File No PLC/1331

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

NT-72

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government Department of Health, 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 the Environment.

This Public Report is 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

March 2016

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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/1331	Canon Australia Pty Ltd HP PPS Australia Pty Ltd	NT-72	No	≤ 2 tonnes per annum	Component of toner

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.

- A copy of the (M)SDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

Emergency Procedures

- 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 component of 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 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 (M)SDS of the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

This notification has been conducted under the cooperative arrangement with USA. The health and environmental hazard assessment components of the USA report were provided to NICNAS and, where appropriate, used in this assessment report. The other elements of the risk assessment and recommendations on safe use of the notified polymer were carried out by NICNAS.

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Canon Australia Pty Ltd (ABN: 66 005 002 951)
Building A, The Park Estate
5 Talavera Road
MACQUARIE PARK NSW 2113

HP PPS Australia Pty Ltd (ABN: 16 603 480 628)
Level 5
1 Homebush Bay Drive
RHODES NSW 2138

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)
NT-72

Molecular Weight
Number Average Molecular Weight (Mn) is > 10,000 Da

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 power
Melting Point/Glass Transition Temp	Not determined (decomposed from approximately 140 °C)
Density	1,040 kg/m^3 at 21.0 ± 0.5 °C
Water Solubility	1×10^{-3} g/L at 20 °C
Dissociation Constant	Not determined. The notified polymer contains ionisable functionalities therefore, expected to be ionised at the environmental pH range of 4 – 9.

Particle Size	21.1% < 100 µm 3.79% < 10 µm 1.18% < 5.5 µm
Reactivity	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	0.1-1	0.5-2	0.5-2	0.5-2	0.5-2

Use
The notified polymer will be used as a component (0.01-1% concentration) of printer toner. The toner will be imported in the container which will be used in printers and photocopiers, and no manufacture, reformulation or repackaging will occur in Australia.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by tests submitted on the following toxicological endpoints.

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*
1. Rat, acute oral	LD50 > 2,000 mg/kg bw	no	OECD TG 420
2. Rabbit, skin irritation	slightly irritating	yes	OECD TG 404
3. Rabbit, eye irritation	slightly irritating	yes	OECD TG 405
4. Skin sensitisation - LLNA	no evidence of sensitisation	yes	OECD TG 429
5. Genotoxicity - bacterial reverse mutation	non mutagenic	no	OECD TG 471

All results were indicative of low hazard.

The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the low hazard and the assessed use pattern.

7. ENVIRONMENTAL RISK ASSESSMENT

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.

The notified polymer will be imported as a component of printer ink in ready-to-use cartridges to be used in photocopier machines or printers. Printing cartridges are designed to prevent release of its contents during transport, installation and removal. Accidental spills are expected to be contained and disposed of to landfill.

The ink will be used on printing articles and the notified polymer, bound within the dried ink matrix, will share the fate of the article. It is anticipated that approximately half of these articles will be disposed of to landfill and the remainder will be recycled at the end of their useful lifetime. During the recycling process, waste paper will be repulped using a variety of alkaline dispersing and wetting agents, water emulsifiable organic solvents and bleaches. Aqueous wastes containing these agents are expected to be sent to sewage treatment plants (STPs) for processing. Under a worst case scenario it

will be assumed that 50% of the notified polymer will be washed into sewers. Assuming 0% of the notified polymer will be removed via absorption to sludge in the STP, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 0.85 µg/L [PECriver = 3.85 kg notified polymer/day ÷ (150 L/person/day × 22.613 million people) × 1 (dilution factor)]. The PEC is below the EC50 for algae of the most toxic polymers (EC50 > 1 mg/L). In sewage treatment plants, most of the notified polymer is expected to partition to sludge and sediments as it has high molecular weight.

Due to its high molecular weight, the notified polymer will not readily cross biological membranes and, therefore, bioaccumulation is not expected.

The proportion of the notified polymer that is adsorbed to STP sludge will be disposed of to landfill or may be used for soil remediation, where it is expected to slowly degrade to form water and oxides of carbon.

Therefore, based on its assumed low hazard, the notified polymer is not considered to pose an unreasonable risk to the environment.