containing the notified polymer will be used at up to 100 sites. The main broad use for automotive/industrial paints containing the notified polymer is on motor vehicles (OEM and repair). The coatings are generally applied by spray and by rollercoating for packaging coatings.

## 6. PHYSICAL AND CHEMICAL PROPERTIES

|   |  |
|---|--|
| <b>Appearance at 20°C and 101.3 kPa</b> | White liquid (30% aqueous dispersion)  |
| <b>Boiling Point</b>                    | 100°C (aqueous dispersion)   |
| <b>Density</b>                          | 1.063 g/m <sup>3</sup> (dispersion); 1.237 (polymer) at 20°C   |
| <b>Water Solubility</b>                 | <p>The polymer is insoluble in water. The product is dispersible in water (see also comments on hydrolysis below).</p> <p>There is insufficient information on water solubility to predict confidently, but the polymer is expected to predominantly associate with the organic phase and with the soil/sediment compartment. It contains a carboxylic acid group which is expected to have typical acidity.</p>   |
| <b>Particle Size</b>                    | Not applicable   |
| <b>Dissociation Constant</b>            | Not expected to dissociate into water due to its low water solubility.   |
| <b>Hydrolysis as a function of pH</b>   | <p>The hydrolysis of the notified polymer was tested at various pH (Avecia Research Centre, 2002). Approximately 0.13-0.15 g of test substance HPA16B (tested in duplicate) was added to 40 mL of buffer solutions of approximate initial pH 1.2, 4.0, 7.0 and 9.0. The solutions were shaken for 2 weeks at 40 °C ±1°C, filtered (0.45 µm cellulose nitrate except pH 1.1 buffer solution which was filtered though 0.1 µm). A 25.0 mL aliquot of each solution was freeze dried, weighed and analysed by Gel Permeation Chromatography GPC). GPC of the pH 4 and pH 7 residues were similar and showed that only the lower</p> |

molecular weight species of HPA 16B were extracted under these conditions. The pH 9 residues showed that some of the bulk of the polymer had also been extracted. The amount of residue for pH 1.2 was too small to generate any meaningful GPC data. Analytical recoveries of the notified polymer at all pHs were in the range of 0.6 to 5.1%. This range indicates relatively high water solubility from the environmental viewpoint, supported by the presence of significant carboxylic acid and ethoxylate functionality.

**Flammability**

Not applicable

**Autoignition Temperature**

Not provided

**Degradation Products**

Substance HPA 16B will be encapsulated in the coatings in which it is used. These coatings will deteriorate under the action of UV radiation from sunlight but this is expected to be minimal over the average life of the coated article. Under extreme heat conditions (eg. fire) the coating containing the notified polymer will burn emitting noxious fumes including oxides of carbon.

**Loss of monomers, other reactants, additives impurities**

The polymer is stable under normal conditions of use and is not expected to depolymerise.

## 7. HUMAN HEALTH IMPLICATIONS

### 7.1 Toxicology

**Toxicological Investigations**

No toxicological data were submitted.

**Human Health Hazard Assessment**

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. MSDS indicates the 30% aqueous dispersion may be a slight irritant to rabbit skin and eyes.

### 7.2 Occupational Health and Safety

**Occupational Exposure**

***Coatings Manufacture***

Dermal exposure during opening and closing of container, adding and mixing in blender, filling containers. Eye contact to the notified polymer is also possible. Final concentration of the notified polymer is up to 1%

***Automotive/Industrial Coating application***

Dermal exposure during opening and closing of container, painting Eye contact to the notified polymer is also possible. Inhalation exposure during spray application, particularly if spray booth not used.

**Exposure Assessment**

***Coatings Manufacture***

Exposure is likely to be low during formulation process due to use of engineering controls such as local exhaust ventilation and use of personal protective equipment. However, incidental dermal exposure may occur during addition to the mixer.

### ***Automotive/Industrial Coating application***

Exposure to the notified polymer is likely to be low since the concentration in paint is < 1%.

## **7.3 Public Health**

### **Exposure Assessment**

Products containing the notified polymer are also for sale to the general public. Members of the public will make dermal contact and possibly incidental ocular contact with products containing the notified polymer. However, exposure will be low because the concentration of notified polymer is < 1%.

## **8. ENVIRONMENTAL IMPLICATIONS**

### **8.1 Ecotoxicology**

#### **Ecotoxicological Investigations**

No toxicological data were submitted.

### **8.2 Environmental Contamination**

#### **Exposure Assessment**

##### **TRANSPORTATION AND PACKAGING**

The notified polymer will be imported from the UK and stored and transported in 25 kg and 200 kg tighthead steel drums. It will be transported by road from the Port to a licensed chemical storage facility with engineering controls (ie. bunding) to safeguard against environmental release from spills. It will be distributed by road or rail to customers including paint companies (~5-10) located throughout Australia.

Environmental release is unlikely during importation, storage and transportation, and spillage during a transport accident the most likely reason for environmental release. Individual container capacity and container specifications would limit the extent of release.

#### **Release**

#### RELEASE OF CHEMICAL AT SITE

##### **Coatings Production Sites**

There is a potential for spillage of the notified polymer to occur during paint manufacture. The process is typically undertaken in a closed system, and spills are controlled by bunding within the plant. Mixers are fitted with exhaust ventilation to control emissions to workplace environment, and a regular maintenance program is pursued. Paints are filled into containers under exhaust ventilation to capture volatiles. At coatings production sites (5-10), the notifier estimates about 200 kg of the notified polymer may be generated as waste as a result of minor spills (0.05 tonnes per annum; tpa) and equipment cleaning (0.15 tpa). This waste will be disposed of through licensed waste disposal contractors for treatment with flocculants. The solid flocculant will be sent to landfills for disposal.

#### RELEASE OF CHEMICAL FROM USE

##### **Coatings Use**

Paint containing the notified polymer will be used for automotive/industrial application, mainly to surfaces of motor vehicles (OEM and repairs). The notified polymer in paint will be applied by spray (90%) or rollercoating (10%) methods at up to 100 sites in Australia. Following coating, the paint is heated and cured. There is a potential for spillage of the notified polymer during stirring and pumping into trays prior to application. Good work practices will minimise the probability of spillage occurring. Spills will be contained within bunded areas. Overspray from the HVLP spray equipment, containing up to 40% of the notified polymer (3.6 tpa), will be contained within spray booths in filter systems. This waste will be collected by licensed waste disposal contractors for flocculation with solid flocculate sent to landfills for disposal. The notified polymer is not volatile and losses to the atmosphere are expected to be limited. Losses through rollercoating are expected to be approximately 3% of the notified polymer (0.01 tpa equipment cleaning; 0.01 tpa spills, 0.02 tpa residual in containers). Due to environmental engineering controls, no environmental release of the notified polymer is expected during application of the notified polymer. Container residues are expected to be sent to landfill for disposal. Drum cycling may generate up to 0.1 tpa of notified polymer waste. It is expected that the drums will be cleaned by incineration resulting in the destruction of the residue.

##### **Disposal**

The MSDS recommends that waste material be disposed of through a licensed waste contractor, and to avoid contaminating drains and waterways. The draft label makes no disposal recommendations, but refers the consumer to the MSDS and the Waste Management Authority and indicates that the product is normally suitable to be sent to landfill for disposal. As such, it is expected that the majority of wastes generated during manufacture and industrial application will be disposed of through licensed waste contractors to landfill.

## **9. RISK ASSESSMENT**

### **9.1. Environment**

No environmental exposure is expected at end use once the paint has dried to form a hard and durable paint matrix and as such is not likely to be released to the environment.

When use volume peaks, up to 3.9 tpa of waste notified polymer may be generated during coatings manufacturing and use each year as a result of incidental spills, equipment cleaning (brushes, rollers, spray equipment), and residues in containers. The majority of this waste will be sent to landfills for disposal. In landfill, the notified polymer in solid wastes is expected to be immobile, and eventually will degrade through biotic and abiotic processes, and consequently, should not pose a significant risk to the environment.

Spills of notified polymer to land are expected to bind to soil and are not expected to be mobile or affect groundwater due to very low water solubility. Spills of notified polymer to waters are not expected to dissolve, and the product is expected to disperse. The notified polymer is expected to settle to sediment due to the lack of water solubility.

## 9.2 Occupational health and safety

The notified polymer dispersion may be slightly irritating to skin and eyes, particularly after repeated exposure. Therefore there is risk of irritation when handling the polymer in its most concentrated form, that is, during weighing and addition to mixing vessels for formulation into paint. Therefore, precautions such as enclosure and local exhaust ventilation must be taken to prevent skin and eye contact during these operations.

Once the polymer is formulated into paint, there is little risk of irritation due to the lower content of notified polymer (maximum 1%).

During application of paints containing the notified polymer, the risk of irritation is low due to the low concentration of polymer in paint. However, precautions should be taken during spray application.

Worker exposure to the notified polymer during transport and storage is only possible in the event of an accidental spillage.

## 9.3 Public health

As there will be no exposure of the public to the paint [containing the notified polymer](#), the risk to the public from exposure to the notified polymer is considered low.

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

## 10.2. Environmental risk assessment

The polymer is unlikely to pose an unacceptable risk to the environment based on its reported use pattern.

## 10.3. Human health risk assessment

### 10.3.1. Occupational health and safety

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

### 10.3.2. Public health

There is Negligible Concern to public health.

# 11. MATERIAL SAFETY DATA SHEET

The notifier has provided MSDS for the notified polymer in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* [NOHSC:2011(1994)]. The accuracy of the information on the MSDS remains the responsibility of the applicant.

# 12. RECOMMENDATIONS

## CONTROL MEASURES

### Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer:
  - Local exhaust ventilation
- Employers should implement the following safe work practices to minimise



occupational exposure during handling of the notified polymer:

- Avoid spills during handling
  - Wear personal protective equipment when cleaning up spills
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
    - Overalls, gloves, safety shoes/boots, and safety goggles
    - 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

- The notified polymer should be disposed of to landfill in accordance with the methods described in the Material Safety Data Sheet, including by licensed waste contractor and in accordance with local jurisdiction waste management guidance.

#### Emergency procedures

- Spills/release of the notified polymer should be handled by containing and absorbing with sand and soil. The waste can then be collected and sealed in appropriately labelled drums for disposal.

### 12.1. 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.

No additional secondary notification conditions are stipulated.

## 13. BIBLIOGRAPHY

Avecia Research Centre (2002). Substance HPA 16B. Notification Data. Project 1271274. Manchester, UK.

Connell DW (1989). Bioaccumulation of xenobiotic compounds. Boca Raton, USA, CRC Press, pp 47-57.

NOHSC (1994) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.