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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

NT-6

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act* 1989 (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 Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Department of the Environment, Sport, and Territories and the assessment of public health is conducted by the Department of Health and Family Services.

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT**NT-6****1. APPLICANT**

Canon Australia Pty Ltd of 1 Thomas Holt Drive NORTH RYDE 2113 has submitted a standard notification statement in support of their application for an assessment certificate for NT-6.

2. IDENTITY OF THE CHEMICAL

NT-6 is considered to be harmful according to Worksafe Australia's *Approved Criteria for Classifying Hazardous Substances* (1) (Approved Criteria) in relation to acute lethal effects, oral route. However, the chemical identity need not be publicly disclosed according to Worksafe Australia's *National Model Regulations for the Control of Workplace Hazardous Substances* (2). Instead a generic name is required. Therefore the chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data and details of exact import volume have been exempted from publication in the Full Public Report and the Summary Report.

Other Names: aluminium salicylate

Trade Name: NT-6

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: white powder with no odour.

Melting Point: $226 \pm 0.5^{\circ}\text{C}$ (decomposes before melting)

Specific Gravity: 2.0140 at $20.5 \pm 0.5^{\circ}\text{C}$

Vapour Pressure: 1.3×10^{-4} Pa at 25°C (extrapolated)

Water Solubility: 12.7 mg/L at $20.0 \pm 0.5^{\circ}\text{C}$
(shake flask method)

Hydrolysis: < 10% after 5 days at 50°C at pH 4, 7 & 9
equates to:

half-life > 1 year at 25°C at pH 4, 7 & 9

Partition Co-efficient: $\log P_{ow} = 1.64$ at $22.0 \pm 0.5^\circ\text{C}$
(average of three results, see comments below)

Adsorption/Desorption $K_{OC} = 7\,320$ in sandy loam, pH 4.8, oc 0.6%
 $K_{OC} = 1\,420$ in sandy loam, pH 5.5, oc 1.8%
 $K_{OC} = 472$ in sandy loam, pH 7.3, oc 0.6%

Dissociation Constant: $pK_a = 4.69$ at $21.0 \pm 1.0^\circ\text{C}$

Surface Tension: 72.6 mN/m at $20.0 \pm 0.5^\circ\text{C}$

Comments on Physico-Chemical Properties

The above physico-chemical properties are for the notified polymer and not the toner to be imported.

Tests were performed according to EEC/OECD test guidelines at facilities complying with OECD Principles of Good Laboratory Practice.

The vapour pressure was determined by measurement at one temperature. This value was used to calculate the vapour pressure at 25°C using a theoretical model.

There was a slight decrease in the log partition coefficient (from 1.77 to 1.53) with the increasing n-octanol/water volume ratio (from 1:2 to 2:1).

Adsorption/desorption data show that the notified chemical ranges from immobile to moderately mobile, depending on the pH of the soil. The chemical's mobility increases with increasing pH.

The notified chemical is not expected to be surface active. By definition, a chemical has surface activity when the surface tension is less than 60 mN/m (3).

4. PURITY OF THE CHEMICAL

Degree of Purity: 86 - 94%

Toxic or Hazardous Impurities: none

Non-hazardous Impurities (> 1% by weight): two reaction products at a maximum of 11% and water at a maximum of 2.5%

Additives/Adjuvants: none

5. USE, VOLUME AND FORMULATION

The notified chemical is an ingredient of a toner (at a concentration < 8% - see attached material safety data sheet (MSDS)) for electro-photocopying machines and electrophoto-graphic printers. No reformulation of the chemical or toner will be undertaken in Australia. The notified chemical is expected to be imported at rate of less than 10 tonnes per year for the first 5 years.

6. OCCUPATIONAL EXPOSURE

The notified chemical will be imported as an ingredient in a toner used in electrophotocopying and electrophotographic printers. The toner is sealed in either plastic bottles (500 g toner) or cartridges (300 g toner).

The toner bottles are inserted into the machine and the shutter opened or seal tape removed. This results in the toner being transferred to the machine. Cartridges are also first inserted into the machine prior to seal tape removal.

There is potential for exposure to toner on the seal tape, toner spillages in the machine itself and airborne toner from spillages or during machine operation. In each case the levels of exposure are likely to be minimal.

7. PUBLIC EXPOSURE

The public may be exposed to residues of the notified substance on photocopied or printed paper, however, as the substance is bound to the paper exposure is minimal.

8. ENVIRONMENTAL EXPOSURE

Release

The notified chemical, as a component of a pre-formulated toner, will be imported in small, sealed plastic bottles and cartridges. These bottles are designed to prevent release of the toner until the removal of the shutter or sealing tape. Under normal use (ie photocopying and printing) the toner is transferred onto a sheet of paper where it is firmly fixed to the surface by heat. Thus the chemical will be fixed into the cured toner and release to the environment will be negligible. Waste paper containing the toner (and thus the notified chemical) eventually will be sent to landfill, will be recycled or will be incinerated.

Release of the notified chemical will also occur through the disposal of bottles and cartridges containing residues of the toner. The expected residue volume remaining in bottles and cartridges will be about 5 grams and 45 grams, respectively. However, as the toner contains less than 8% of the notified chemical, the quantity of chemical released in this fashion would be 0.4 g and 3.6 g respectively. The spent toner bottles and cartridges will be disposed of as normal office waste, which in turn will go to landfill. It is impossible to calculate the exact total volume of notified

chemical sent to landfill in this way as figures on import quantities for cartridges and bottles and cartridge recycling were not supplied by the notifier.

Environmental release during transport due to accidental spillage will be limited due to the toner being supplied in discrete, small volume, plastic containers and cartridges.

Fate

The fate of the notified chemical will be similar to that of the toner once the toner had been cured. Unless incinerated, the cured toner containing the notified chemical is likely to be disposed of by landfill, either bound to waste paper or sludge (from the paper recycling process). As such, the toner will be immobile. As the notified chemical is not expected to leach from the cured toner, no leaching of the notified chemical from landfill is expected. Combustion of the notified chemical in the presence of excess air will result in products of oxides of carbon and nitrogen, aluminium salts and water.

Paper containing the cured toner may also be sent for recycling. Wastepaper is repulped using a variety of alkalis, dispersing agents, wetting agents, water emulsifiable organic solvents and bleaching agents. These chemicals enhance fibre separation, ink detachment from the fibres, pulp brightness and whiteness of the paper. After pulping, the contaminants and the ink are separated from the fibres by pumping the stock through various heat washing, screening, cleaning, flotation and dispersion stages. The notifier has provided no data on the likely behaviour of the toner or chemical during the recycling process. The toner (containing the notified chemical) is likely to survive the above conditions, either remaining bound to the pulp or becoming associated with the sludge. In the latter case, the chemical will either arrive in landfill or be destroyed through incineration.

When the uncured toner is disposed of to landfill via the toner cartridges and bottles, the moderate solubility and mobility (in neutral soil) of the notified chemical could lead to some leaching within landfill. However, as the toner (and thus notified chemical) will be contained in the cartridges or bottles, the rate of leaching will be very low.

The notified chemical was found to exhibit 0% degradation after 28 days in the OECD Test 301B for 'Ready Biodegradability' (CO₂ Evolution Test). Therefore, the chemical can not be considered to be biodegradable under the strict terms of this test. The notified chemical was found not to inhibit the respiration of sewage sludge micro-organisms at the concentration employed in this test.

Bioaccumulation of the notified chemical is not expected due to its low log partition coefficient of 1.64 (4). Also, biological membranes are not permeable to chemicals of very large molecular size (5,6).

9. EVALUATION OF TOXICOLOGICAL DATA

Toxicological data was supplied for the notified chemical, NT-6, and for the toner to be imported as indicated in this section.

9.1 Acute Toxicity

Summary of the acute toxicity of NT-6

Test	Species	Outcome	Reference
acute oral toxicity	rat	LD ₅₀ = 334 mg/kg in males	7
acute dermal toxicity	rat	LD ₅₀ > 2 000 mg/kg	8
skin irritation	rabbit	slight irritant	9
eye irritation	rabbit	slight irritant	10
skin sensitisation	guinea pig	non-sensitiser	11

Summary of the acute toxicity of toner containing NT-6

Test	Species	Outcome	Reference
acute oral toxicity	rat	LD ₅₀ > 5 000 mg/kg	12
skin irritation	rabbit	non-irritant	13
eye irritation	rabbit	non-irritant	14

9.1.1 Oral Toxicity (7,12)

9.1.1.1 NT-6 (7)

<i>Species/strain:</i>	rat/Sprague Dawley
<i>Number/sex of animals:</i>	5 males/ dose group (0, 100, 224 and 500 mg/kg) and 5 females given 100 mg/kg
<i>Observation period:</i>	14 days
<i>Method of administration:</i>	gavage; vehicle: arachis oil
<i>Clinical observations:</i>	common signs of toxicity noted in males treated with 100 or 500 mg/g were ataxia, decreased respiratory rate and laboured respiration with additional signs of lethargy; frequent signs of hunched posture with additional signs of splayed gait were also noted in males treated with 100 mg/kg; loss of righting reflex was commonly noted in males

	treated with 500 mg/kg; males treated with 100 mg/kg recovered one or two days after dosing; females treated with 100 mg/kg and males treated with 224 mg/kg appeared normal throughout the study; all surviving animals showed expected bodyweight gain during the study
<i>Mortality:</i>	all animals treated with 500 mg/kg were dead 2 - 4 hours after dosing
<i>Morphological findings:</i>	in males treated with 500 mg/kg that died during the study: haemorrhagic lungs, dark liver and dark kidneys
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>LD₅₀:</i>	334 mg/kg in males
<i>Result:</i>	the notified chemical exhibited moderate acute oral toxicity in rats

9.1.1.2 Toner containing NT-6 (12)

<i>Species/strain:</i>	rat/Sprague Dawley
<i>Number/sex of animals:</i>	5 males/5 females
<i>Observation period:</i>	14 days
<i>Method of administration:</i>	gavage; vehicle: arachis oil
<i>Clinical observations:</i>	none
<i>Mortality:</i>	none
<i>Morphological findings:</i>	none
<i>Test method:</i>	Japanese Ministry of Agriculture, Forestry and Fisheries Testing Guidelines for Toxicology Studies (17)
<i>LD₅₀:</i>	> 5 000 mg/kg
<i>Result:</i>	toner containing the notified chemical exhibited low acute oral toxicity in rats

9.1.2 Dermal Toxicity (8)

<i>Species/strain:</i>	rat/Sprague-Dawley
<i>Number/sex of animals:</i>	5 males, 5 females
<i>Observation period:</i>	14 days
<i>Method of administration:</i>	test material was applied to a shorn area moistened with arachis oil and covered with a semi-occlusive dressing for 24 hours
<i>Clinical observations:</i>	no signs of systemic toxicity
<i>Mortality:</i>	no deaths
<i>Morphological findings:</i>	no abnormalities noted at necropsy and no signs of skin irritation
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>LD₅₀:</i>	> 2 000 mg/kg
<i>Result:</i>	the notified chemical was of low acute dermal toxicity in rats

9.1.3 Skin Irritation (9,13)

9.1.3.1 NT-6 (9)

<i>Species/strain:</i>	rabbit/New Zealand White
<i>Number/sex of animals:</i>	3 males
<i>Observation period:</i>	72 hours
<i>Method of administration:</i>	0.5 g of the notified chemical moistened with 0.6 mL of distilled water under semi-occlusive gauze dressing for 4 hours
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>Result:</i>	observations at 1 hour, 1, 2 and 3 days after patch removal revealed that no animal exhibited oedema; 2 animals at 1 hour and 1 animal at 24 hours exhibited slight erythema; the notified chemical was a slight skin irritant

in rabbits

9.1.3.2 Toner containing NT-6 (13)

<i>Species/strain:</i>	rabbit/New Zealand White
<i>Number/sex of animals:</i>	2 males; 1 female
<i>Observation period:</i>	72 hours
<i>Method of administration:</i>	0.5 g of the notified chemical moistened with 0.5 mL of distilled water under semi-occlusive gauze dressing for 4 hours
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>Result:</i>	observations at 1 hour, 1, 2 and 3 days after patch removal revealed that no animal exhibited oedema; 2 animals at 1 hour and 1 animal at 24 hours exhibited slight erythema; toner containing the notified chemical was a slight skin irritant in rabbits

9.1.4 Eye Irritation (10,14)

9.1.4.1 NT-6 (10)

<i>Species/strain:</i>	rabbit/New Zealand White
<i>Number/sex of animals:</i>	3 females
<i>Observation period:</i>	72 hours
<i>Method of administration:</i>	0.1 mL (vehicle unspecified) of the notified chemical was placed into the conjunctival sac of the right eye of each animal
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>Result:</i>	no corneal or iridal effects were seen; slight conjunctival redness was seen at 1 and 24 hours in 2 animals and at 1 hour in the third animal; slight chemosis was seen in 1 animal 1 hour post-instillation and slight discharge in another animal at the same time point

the notified chemical was a slight eye irritant in rabbits

9.1.4.2 Toner containing NT-6 (14)

<i>Species/strain:</i>	rabbit/New Zealand White
<i>Number/sex of animals:</i>	2 males, 1 female
<i>Observation period:</i>	72 hours
<i>Method of administration:</i>	0.1 mL (vehicle unspecified) of the notified chemical was placed into the conjunctival sac of the right eye of each animal
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>Result:</i>	<p>no corneal or iridal effects were seen; slight conjunctival redness was seen at 1 hour in all animals; slight chemosis was seen in 1 animal 1 hour post-instillation and slight discharge in another animal at the same time point</p> <p>toner containing the notified chemical was a slight eye irritant in rabbits</p>

9.1.5 Skin Sensitisation (11)

<i>Species/strain:</i>	guinea pig/Dunkin Hartley
<i>Number of animals:</i>	20 test and 10 control male animals
<i>Induction procedure:</i>	<p>day 0: intradermal induction was 3 pairs of injections of 0.1 mL consisting of:</p> <ul style="list-style-type: none">- Freund's Complete Adjuvant (FCA) in distilled water (1:1);- a 5% suspension of the notified chemical in arachis oil;- a 5% emulsion of the notified chemical in a 1:1 preparation of FCA and distilled water <p>day 7: occlusive dressing containing 25% notified chemical in arachis oil for 48 hours</p>

Challenge procedure: **day21:**
10% and 25% notified chemical in arachis oil
under occlusive dressing for 24 hours

Challenge outcome:

Challenge concentration	Test animals		Control animals	
	24 hours*	48 hours*	24 hours	48 hours
10%	0/20**	0/20	0/10	0/10
25%	0/20	0/20	0/10	0/10

* time after patch removal

** number of animals exhibiting positive response

Test method: according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)

Result: the notified chemical was not a skin sensitiser in guinea pigs at the concentrations tested

9.2 Repeated Dose Toxicity (18)

Species/strain: rat/Sprague-Dawley

Number/sex of animals: 5/sex/dose

Method of administration: gavage; vehicle: arachis oil

Dose/Study duration:: 0, 15, 50 or 150 mg/kg/day (control, low, mid or high dose, respectively)

Clinical observations: transient increased salivation after day 9 in the high dose group; no effects on bodyweight or food consumption

Clinical chemistry/Haematology: no treatment-related changes observed; some individual high dose males exhibited reductions in total plasma protein, albumin and an increase in bilirubin but the group means were not statistically significant; some non-dose-related effects were increased alanine aminotransferase levels in low dose males, increased urea concentration in mid dose females and a reduction in blood glucose for low and mid dose females

a slight increase in leucocyte count in high dose males and a decrease in clotting time in mid dose females were judged not to be of toxicological significance

*Necropsy findings/
Histopathology:*

high dose males exhibited increased liver weights and one male exhibited a substantially elevated kidney weight; seven high dose animals showed dark livers and one male exhibited enlarged kidneys with a granular appearance

no microscopic abnormalities were detected

Test method:

according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 67/548/EEC (16)

Result:

the notified chemical causes minor toxicologically significant changes in the liver at a dose level of 150 mg/kg/day for 28 days

9.3 Genotoxicity

9.3.1 *Salmonella typhimurium* Reverse Mutation Assay (19)

Strains: TA 1535, TA 1537, TA 1538, TA 98 and TA 100

Concentration range: 50 - 5 000 µg/plate

Test method: according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)

Result: the notified chemical was not found to be mutagenic in *S. typhimurium* in the presence or absence of an exogenous metabolising system (rat liver S9 fraction)

9.3.2 Micronucleus Assay in the Bone Marrow Cells of the Mouse (20)

Species/strain: mouse/CD-1

Number and sex of animals: 5/sex/time point

Doses: 250 mg/kg; bone marrow sampled at 24, 48 and 72 hours

<i>Method of administration:</i>	intraperitoneal
<i>Test method:</i>	OECD Guidelines for Testing of Chemicals (15)
<i>Result:</i>	no significant increase in micronucleated polychromatic erythrocytes compared to controls; premature deaths in the 48 and 72 hour dose groups indicated systemic absorption

9.3.3 Chromosomal Aberrations in human lymphocytes *in vitro* (21)

<i>Doses:</i>	<p>experiment 1 20 hour incubation in 0, 4.88 (-S9 alone), 9.75, 19.5 and 39 (+S9 alone) µg/mL</p> <p>experiment 2 20 hour incubation in 0, 10, 20, 30, 40 µg/mL (-S9) and 0, 20, 40, 60 µg/mL (+S9) 44 hour incubation in 0, 30, 40 (+S9 alone) µg/mL</p>
<i>Test method:</i>	according to OECD Guidelines for Testing of Chemicals (15) and Commission Directive 92/69/EEC (16)
<i>Result:</i>	no significant increase in the frequency of cells with chromosomal aberrations or polyploid cells in either the presence or absence of an exogenous metabolising system (rat liver S9 fraction)

9.4 Overall Assessment of Toxicological Data

The notified chemical was of moderate acute oral toxicity in rats (LD₅₀ = 334 mg/kg in rats) and low acute dermal toxicity in rats (LD₅₀ > 2 000 mg/kg). It was a slight skin and eye irritant in rabbits and was not a skin sensitiser in guinea pigs. Repeated oral dosing for 28 days with 150 mg/kg caused minor hepatic changes. The notified chemical was not mutagenic in *S. typhimurium* in the presence or absence of metabolic activation was not clastogenic in the mouse micronucleus assay or in the lack of induction of chromosomal aberrations in human lymphocytes.

Toner containing the notified chemical was of low acute oral toxicity in rats (LD₅₀ > 5 000 mg/kg) and was not a skin or an eye irritant in rabbits.

The notified chemical would be classified as hazardous according to the Approved Criteria in relation to acute lethal effects (oral route) but not in relation to the other toxicological data supplied. The toner containing the

notified chemical also would not be classified as hazardous in relation to a more limited toxicological dataset.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

The following tables present the results of ecotoxicity studies supplied by the notifier using the notified chemical (NT-6) and using the toner containing the notified chemical. The tests were carried out to OECD Test Methods.

Ecotoxicity Test Results - Notified Chemical (NT-6)

Test	Species	Results (Actual)
Acute Toxicity - Semi-static ^(a) (OECD TG: 203)	Rainbow Trout (<i>Oncorhynchus mykiss</i>)	96 hr LC ₅₀ 0.95 mg/L NOEC 0.40 mg/L
Acute Toxicity (Immobilisation) - Static ^(a) (OECD TG: 202)	Water flea (<i>Daphnia magna</i>)	48 hr EC ₅₀ 0.79 mg/L NOEC 0.40 mg/L
Acute Toxicity (Reproduction) - Semi-static ^(a) (OECD TG: 202)	Water flea (<i>Daphnia magna</i>)	<u>Immobilisation</u> 21 day EC ₅₀ 0.47 mg/L LOEC 0.25 mg/L NOEC 0.080 mg/L <u>Reproduction</u> NOEC 0.25 mg/L
Inhibition - Biomass (b) and Growth Rate (μ) (OECD TG: 201)	Algae (<i>Scenedesmus subspicatus</i>)	72 hr E _b C ₅₀ > 4.0 mg/L ^(b) 24 hr E _μ C ₅₀ > 4.0 mg/L NOEC > 4.0 mg/L

a. The test material was prepared using a preliminary solution in 9% v/v TWEEN 80-tetrahydrofuran.

b. 4.0 mg/L was the highest attainable test concentration that could be prepared due to limited solubility in water and auxiliary solvent (9% v/v TWEEN 80-tetrahydrofuran).

Ecotoxicity Test Results - Toner Containing Notified Chemical

Test	Species	Results (Actual)
Acute Toxicity - Semi-static (OECD TG: 203)	Rainbow Trout (<i>Oncorhynchus mykiss</i>)	96 hr LC ₅₀ > 1.0 mg/L ^(a) NOEC ≥ 1.0 mg/L
Acute Toxicity (Immobilisation) - Static (OECD TG: 202)	Water flea (<i>Daphnia magna</i>)	48 hr EC ₅₀ > 1.0 mg/L ^(a) NOEC ≥ 1.0 mg/L

a. The test material was prepared using a preliminary solution in dimethylformamide. 1.0 mg/L was the maximum attainable test concentration.

The ecotoxicity data show the notified chemical to be highly toxic to both the rainbow trout and water flea. Fish deaths were first recorded at 1.3 mg/L at 48 hours, with

behavioural responses first noted at 0.70 mg/L at 72 hours (*ie* increased pigmentation). Immobilisation of water fleas was first noted at 0.70 mg/L at 24 hours, with 100% immobilisation noted at 2.2 mg/L at 24 hours.

In the 21 day water flea study, mortality of a significant number of water fleas occurred in the 0.25 mg/L test group (23% immobilisation). This indicates that there is a prolonged toxic effect to water fleas to the notified chemical. At 21 days there were no statistically significant differences between the controls and test groups (number of young produced per adult) up to 0.25 mg/L. Exposure to the notified chemical at 0.80 mg/L resulted in significant impairment of reproduction.

Algae inhibition tests show that the chemical can be classed as non-toxic up to the limits of its solubility. Neither the growth rate (μ) or biomass (*b*) of the algae were affected by the presence of 4.0 mg/L of the test material over the 72 hour exposure period.

The toner (containing the notified chemical at a concentration < 8%) can be classed as non-toxic to the rainbow trout and water flea up to the limits of its solubility (1.0 mg/L).

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The majority of notified chemical should not enter the environment until it is incorporated into a polymer matrix when the toner is heat-cured and fixed to paper. Environmental exposure and the overall environmental hazard should be negligible.

Disposal of the waste paper containing the toner is normally through landfill, incineration or recycling. In landfill the toner (and thus notified chemical) should remain fixed to the paper substrate and remain immobile. Incineration products of the notified chemical should not produce an environmental hazard. After the recycling process, the toner will either remain bound to the pulp or become associated with sludge. In the latter case, the final destination is likely to be landfill where the toner can be expected to persist but remain immobile, remaining bound to the sludge. Should the toner enter the aquatic compartment, ecotoxicity tests show that it is non-toxic to fish and invertebrates up to the limits of its solubility. Therefore, the environmental hazard through this exposure is expected to be negligible.

Accidental spillage of the chemical, either during replacement of cartridges or during transport, should result in powder wastes being sent to either landfill or incineration facilities. Spent cartridges (not sent for recycling) and bottles containing residues of toner are likely to be sent to landfill. Assuming only cartridges are imported, a maximum of 1.5 tonnes of the notified chemical could be sent to landfill at maximum import quantities. However, the notifier has indicated that there is a printer-cartridge recycling programme in Australia in which the used cartridges, once collected, are sent overseas for recycling and re-use. Further, as a significant quantity of the notified chemical will be imported in toner bottles, which have considerably less residue than the cartridges, actual disposal volumes of toner, and thus notified chemical, will be significantly less.

Due to the chemical's moderate water solubility and expected mobility in soils,

movement of the chemical from landfill is possible and therefore could present an environmental hazard. However, the amount of notified chemical sent to landfill is likely to be minimal, with the majority contained within the toner bottles and cartridges, and disposed of to landfills throughout Australia. Any notified chemical leaching from landfills and entering the aquatic compartment is likely to be diffuse and at concentrations not likely to pose significant environmental effects.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

Based on the toxicological data supplied, the notified chemical may be moderately toxic and would be classified as harmful in relation to acute oral toxicity according to the Approved Criteria (1). However, it would not be classified as hazardous in relation to the other toxicological endpoints studied - acute dermal toxicity, skin and eye irritancy, skin sensitisation, subchronic toxicity and genotoxicity. Since the notified chemical is to be imported at a concentration of less than 8% in toner, the toner itself would not be classified as hazardous according to the Approved Criteria (1). This was borne out by the more limited toxicological dataset for the toner with regard to acute oral toxicity and skin and eye irritancy.

The opportunity for exposure to the notified chemical for office workers changing the plastic bottles or cartridges in photocopiers or printers is expected to be minimal. Exposure may occur if toner is spilt or if the seal tape which seals the toner containers is mishandled. Maintenance workers may have increased opportunity for exposure to toner but the level of exposure is still expected to be low.

Exposure of the general public will most likely be to toner on printed or copied pages but this exposure is expected to be minimal in view of the fact that it is bound strongly.

The risk of adverse health effects to workers or the public arising from the transport, storage, use or disposal of the notified chemical is expected to be negligible

13. RECOMMENDATIONS

To minimise occupational exposure to notified chemical the following guidelines and precautions should be observed:

- Spillage of toner containing the notified chemical should be avoided, spillages should be cleaned up promptly and should then be put into containers for disposal or recycling; when removing tapes used to seal toner cartridges dermal exposure to the toner should be avoided;
- Good personal hygiene should be practised to minimise the potential for ingestion;
- A copy of the relevant MSDS should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The MSDS for toner containing the notified chemical was provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (22).

This MSDS was provided by the applicant as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of the applicant.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the Act, secondary notification of the notified chemical shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

16. REFERENCES

1. National Occupational Health and Safety Commission 1994, *Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)]*, Australian Government Publishing Service, Canberra.
2. National Occupational Health and Safety Commission 1994, *National Model Regulations for the Control of Workplace Hazardous Substances [NOHSC:1005(1994)]*, Australian Government Publishing Service, Canberra.
3. European Economic Community (EEC), EEC Directive 92/69, Annex V, Part A, *Methods for the determination of physico-chemical properties*, A.5 "Surface Tension" EEC Publication No. L383. December 1992.
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¹ this includes Commission Directive 67/548/EEC