File No PLC/617

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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in SMA 1440HK

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Hewlett Packard (ABN: 74 004 394 763) of 3 Richardson Place North Ryde NSW 2113
and

TR (Chemicals Australia) Pty Ltd (ABN: 57 001 268 006) of 195 Briens Road Northmead NSW 2152

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/Impurities, Use Details, Import Volume, Site of Reformulation, and Purity

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
USA

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Polymer in SMA 1440HK

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met (yes/no/not applicable)*
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. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified polymer will be imported as a component of inkjet printing inks in pre-packed cartridges. The inks will contain a maximum of <1% notified polymer.

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 0.5	< 0.5	< 0. 5	< 0.5	< 0.5

USE
The notified polymer is a component of inkjet printing inks.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

No reformulation or repackaging of the product occurs in Australia. The product is delivered to the end-user as it is imported into Australia. The notified polymer is designed to be used as a component of inkjet inks used in six different printers which are destined for commercial use and not consumer use.

The concentration of the notified polymer is < 1% in all of the inkjet inks used in the six printers.

Printer 1 is an office printer, which uses cartridges of 29ml, 69ml or 130 ml of ink. The printer is not designed for individual offices or cubicles, but rather a printing/faxing area of the office.
.
Printers 2, 3, and 4 are large format printers designed for use by professional photographers and graphic arts professionals.

- Printer 2 uses A (8.5inches x 11 inches) and B (11inches x17inches) size paper, and sits on a tabletop; the cartridges contain 28ml of ink.
- Printer 3 uses 24-inch wide paper rolls, and sits on a tabletop; the cartridges contain 69ml or 130 ml of ink.
- Printer 4 uses 44-inch wide paper rolls, and stands on its own legs. The cartridges contain 69 ml or 130 ml of ink.

Printer 5 is a large format printer designed for "Printing Service businesses" (businesses that create and sell the printed materials), uses up to 60-inch wide paper and stands on its own legs. The cartridges contain 775 ml of ink.

Printer 6 will be enclosed in free-standing kiosks for printing photos in shopping malls. The cartridges containing 775 ml ink are contained in the kiosk and will not be accessible to the shopping mall patrons.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Dermal and inhalation exposure (at a concentration of < 1%), of office workers professional photographers and graphic artists, employees of Printing Service businesses, the employees of Kiosk owners and service engineers, to the notified polymer will potentially occur when replacing spent cartridges and clearing paper jams from the printers. However, due to the design of the cartridge the low concentration of the notified polymer and its expected low vapour pressure, exposure is expected to be low.

Users of the printers may also be exposed to the notified polymer during handling of printed paper, however, the notified polymer is bound to the paper matrix and not expected to be readily bioavailable except if the paper or other substrate is handled before the ink has dried.

The notified polymer contains residual 2-butoxyethanol, to which dermal and inhalation exposure could occur. The concentration of 2-butoxyethanol in the inks is <0.035%, and as such exposure is expected to be low.

6.2. Summary of Public Exposure

Members of the public who will use the printing kiosks in the shopping malls may be exposed to the notified polymer through handling of the printed paper. Once printed onto paper the notified polymer is bound to the paper matrix and not expected to be bioavailable.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

Release of Polymer at Site

No release is expected because reformulation of the ink containing the notified polymer will not take place in Australia.

Release of Polymer from Use

Release of the ink solution to the environment is not expected under normal use because the cartridges are designed to prevent leakage. If leakage or accidental spills occur when changing the spent cartridges for new cartridges, the ink is expected to be contained using absorbent material, which will presumably be disposed of in a landfill.

Empty cartridges will be recycled at a Hewlett Packard recycling centre in Australia. The cartridges will be crushed and the various parts recycled. Ink residues, estimated as <10% of the ink, will be separated from the cartridge and incinerated.

Recycling of treated paper may take place in a number of centres throughout Australia. During the paper recycling process, waste paper is repulped using a variety of alkaline, dispersing and wetting agents, water emulsifiable organic solvents and bleaches. Trade sources estimate the washing process will recover 30-60% of the total amount of ink and therefore, 30%-60% of the notified polymer in the recycled paper will be disposed of with sludge in a landfill. The remainder of the notified polymer salt can be expected to go to trade waste sewers and be released to the aquatic environment. Based on the low concentration of the notified polymer on the paper, and that the paper recycling centres are located throughout Australia, the release of the notified polymer to the aquatic environment will be in a highly diffuse manner.

6.3.2. Environmental Fate

The relatively large molecular weight and the water solubility of the notified polymer indicates it will not readily cross biological membranes, and a low potential for bioaccumulation is predicted. If disposed of by incineration, the notified polymer is expected to be thermally decomposed to form simple salts and molecules. Due to its solubility, the notified polymer will stay within the aqueous compartment following paper recycling where it will slowly degrade via abiotic and biotic processes.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Amber Liquid, the notified polymer is always in aqueous solution.
Boiling Point/Glass Transition Temp	100°C (SMA 1440HK)
Specific Gravity	1.0 – 1.1 at 25°C (SMA 1440HK)
Water Solubility	100% soluble; polymer is a salt, always present in an aqueous solution
Dissociation Constant	The notified polymer contains anionic functionality with typical acidity.
Reactivity	Stable under normal conditions of use. Avoid contact with heat, acids and oxidizers. Contact with oxidizers may cause low energy release.
Degradation Products	Acrid smoke-fumes, carbon monoxide, carbon dioxide and other toxic vapours may be released and thermal decomposition.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were submitted:

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and therefore be considered to be of low hazard.

The notified polymer contains residual 2-butoxyethanol which is classified as hazardous with the following Risk Phrases:

- Harmful by inhalation, in contact with skin and if swallowed (cut off > 25%), contacting to skin and eyes (cut-off > 20%) and has an exposure standard of 96.9 mg/m^3 (TWA).

However, the concentration present in the formulated ink are approximately 1000 times less than the cut-off for hazard classification and the basis of the residual 2-butoxy ethanol content.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

:

9.2. Environmental Hazard Assessment

Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This could apply to the notified polymer. However, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

10. RISK ASSESSMENT

10.1. Environment

No release is expected because reformulation of the ink containing the notified chemical will not take place in Australia.

Release of the ink solution to the environment is not expected under normal use because the cartridges are designed to prevent leakage. If leakage or accidental spills occur when changing the spent cartridges for new cartridges, the ink will be contained with absorbent material, which will presumably be disposed of in a landfill.

Empty cartridges will be recycled at a Hewlett Packard recycling center in Australia. The cartridges will be crushed and the various parts recycled. Ink residues, estimated as <10% of the ink, will be separated from the cartridge and incinerated.

Recycling of treated paper may take place in a number of centres throughout Australia. During the paper recycling process, waste paper is repulped using a variety of alkaline, dispersing and wetting agents, water emulsifiable organic solvents and bleaches. Trade sources estimate the washing process will recover 30-60% of the total amount of ink and therefore, 30%-60% of the notified polymer salt in the recycled paper will be disposed of with sludge in a landfill. The remainder of the notified polymer salt can be expected to go to trade waste sewers and be released to the aquatic environment. Based on the low concentration of the notified polymer salt on the paper, and that the paper recycling centres are located throughout Australia, the release of the notified polymer salt to the aquatic environment will be in a highly diffuse manner.

No ecotoxicity data are available. As mentioned above, the notified polymer may have slight toxicity. However, based on the exposure levels and use pattern, the notified polymer is unlikely to pose an unacceptable risk to the environment.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low, based on ther minimal

exposure to workers and the low intrinsic hazard of the polymer. The presence of 2-butoxythnaol is not considered to present a risk to workers due to the low concentration in the ink.

10.3. Public Health

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is predicted to be of low hazard, present at low concentrations and once the ink has dried is unlikely to be bioavailable.

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

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

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

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. 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 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 by of by incineration.

Emergency procedures

- Spills/release of the notified polymer should be handled by physical containment,

collection and subsequent safe disposal.

13.1. 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.