File No PLC/913

March 2010

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in HP Large Format Commercial & Industrial Printer Black Ink

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

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Hewlett-Packard Australia Pty Ltd (ABN 74 004 394 763)
353 Burwood Highway
FOREST HILL VIC 3131

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 Formula, Structural Formula, Means of Identification, Number Average Molecular Weight, Weight Average Molecular Weight, Low Molecular Weight Species, Charge Density, Polymer Constituents, Residual Monomers and Impurities and 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)
Nil

NOTIFICATION IN OTHER COUNTRIES
EU, Philippines, Canada

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
HP Large Format Commercial & Industrial Printer Black Ink (product containing the notified polymer at < 1% concentration).

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 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:	White solid with acrylic-like odour
Melting Point	Not determined. (Decomposes at > 300ºC)
Density	1140 kg/m^3 (estimate based on polymers with similar structure)
Water Solubility	Estimated by notifier to be at least 42% by weight, which is consistent with its hydrophilic structure
Dissociation Constant	The notifier estimated the pKa to be 4.2, which is consistent with anionic functional groups
Particle Size	Not determined as the notified polymer will be imported as a solution and will remain in solution throughout its use
Reactivity	Stable under normal environmental conditions. Hydrolysable functionality but hydrolysis not expected to occur in the environmental pH range of 4-9.
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
The notified polymer acts as a binder in printing inks for paper use. The ink containing the notified polymer at < 1% will be used in inkjet printer cartridges in commercial and industrial settings.

Mode of Introduction and Disposal
The notified polymer will not be manufactured in Australia and will be imported as a component of printer ink at < 1% in sealed cartridges (< 100 mL).

6. HUMAN HEALTH IMPLICATIONS

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

Occupational Health and Safety Risk Assessment
Dermal and inhalation exposure to the notified polymer may occur when refilling and replacing spent ink cartridges. However, the concentration of the notified polymer in the ink is < 1%, and the design of the cartridges is such that exposure to the notified polymer should be low. Once the ink dries, the notified polymer would be trapped in the printed paper, and 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 not expected to be unacceptable, based on the low exposure to workers and anticipated low hazard.

Public Health Risk Assessment
Ink cartridges containing the notified polymer will not be sold to the public. The public may experience dermal exposure to paper containing the dried ink containing the notified polymer. However, once the ink dries, the notified polymer would be trapped in the printed paper, and therefore dermal exposure to the notified polymer from contact with the dried ink is not expected.

Overall, the risk to public health presented by the notified polymer is not expected to be unacceptable due to its low concentration in ink, low potential for exposure and anticipated low hazard.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation
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 is unlikely to apply to the notified polymer.

Environmental Risk Assessment
The notified polymer will be imported into Australia as an ingredient of an ink in sealed cartridges, which will be distributed to customers for direct use. Approximately 50% of the paper on which the ink will be printed will be recycled. Most of the notified polymer will reach landfill as a result of disposal of used paper or sludge waste from paper recycling. In landfill the notified polymer will be slowly degraded, eventually forming oxides of carbon, water and inorganic salts. As the notified polymer is a water dispersible poly-anion, it may not be fully recovered by on site waste water treatment at paper recycling facilities. Small quantities of the polymer may therefore be released to surface waters as a result of the de-inking process. However, the notified polymer is not expected to be a toxic hazard to aquatic organisms and has a low potential to bioaccumulate due to its high molecular weight and dispersive release pattern. In water the notified polymer is expected to degrade over time. The notified polymer is therefore not likely to pose a risk to the environment based on the reported use pattern.

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.

- 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 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 powder form;

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from a component of inkjet ink cartridges 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 a 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.