File No PLC/835

April 2009

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

M Polymer

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:

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Epson Australia Pty Ltd (ABN 91 002 625 783)
3 Talavera Road North Ryde NSW 2113

NOTIFICATION CATEGORY
Polymer of Low Concern

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, 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)
LVC/629, LVCR/49

NOTIFICATION IN OTHER COUNTRIES
USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
M Polymer

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) >1000 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:	Liquid
Melting Point/Glass Transition Temp	150°C
Density	1120 kg/m^3
Water Solubility	0.058 g/L at 20°C Cured and dried polymer (20ºC for 24 hours, then 80ºC for 90 minutes) was weighed and placed in 100 mL of deionised water at 20±2ºC for 4 hours. Weight loss was calculated from filtered dried (80ºC for 90 minutes) solid.
Dissociation Constant	Terminal groups are expected to show typical acidity (pKa ~ 4). However, excess residual amines present are expected to react with the terminal group to form a quaternary amine counter ion.
Reactivity	Contains hydrolysable groups but is expected to be 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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 1	< 1	< 1	< 1	< 1

Use
Component of printer ink at < 5% for use in inkjet printers.

Mode of Introduction and Disposal
The notified chemical will be imported only as a component of ink, which has already been incorporated into cartridges (< 5% concentration).

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
Dermal exposure to the notified polymer may occur when refilling/replacing spent cartridges and clearing paper jams from the printer. However, the concentration of the notified polymer in the ink is low, and the design of the cartridges is such that exposure to the notified polymer should be low. Once the ink dries, the polymer will be bound to the paper, therefore dermal exposure to the notified polymer from contact with the dried ink is not expected. Overall, the OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers and the low intrinsic hazard of the polymer.

Public Health Risk Assessment
The scenarios by which the public may be exposed to the notified polymer would involve home use of printers, and are similar to those for office workers. However, it is expected that the public will be using the printer less often than workers. The risk to public health presented by the notified polymer is expected to be low due to its intrinsic low toxicity, low concentration in ink and low potential for exposure.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation
No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment. (Only the terminal groups are expected to potentially possess a formal charge).

Environmental Risk Assessment
The notified substance is a component of ink in sealed printer cartridges. No manufacture or reformulation occurs in Australia and no environmental release is expected from these activities. The notifier expects that less than 1 g of ink

will remain in empty cartridges, which initially contain 10-15 g when full. Accordingly < 10% of the notified substance will remain in the empty cartridges. These cartridges will be disposed of to landfill or recycled. During recycling the cartridges are crushed and the ink is incorporated into recycled plastic products (such as park benches) containing low grade inks. These will be disposed of to landfill at the end of their useful lives.

The majority > 90% (~ 900 kg per annum) of the imported ink will be printed to paper and share its fate with the paper. In Australia approximately 50% of paper is recycled with most of the remainder being disposed of to landfill or possibly incinerated. In landfill the polymer is expected to eventually degrade to oxides of carbon, and nitrogen; and water vapour.

During paper recycling a portion of the ink will be detached from the paper fibres and released to sewer. Using standard assumptions a worst case PEC of 0.41 µg/L is calculated at sewage outfall. This is likely to be lower as much of the polymer is expected to be adsorbed to sludge during the paper recycling and sewage treatment. The sludge is expected to be disposed of to landfill.

Although a risk quotient cannot be calculated as a PNEC has not been established, the notified polymer is not expected to be toxic to aquatic organisms. The notified polymer will be released in a dispersed manner to the aquatic environment with a low PEC and hence the risk is expected to be acceptable.

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 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 of to landfill.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical collection using sponges, cloths etc. Rinse area with damp cloth. Place clean up materials into an appropriate closed container for 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 printer ink, 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;
- 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.