File No PLC/836

May 2009

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

VPES-93

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, Water, Heritage and the Arts.

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 334-336 Illawarra Road, Marrickville NSW 2204.

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:

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
NICNAS

TABLE OF CONTENTS

FULL PUBLIC REPORT

VPES-93

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Kao (Australia) Marketing Pty Ltd (ABN 59 054 708 299)
1-5 Commercial Road
KINGSGROVE NSW 2208

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, Use Details, 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
Canada, USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
VPES-93

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) >1000 Da

REACTIVE FUNCTIONAL GROUPS
The notified polymer contains a high concern reactive functional group however the FGEW is > 5000 Da, therefore the notified polymer meets the PLC criteria.

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	Pale yellow powder
Glass Transition Temp	60°C
Density	1150-1250 kg/m^3 at 20°C
Water Solubility	Not tested. Expected to be low based on the predominately hydrophobic chemical structure of the polymer.
Dissociation Constant	Not determined. The notified polymer contains carboxylic acid functionality and may be ionised under normal environmental conditions.
Particle Size (μm)	> 1000 0.58 % 1000-850 0.85 % 850-500 6.22 % 500-355 9.45 % 355-250 14.88 % 250-150 22.43 % < 150 45.59 %
Reactivity	The notified polymer contains functional groups that may be slowly hydrolysed in the environment.
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	1 - 3	1 - 3	2 - 5	3 - 10	3 - 10

Use
The notified polymer will be a component of photocopier toners for offices and home use at a level of < 10%. Generally 20-40 mg of toner is applied per sheet of paper and the toner is bound to the paper.

Mode of Introduction and Disposal
The notified polymer will be a component of toners used in photocopy machines. It will be imported by sea into Port Botany, Sydney, in carton boxes containing individual cartridges sealed in foil wrap or impact protected wrap. The toner cartridges will range between 300 and 3000 g in size. From the docks, the cartridges will be transported by road transport to distribution points.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation
No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Occupational Health and Safety Risk Assessment
The notified polymer has a relatively high proportion of small-sized particles < 150 μm with low water solubility, which could be irritating to the respiratory system if inhaled. Dermal and inhalation exposure to the notified polymer may occur when refilling/replacing spent cartridges, clearing paper jams or performing maintenance. However, the concentration of the notified polymer in the toner is relatively low (< 10%) and design of the cartridges is such that inhalation and dermal exposure to the notified polymer is expected to be low. Nevertheless, due to the particulate nature of the toner, respiratory exposure should be avoided and printers should be used in ventilated areas. Once the toner dries, the chemical would be trapped in the printed paper, and therefore exposure to the notified chemical from contact with the dried ink is not expected. Overall, the OHS risk presented by the notified polymer is low, based on the low expected exposure to workers and the assumed low hazard of the polymer.

Public Health Risk Assessment
The scenarios by which the public may be exposed to the notified chemical would involve home use of photocopiers, and are similar to those for office workers. However, it is expected that the public will be using the photocopier less often than workers. The risk to public health presented by the notified polymer is expected

to be low due to its assumed low toxicity and low potential for exposure. Nevertheless, due to the particulate nature of the toner, respiratory exposure should be avoided. Photocopiers should be located in well-ventilated areas.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation
No ecotoxicological data were submitted. Some classes of anionic polymers are moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed 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 not expected to be a toxic hazard to algae.

Environmental Risk Assessment
The widespread use pattern indicates that landfills would receive the notified polymer bound into the toner matrix within cartridges (< 5%) and on paper products. During printing, the notified polymer will interact with other components to form a stable polymer matrix and, is expected to be immobile. During recycling processes, waste paper is repulped using a variety of chemical agents, which, amongst other things, enhance toner detachment from the fibres. The aqueous wastes go to the sewer. Very little of the notified polymer is expected to partition to the supernatant water, due to its predominately hydrophobic nature, which is released to the sewer. Sludge generated during the washing process is dried and thermally decomposed or sent to landfill for disposal. The notified polymer is expected to neither become dispersed in the environment when it is used as proposed, nor cross biological membranes, because of its molecular weight, and its entrapment in the toner matrix.

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 considered 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.

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

- Service personnel should ensure adequate ventilation is present when removing spent toner cartridges containing the notified polymer and during routine maintenance and repairs.

- Photocopiers should be located in well ventilated areas.

- 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.

Environment

- Do not allow material or contaminated packaging to enter drains, sewers, or water courses.

Disposal

- The notified polymer should be disposed 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.
  - the notified polymer is introduced in a manner other than inside sealed toner cartridges;

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the notified polymer has changed from component of photocopier toner, 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 the 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.