File No PLC/1012

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Toner BT-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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, 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

November 2011

Table of Contents

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/1012	Kao (Australia) Marketing Pty Ltd	Polymer in Toner BT-1	No	≤ 1 tonne per annum	Component of photocopier and printer toner/developer

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health 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 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

- 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 wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified polymer and during routine maintenance and repairs.

- 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.

Disposal

- The notified polymer should be disposed to landfill.

Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- 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 being a component of photocopier and printer toner/developer, 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;
- the method of manufacture of the notified polymer in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the notified polymer on occupational health and safety, public health, or the environment;
- 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
Kao (Australia) Marketing Pty Ltd
ABN: 59 054 708 299
1A, the Crescent
Kingsgrove NSW 2208

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.

2. IDENTITY OF POLYMER

Marketing Name(s)
Polymer BP-400

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

Reactive Functional Groups
The notified polymer contains only low concern functional groups.

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
Melting Point/Glass Transition Temp	80-160 °C
Density	1,250 kg/m^3 at 20 °C
Water Solubility	Not determined. The notified polymer is mainly composed of hydrophobic subunits and is therefore expected to have low solubility in water.
Particle Size	MMAD= 1.13 µm (100% < 4 µm, 38.8% < 1 µm, 2.8% < 0.5 µm, 0% < 0.226 µm)
Reactivity	Stable under normal environmental conditions. Contains hydrolysable groups, however it is expected to be hydrolytically stable due to its limited water solubility.
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	0.2-1	0.2-1	0.2-1	0.2-1	0.2-1

Use
The notified polymer will not be manufactured, reformulated or repackaged in Australia. The toner and developer containing the notified polymer will be used mostly in industrial photocopiers and laser printers with some anticipated retail use. The notified polymer will be imported as a component of a finished photocopier toner in sealed cartridges at a concentration of <10% and as a component of finished photocopier developer in plastic bottles at a concentration of <1%.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria. No toxicological data were submitted, however one monomer of the notified polymer is classified as a skin sensitiser because of its potential to form sensitising oxidation products. The level of residual monomer is below the cut-off concentration for classification. The polymer itself contains a moderate level of low molecular weight species and while the potential for sensitisation of the notified polymer cannot be ruled out, it will be reduced by the overall high molecular weight and the fact that the polymer contains only a limited percentage of the monomer (FGEW > 1500).

The particle size of the notified polymer indicates that it will be respirable (< 10 μm). Small proportions of the notified polymer may reach the lower respiratory tract, but it should still be readily cleared from the lungs unless high levels are inhaled. When high concentrations of the notified polymer are inhaled, it is likely to be cleared from the lungs, but this may be slower and temporary respiratory impairment is possible. The expected low exposure due to the use as a component of toner and developer in photocopiers and laser printers and the low concentration of the notified polymer in these products lower the risk of temporary lung overloading.

Occupational Health and Safety Risk Assessment
The polymer may have some sensitising potential due to one of the monomers. As the polymer is imported in sealed cartridges at <10% or developer bottles at <1% and no reformulation or repackaging occurs in Australia, exposure of technicians and users of photocopiers and laser printers is expected to be low. Therefore the risk to workers is not considered unreasonable. As a further precaution, use of personal protective equipment, such as gloves, by technicians would further reduce any risk.

Public Health and Safety Risk Assessment
The exposure of the public during use of photocopiers or laser printers is considered to be similar to that of workers, but is expected be less frequent. Therefore the risk to the public posed by the notified polymer is not considered unreasonable

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Polymers without significant ionic functionality are generally of low concern to the environment.

The notified polymer will be imported into Australia as an ingredient of finished toner and developer products. Approximately 50% of the paper on which the products will be printed will be recycled. Most of the notified polymer will reach landfill as a result of disposal of used paper, empty cartridges and bottles, or sludge waste from paper recycling processes. In landfill the notified polymer is expected to be immobile due to its very solubility in water and will likely undergo slow biotic and abiotic degradation processes to form water and oxides of carbon. The notified polymer is not expected to cross biological membranes due to its high molecular weight and is thus not likely to bioaccumulate. The notified polymer is therefore not expected to pose an unreasonable risk to the environment based on the assessed used pattern.