

File No PLC/445

6 July 2004

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Diacron FC-1469

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 and Heritage.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

Library
National Occupational Health and Safety Commission
25 Constitution Avenue
CANBERRA ACT 2600
AUSTRALIA

To arrange an appointment contact the Librarian on TEL + 61 2 6279 1161 or + 61 2 6279 1163.

This Full 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:

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
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT.....	3
1. APPLICANT AND NOTIFICATION DETAILS	3
2. IDENTITY OF CHEMICAL	3
3. COMPOSITION	3
4. INTRODUCTION AND USE INFORMATION.....	4
5. PROCESS AND RELEASE INFORMATION	4
5.1. Distribution, Transport and Storage	4
5.2. Operation Description.....	4
6. EXPOSURE INFORMATION	4
6.1. Summary of Occupational Exposure	4
6.2. Summary of Public Exposure	4
6.3. Summary of Environmental Exposure.....	5
7. PHYSICAL AND CHEMICAL PROPERTIES	5
8. HUMAN HEALTH IMPLICATIONS.....	5
Human Health Hazard Assessment	5
9. ENVIRONMENTAL HAZARDS	6
9.1. Ecotoxicology.....	6
9.2. Environmental Hazard Assessment	6
10. RISK ASSESSMENT	6
10.1. Environment	6
10.2. Occupational health and safety	6
10.3. Public health	6
11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	7
11.1. Environmental risk assessment.....	7
11.2. Human health risk assessment	7
11.2.1. Occupational health and safety	7
11.2.2. Public health.....	7
12. MATERIAL SAFETY DATA SHEET	7
13. LABEL	7
14. RECOMMENDATIONS	7
14.1. Secondary notification.....	8
15. BIBLIOGRAPHY	8

FULL PUBLIC REPORT**Diacron FC-1469****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Sharp Corporation of Australia Pty Ltd (ABN 40 003 039 405) of 1 Huntingwood Drive,
Huntingwood, Blacktown, NSW 2148

NOTIFICATION CATEGORY

Synthetic 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

Polymer constituents

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)

No

NOTIFICATION IN OTHER COUNTRIES

Japan, USA, Korea, China and EU

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

DIACRON FC-1469

PRODUCT NAME

Sharp AR-C26TBE

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</i>
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
No Substantial Degradability	Yes
Water Absorbing	Yes
Low Concentrations of Residual Monomers	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	< 1	< 1	< 1	< 1	< 1

USE

Component of a toner product for electrostatic photocopying system.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURER/RECIPIENTS

Sharp Corporation of Australia Pty Ltd Limited of 1 Huntingwood Drive, Huntingwood, Blacktown, NSW 2148 will import the toner (containing the notified polymer) from Japan. The toner will be supplied to various customer outlets around Australia.

TRANSPORTATION AND PACKAGING

The notified polymer will be imported as a component of photocopier toners, in purpose-designed toner cartridges at a concentration of 90-92%, which will be packed in cardboard cartons. The cartons will be transported from the dockside to the local notifier's warehouse, where they will be stored until distribution to customer outlets around Australia. Transport and storage workers will load and unload cartons for either storage or distribution to customers.

5.2. Operation Description

The photocopier service engineers and office workers will change the toner cartridges and remove the used cartridges.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

Exposure Details

Transport and Storage

Exposure to the notified polymer is not expected during the importation, warehousing or transportation of the product except in cases where the packaging is accidentally breached.

Customer Service Engineers

Occupational exposure to the notified polymer will primarily concern copier service engineers, as they will be changing the toner cartridges. The toner in the new cartridge remains sealed until the sealing tape is removed just prior to installation. The used cartridge is removed from the machine and replaced with the new cartridge without direct contact with the toner contained in the cartridge. Customer service engineers handling the imported products will be required to wear cotton gloves.

Inhalation and dermal exposure to the toner powder may occur during toner replacement in the event of a container leak or spill. Some exposure may occur as a result of contact with toner particles remaining in the machine and disturbance of toner dust leading to inhalation exposure.

6.2. Summary of Public Exposure

Since the notified polymer is an ingredient of a toner cartridge, the general public will be exposed to the notified polymer during normal use of the photocopier or printer. Exposure is also possible in the event of accidents during transport. However, exposure will be minimal as the notified polymer is contained within the enclosed toner cartridge. Once printed onto the paper, the notified polymer is

fixed and will not be bioavailable.

6.3. Summary of Environmental Exposure

The notified polymer will be imported fully formulated into Australia in toner bottles and cartridges and will be used only in photocopiers and printers. The polymer makes up 90-92% of the toner. A filter installed in the machines prevents leakage therefore release to the environment is not expected during normal use. During printing, the toner containing the polymer is fused to the paper in a non-water soluble matrix.

Incineration of waste paper will destroy the compound with the generation of water vapour and oxides of carbon, while the paper sent to landfill will have the notified polymer strongly bound. Printed paper being recycled will be repulped using a variety of alkaline, dispersing and wetting agents, water emulsifiable organic solvents and bleaches to enhance fibre separation, toner detachment from the fibres, pulp brightness and the whiteness of paper. Very little of the notified polymer is expected to partition to the supernatant if wastewater is released to the sewer. Sludge generated during the washing process is dried and incinerated or sent to landfill where the notified polymer is expected to be immobile and eventually degrade through biotic and abiotic processes. Consequently, it should not pose a significant exposure to the environment.

A proportion of the printed-paper may form litter, but it is expected to be in small quantity and stable form and is unlikely to pose a significant exposure to the environment.

The empty toner cartridges (containing $\leq 9\%$ of the notified polymer) may be recycled or disposed of in normal municipal landfills according to local waste disposal regulations. Residues are expected to remain within the cartridges although deterioration of the casing over time may cause some release.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Yellow powder.
Melting Point/Glass Transition Temp	> 90°C
Density	1220 kg/m ³
Water Solubility	0.89 mg C/L extractability at 20±1°C determined according to OECD Test Guideline 120. Three 10 g and three 1 g samples were shaken with 1,000 mL purified water for 24 h at 20±1°C. Samples were filtered (0.2 µm) and a portion measured in duplicate for total organic carbon (TOC). A gravimetric determination of the undissolved part was also done.
Particle Size	0.3% by mass of the Diacron FC-1469 is smaller than 75 µm and 97.2% is > 400 µm.
Reactivity	Stable under normal environmental conditions.
Degradation Products	CO, CO ₂ and NO ₂

8. HUMAN HEALTH IMPLICATIONS

Human Health Hazard Assessment

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

Toxicological Information

The MSDS for a toner containing the notified polymer provides the following information:

Acute Toxicity

- Ingestion (oral): LD₅₀ > 2500 mg/kg (estimated from data for a toner containing a similar polymer).
- Dermal: LD₅₀ > 2500 mg/kg (estimated from the acute oral toxicity data).
- Inhalation LC₅₀ > 5.00 mg/l (Rats, 4hr)
- Eye Irritation: Non-irritant (estimated from data for a toner containing a similar polymer).
- Skin Irritation: Non-irritant (estimated from data for a toner containing a similar polymer).
- Skin Sensitiser: Non-sensitiser (estimated from data for a toner containing a similar polymer).

Mutagenicity

- (Ames Test): Negative (estimated from data for a toner containing a similar polymer).

9. ENVIRONMENTAL HAZARDS**9.1. Ecotoxicology**

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Polynionic polymers which have $MW > 1000$ are of low concern (Nabholz et al. 1993).

10. RISK ASSESSMENT**10.1. Environment**

The notified polymer will be used as a component of toner in photocopiers and printers. During printing, the toner containing the polymer is fused to the paper in a non-water soluble matrix. Incineration of waste paper will destroy the compound with the generation of water vapour and oxides of carbon while the paper sent to landfill will have the notified polymer strongly bound. During paper recycling, very little of the polymer is expected to partition to the waste water released to the sewer but instead be bound to the sludge to be incinerated or sent to landfill. Any polymer in landfill is expected to be immobile and eventually degrade through biotic and abiotic processes.

Very little polymer will be released to water and it is not possible to calculate a reasonable predicted environmental concentration (PEC).

10.2. Occupational health and safety

The health risk to transport and storage workers should be low even in the event of accidental breach of the cartridges as a result of the low hazard of the notified polymer.

Dermal and inhalation exposure of maintenance workers to the notified polymer is possible during routine maintenance but is expected to be low due to the use of sealed cartridges. Nevertheless, due to the probable fine nature of the toner, skin, eye and respiratory exposure should be avoided. The national exposure standard for nuisance dusts is 10 mg/m^3 TWA (NOHSC, 1995). Australia has no exposure standard for respirable dust, however, the ACGIH TLV of 3 mg/m^3 TWA is recommended (ACGIH, 2001). Due to their frequent potential exposure to toners, maintenance personnel should wear cotton or disposable gloves. The airborne concentration of toner dust in the vicinity of a photocopier is expected to be low. Dermal and inhalation exposure of office workers to the notified polymer will potentially occur when replacing spent cartridges and clearing paper jams from the printer or photocopier. However, as for maintenance workers, exposure should be low for the same reasons. Therefore, the health risk to workers should be low based on the low hazard of the polymer and the likely low exposure.

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* (NOHSC, 1999), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

10.3. Public health

The health risk to the public changing toner cartridges from the notified polymer is low due to the likely low exposure from the sealed cartridge design and the low hazard of the notified polymer. 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 bound on the paper and 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 Low Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

The MSDS of the product provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets*. It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. LABEL

The labels for the products containing the notified polymer provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances*. The accuracy of the information on the label remains the responsibility of the applicant.

14. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Service personnel and office staff should wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent cartridges containing the notified polymer and during routine maintenance and repairs.

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

Environment

Disposal

- The notified polymer should be disposed of by incineration or sent to landfill.

Emergency procedures

- Wet spills/release of the notified polymer should be diked and absorbed with inert materials for disposal by incineration or landfilled according to local regulations.
- For dry spills, the material should be swept or scooped up for disposal.
- Material should not be released to sewers or allowed to enter waterways.

14.1. 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.

The Director will then decide whether secondary notification is required.

No additional secondary notification conditions are stipulated.

15. BIBLIOGRAPHY

ACGIH (2001); The American Conference of Governmental Industrial Hygienists (ACGIH): Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices 2001; ACGIH Cincinnati, Ohio.

Nabholz JV, Miller P & Zeeman M (1993) Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act (TSCA) Section Five. In: Landis WG, Hughes JS & Lewis MA ed Environmental Toxicology and Risk Assessment, ASTM STP 1179, American Society for Testing and Materials, Philadelphia, PA.

NOHSC (1995) Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)] & [NOHSC:1003(1995)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.