File No PLC/549

17 March 2005

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Tuftone KPR-3010

This Self 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 environmental risk assessment is conducted by the Department of the Environment and Heritage. The data supporting this assessment will be subject to audit by NICNAS.

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Director
Chemicals Notification and Assessment

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Kao (Australia) Marketing Pty Ltd (ABN 59 054 708 299)
1-5 Commercial Road
Kingsgrove, NSW 2208

NOTIFICATION CATEGORY
Self Assessment: 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 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)
None Known

NOTIFICATION IN OTHER COUNTRIES
USA: US EPA: PMN P01-779 filed on 30 July 2001
Canada: Registered in 2002
China: NSN No. 13549 filed on 3 November 2004

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Tuftone KPR-3010
Tuftone KPR-3000
PES-2683

3. COMPOSITION

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 polymer will not be manufactured in Australia. It will be imported as a component of toners manufactured overseas. The toners, which are in a form of cartridges or bottles are used within laser beam printers (LBP) or plain paper copiers (PPC).

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

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

USE
Binder resin

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

No reformulation or repackaging of the toner products will occur in Australia. The toner containing <7% notified polymer will be packed in 300g capacity cartridges or bottles for domestic and office use, and 3kg capacity toner bottles for industrial use only. The cartridges and bottles are expected to be packed in sturdy cardboard boxes, and normally be transported and distributed to customers by road.

Office workers and customer service engineers will replace cartridges and toner bottles. Replacement of cartridges involves removal of the old printing cartridge from the printing machine and directly loading the new cartridge. Exchange of toner bottles is required when the printing or copier performance is lost during use. The toner bottle or cartridge is replaced by attaching a specifically designed plastic bag into copying machine or printer. The used toner is transferred to the bag, the bottle or cartridge refilled with new toner, and the bag is then sealed and removed. For larger machines, it is likely that trained service personnel will carry out toner replenishment. The developer bottle or cartridge is designed so that release of toner is not expected unless the shutter is opened or the seal tape is removed.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

Office workers and customer service personnel may be intermittently exposed to the notified polymer when replacing the spent cartridge or bottle, clearing paper jams from the printer or photocopier, and during maintenance of printers or photocopiers. Maintenance workers may potentially come in contact with the notified polymer more often than office workers. Exposure would be principally by skin contamination, however, inhalation exposure could also occur, particularly if spillage occurs. The notified polymer contains 1.7% of non-respirable particle (<75µm). Previous estimates have suggested that toner dust levels of 0.02 mg/m^3 exist in the vicinity of copiers or printers. This is well below the NOHSC exposure standard for dusts of 10mg/m^3. Employers are responsible for ensuring the NOHSC exposure standards are not exceeded in the workplace.

Residual polymer will also remain on printed-paper. However, toners that contain the notified polymer are fused to paper during printing and not available for exposure or dermal uptake.

Customer service personnel often wear cotton or disposable to prevent skin contamination. Workers should also avoid generating dust when handling any toner containing the notified polymer. During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Due to the expected low exposure, low content of the polymer within the toner (<7%) and enclosed presentation of most toner cartridges and bottles, exposure to the polymer is expected to be low.

6.2. Summary of Public Exposure

The notified polymer will be imported in pre-packed cartridges and bottles. Indirect dermal exposure may occur when replacing spent cartridges, handling printed papers and if a toner cartridge or bottle is damaged or spilled. Based on its use pattern, intermittent exposure and expected low toxicity, public exposure to the notified polymer will be low.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

Negligible amounts of toner containing the binder will be released into the environment annually. The polymer will be supplied into Australia as a component of toners containing <7% of the notified polymer. Typically, toners incorporating the notified polymer are supplied in toner cartridges or bottles with a capacity of between 300g and 3,000g. The cartridges/bottles are used within laser beam printers (LPC) or plain paper copiers (PPC). Use of the toner generally results in <40mg of toner being deposited per Legal (Foolscap) page. The deposited toner binds to the page. Consequently, print on paper is one potential source of environmental exposure to the polymer.

Disposal of paper waste printed with the toner is by normal disposal methods, such as, landfill, incineration or recycling. In landfill the notified polymer, bound within the toner, should remain immobile as it will be bound to the paper. No hazardous products will be produced by the notified polymer as a result of incineration of paper printed with toners incorporating the notified polymer. Recycling results in the production of paper products, in which small amounts of the polymer may be bound or in sludge containing the polymer. The sludge is typically disposed of in industrial waste including landfill where any of the notified polymer is expected to remain immobile.

Another potential source of environmental exposure is accidental release of the toner, for example, if a cartridge is damaged. Damage to individual cartridges or bottles will result in only in small amounts of the toner being released into the environment. Toner containing the notified polymer that is recovered after a spill can be disposed of in normal waste. Such waste typically is sent to landfill or for incineration.

Spent cartridges may be disposed of in normal waste (which is sent to landfills or for incineration) or recycled.

6.3.2. Environmental Fate

The small amounts of polymer remaining on printed paper will be dispersed as the paper degrades in the environment. Accidental spills need to be cleaned up and managed in accordance with the recommendations for the toner as a whole. Typically, these wastes are disposed of in general waste that is sent to a landfill or for incineration.

Hydrolysis is possible but unlikely under environment conditions due to the low water solubility of the notified polymer. Any free notified polymer should have low mobility in landfill and is expected to slowly degrade through biotic and abiotic processes to form oxides of carbon and hydrogen.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa	Solid, white powder
Melting Point/Glass Transition Temp	90 to 140ºC
Density	1350 kg/m^3 at 20ºC
Water Solubility	6 mg/L at 20ºC
Particle Size	Particle size (µm) % by weight >500 38.6 500-355 18.0 355-150 30.1 150-100 11.2 100-75 0.4 <75 1.7
Reactivity	Stable under normal environmental conditions.
Degradation Products	Does not degrade under normal conditions. Decomposition in fire could result in release of

carbon monoxide and carbon dioxide.

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 can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Nonionic polymers of NAMW>1000 are of low concern. The notified polymer meets the PLC criteria and can therefore by considered to be of low hazard.

10. RISK ASSESSMENT

10.1. Environment

While environmental exposure is limited during use, the total import volume of the notified polymer will ultimately be disposed of either in landfills or by incineration. The widespread use pattern indicates that landfill throughout Australia would receive the notified polymer bound into the toner matrix with cartridges and on paper products. The used toner would be expected to remain within the container unless breached. On paper, the notified polymer will interact with other components to form a stable polymer matrix and, once dry, is expected to be immobile and pose little risk to the environment.

During recycling processes, waste paper is repulped using a variety of alkaline, dispersing and wetting agents, water emulsifiable organic solvents and bleaches. These agents enhance fibre separation, toner detachment from the fibres, pulp brightness and the whiteness of paper. These aqueous wastes are expected to go into the sewer. Very little of the notified polymer is expected to partition to the supernatant water which is released to the sewer. Sludge generated during the washing process is dried, incinerated or sent to landfill for disposal.

The notified polymer is not likely to present a risk to the environment when it is stored, transported, used, recycled or disposed of in the proper manner.

10.2. Occupational Health and Safety

Occupational exposure to the polymer will be restricted to handling of toners in which the polymer is incorporated. Such toners are supplied in sealed cartridges or bottles. Consequently, the occupational health and safety exposure presented by the notified polymer is expected to be low.

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

The level of atmospheric nuisance dust should be maintained as low as possible. The NOHSC exposure standard for atmospheric dust is 10 mg/m^3.

10.3. Public Health

Exposure to the polymer by the public will be restricted to handling of toners in which the polymer is incorporated. Most such toners are supplied in sealed cartridges or bottles. The notified polymer is unlikely to be bioavailable when fused during printing. The risk to public health will be low due to intermittent exposure and the low concentrations (<7%) of the notified polymer within toners.

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 No Significant 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.
- In the interest of occupational health and safety, the following guidelines and precautions should be observed for use of the notified polymer as introduced as a component of toners:
  - Typically, it is recommended that service personnel wear cotton or disposable gloves and ensure adequate ventilation is present when replenishing spent ink cartridges and during routine maintenance and repairs of printers and photocopiers.
- 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.

Environment

Disposal

- The notified polymer should be disposed of in accordance with local, state and federal regulations.

Emergency procedures

- Spills/release of the notified polymer should be handled by collecting the cartridge intact and landfilled. Contain the spill and absorb it with sawdust, sand or earth. Place used absorbent in suitable containers and follow local, state and federal regulations for the disposal of wastes.

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.

(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.