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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

PF-310

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT

PF-310

1. APPLICANT

Lanier (Australia) Pty Ltd of 854 Lorimer Street, PORT MELBOUNE VIC 3207 has submitted a limited notification statement in support of their application for an assessment certificate for the chemical PF-310.

2. IDENTITY OF THE CHEMICAL

PF-310 is at least severely irritating to the eye, however the notified chemical is imported as a minor constituent (<1%) of a formulated product which is not itself, hazardous according to National Occupational health and Safety Commission's *Approved Criteria for Classifying Hazardous Substances* (1). Therefore the chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data, details of the composition and details of exact import volume have been exempted from publication in the Full Public Report and the Summary Report.

Trade Name:	PF-310
Other Name:	Lanier Toner
Molecular Weight:	< 1 000
Method of Detection and Determination:	identity by ultra-violet/visible (UV/Vis), infrared (IR) and nuclear magnetic resonance (^{1}H NMR) spectroscopy; assay by high performance liquid chromatography (HPLC)

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	light yellow powder; no appreciable odour
Melting Point:	> 400°C but decomposes at 180^{o}C
Specific Gravity:	1 780 kg.m^{-3}

Vapour Pressure:	0.012 kPa at 25°C
Water Solubility:	250 $mg.L^{-1}$ at 20°C
Fat Solubility:	1.19 $mg.100\ g^{-1}$ of standard fat HB 307 at 37°C
Partition Co-efficient (n-octanol/water):	log P_{ow} = 2.3 (estimated)
Hydrolysis as a Function of pH:	at pH 7 the chemical is hydrolytically stable; at pH 4 and 9 at 50°Cafter 144 hours the concentration of the notified chemical is decreased by about 30%.
Adsorption/Desorption:	not determined
Dissociation Constant:	pK_a of 4.08 at 20°C
Surface Activity:	21.4 $mN.m^{-1}$ at 20°C (saturated solution)
Flash Point:	could not be ignited
Flammability Limits:	not flammable
Autoignition Temperature:	not auto-flammable
Explosive Properties:	not explosive under the influence of flame, shock or friction
Reactivity/Stability:	has no oxidising properties
Decomposition Temperature:	> 180°C

Comments on Physico-Chemical Properties

Tests were performed according to OECD test guidelines (2) at facilities complying with OECD Principles of Good Laboratory Practice.

The compound began to decompose without melting at a temperature of 180°C.

The vapour pressure of 0.012 kPa is larger than expected for an ionic compound (atmospheric pressure 0.101 kPa). The notifier comments that this is due to the volatility of the impurities.

The ionic nature of the quaternary amine head group confers some water solubility on the compound, but this is mitigated by other moieties. Nevertheless, at 250 $mg.L^{-1}$ water solubility is appreciable.

Some of the linkages would be susceptible to hydrolysis under extreme environmental pH conditions, but is unlikely to react (ie be cleaved) under ambient conditions where the pH ranges between 4 and 9. The chemical is surface active (see below), and consequently the n-octanol/water partition coefficient was determined using OECD TG 207. This involves taking the ratio of the measured solubility of the material in n-octanol over that in water determined at the same temperature. The measured log P_{ow} of 2.3 indicates a modest tendency for partitioning into the oil phase.

Technical difficulties precluded the determination of K_{oc}, but the modest water solubility and relatively small value of P_{ow} indicate the compound would have little tendency for association with the organic component of soils and sediments. The chemical contains both a polar head group and a reasonably large hydrophobic (in this case a fluorocarbon) group, and would be expected to have surfactant like properties and be surface active. The measured surface tension of the saturated water solution is very low at 21.4 $mN.m^{-1}$, which is indicative of a strongly surface active species.

4. PURITY OF THE CHEMICAL

Degree of Purity: 99.2%

Toxic or Hazardous Impurities: none known

5. USE, VOLUME AND FORMULATION

The notified chemical will not be manufactured in Australia and will be imported as a component of photocopier toners at a concentration of less than 1%.

Less than 20 kg of the notified chemical will be imported annually for each of the first five years.

6. OCCUPATIONAL EXPOSURE

The notified chemical will be imported into Australia as a minor component of photocopier toners and developers in ready to sell packages. Formulated products contain less than 1% of PF-310.

The main category of workers potentially exposed to the formulated products containing PF-310 are photocopier service engineers who will be involved in the installation and maintenance of dry photocopiers. Approximately 90 service engineers will be involved in these tasks in Australia and will be servicing many machines on a daily basis. Additionally, office workers who add toner to photocopiers and workers involved in full time photocopying and machine upkeep may also be exposed to the notified chemical.

The total number of employees exposed to formulated products containing the notified chemical cannot be specified with any great certainty, as this will depend on the number of machines used (which is dependent on market share) and the amount of photocopying carried out on each individual machine. Formulated products containing the notified chemical are contained in cartridges or plastic bottles thus minimising direct contact with the chemical.

7. PUBLIC EXPOSURE

The potential for public exposure to PF-310 is anticipated to be low. The notified chemical is present in photocopier products at a low concentration (<1%), and public exposure may arise through contact with dust particles during maintenance of the photocopiers or through contact with the cured toner on photocopied paper. These are not regarded to be significant as in most cases (except for people employed for photocopying) the process of photocopying is carried out infrequently and the packaging of the product in cartridges and plastic bottles will markedly reduce exposure potential. The cured toner is bound strongly to the paper, and the notified chemical is not expected to be dermally absorbed.

The notified chemical and products containing the notified chemical will be disposed of as domestic waste. In view of the low import volume and packaging in plastic cartridges or bottles, public exposure from disposal or accidental spills during transport is expected to be negligible. Spills will be collected and disposed of as industrial or chemical waste to landfill or by incineration according to State reguations as indicated in the Material Safety Data Sheet (MSDS).

8. ENVIRONMENTAL EXPOSURE

Release

There are two principal pathways of release of the notified substance into the environment. Firstly, residual unused toner (i.e. that remaining in the spent cartridges after most of the material has been used) will be disposed of as office waste and will be either incinerated or disposed of to landfill. In the normal course of usage, this should be minimal, since it is expected that a maximum of 30 g of toner product (ie 10 %) would remain in the spent cartridges, and since the notified chemical constitutes only 1% of the product it is estimated that each spent cartridge, this has the potential to contribute around 0.3 g of the notified compound to the environment via this route. It is anticipated that the spent toner cartridges would be disposed of into landfill. However, release of the residual toner should occur only after destruction of the integrity of the cartridge.

In normal use the product will be incorporated into a thermo-cured resin (ie the print) and firmly bound to the paper substrate, and hence would be released to the environment through disposal of the waste paper. The anticipated fate of the material would be associated with that of the paper, and is described below.

Fate

The majority of the notified chemical PF-310 will be associated with the print and bound strongly to paper. Waste paper disposal is effected either through high temperature incineration, recycling or deposition into landfill.

High temperature incineration would destroy the compound with evolution of oxides of carbon and nitrogen, together with release of low molecular weight fluorocarbon compounds, and possibly hydrogen fluoride. Similarly, it is expected that during the extensive repulping and bleaching procedures implied by paper recycling the material would be either destroyed chemically or be incorporated into waste sludge. Given that the compound has low but nevertheless appreciable water solubility, it is possible that some of the notified chemical could also partition into aqueous waste streams generated during recycling. Waste sludge from the recycling plants would be either incinerated or disposed of to landfill. The aqueous waste would be comprehensively treated prior to discharge, but it is unlikely this would degrade the fluorocarbon portion (3) and this portion would be discharged with the plant effluent.

Some waste paper may be disposed of directly to landfill, and although only slowly hydrolysable and not readily bio-degradable (see below), it is anticipated that prolonged residence in an active landfill environment would eventually degrade the notified substance, again producing the usual landfill gases together with lower molecular weight volatile fluorocarbon compounds, the fate of which would be as described above.

Aqueous leachate from a landfill could conceivably contain low concentrations of non-degraded compound, which would be received into the wider environmental water compartment. Although the chemical is moderately toxic to aquatic life (see further below) it would be released at very low concentration, and is not expected to have a large detrimental effects on the environment. The same considerations will apply to effluent discharged (after treatment) from paper recycling facilities.

The material is not readily biodegradable, and when subjected to a modified Sturm test (OECD No 301B), biodegradation occurred with10 mg. L^{-1} (20%) and 20 mg. L^{-1} (35%) over a 28-day period, and it is probable that the degradation which does take place is confined to that part of the molecule not containing the fluorocarbon moiety (3). Under the stringent conditions of this test, the substance cannot be classed as readily biodegradable, and it is likely that the fluorocarbon portion will be persistent.

The chemical has a relatively high molecular weight (794.3 $g.mol^{-1}$), reasonable water solubility, low fat solubility and the low P_{ow} indicates little potential for bioaccumulation.

9. EVALUATION OF TOXICOLOGICAL DATA

Under the *Industrial Chemicals (Notification and Assessment) Act*, 1989 toxicity data are not required for chemicals manufactured or imported in volumes less than 1 tonne per year. However, the following studies were provided and are evaluated below:

9.1 Acute Toxicity

Summary of the acute toxicity of

Test	*Species*	*Outcome*	*Reference*
acute oral toxicity	rat	LD_{50} > 5 000 $mg.kg^{-1}$	(4)
acute dermal toxicity	rat	LD_{50} > 2 000 $mg.kg^{-1}$	(5)
skin irritation	rabbit	non-irritant	(6)
eye irritation	rabbit	severely irritating	(7)
skin sensitisation	guinea pig	non-sensitising	(8)

9.1.1 Oral Toxicity (4)

Species/strain:	rat/Wistar (albino)
Number/sex of animals:	5/sex
Observation period:	15 days
Method of administration:	gavage; 5 000 $mg.kg^{-1}$ of the test substance was administered in distilled water
Clinical observations:	rough coat was shown by all males on days 1 and 2; no other signs of ill health or behavioural changes were observed
Mortality:	none
Morphological findings:	none
Test method:	similar to OECD Guidelines (2)
LD_{50}:	> 5 000 $mg.kg^{-1}$
Result:	the notified chemical was of low acute toxicity to rats when administered orally in a limit test

9.1.2 Dermal Toxicity (5)

Species/strain:	rat/Wistar (albino)
Number/sex of animals:	5/sex
Observation period:	14 days
Method of administration:	a dose of 2 000 $mg.kg^{-1}$ was applied in distilled water to a shaved skin site; the site was covered with an occlusive dressing; after 24 hours the dressing and residual test article were removed
Clinical observations:	lethargy was noted in three males on days 1 and 2; no other signs of ill health or behavioural changes were observed; erythema was observed at the site of application in two females from day 5 onwards; one of these females showed scales on the treated area between days 7 and 9
Mortality:	none
Morphological findings:	none
Test method:	similar to OECD Guidelines (2)
LD_{50}*:*	> 2 000 $mg.kg^{-1}$
Result:	the notified chemical was of low acute toxicity to rats when administered dermally in a limit test

9.1.4 Skin Irritation (6)

Species/strain:	rabbit/New Zealand White
Number/sex of animals:	3/female
Observation period:	72 hours
Method of administration:	500 mg of the notified chemical (moistened with distilled water), applied to an intact dorsal skin site under semi-occlusive dressing for 4 hours; after removal of the dressing the remaining test substance was

	removed using a tissue moistened with water; observations made at 1 hour, 24, 48 and 72 hours after removal of dressing and scored according to the method of Draize (9)
Draize scores (9)	yellow staining of the treated skin by the test substance was observed; very slight erythema was observed in 2/3 animals and slight oedema in one animal at the end of 1 hour; the skin irritation was reversed within 24 hours after exposure in all three animals; no symptoms of systemic toxicity were observed in the animals during the test period and no mortality occurred
Test method:	similar to OECD Guidelines (2)
Result:	the notified chemical showed signs of slight transient skin irritation in rabbits, but would not be classified as an irritant in this species

9.1.5 Eye Irritation (7)

Species/strain:	rabbit/New Zealand White
Number/sex of animals:	3/female
Observation period:	22 days
Method of administration:	100 mg of the notified chemical was instilled into the conjunctival sac of one eye of each animal; untreated eye served as control
Comments:	corneal, iridial and conjunctival effects were noted one hour after instillation; corneal and conjuntival effects persisted in all animals 21 days after treatment, one animal showed iridial effects after this period
Test method:	similar to OECD Guidelines No: 405 (2)

Draize scores (9) of unirrigated eyes:

	Time after instillation														
Animal	**1 day**			**2 days**			**3 days**			**7 days**			**14 days**		
Cornea	**o[a]**	**a[b]**		**o[a]**	**a[b]**		**o[a]**	**a[b]**		**o[a]**	**a[b]**		**o[a]**	**a[b]**	
1	1	3		1	4		2	1		2	1		2	1	
2	2	4		2	4		2	3		2	3		3	1	
3	2	1		3	1		3	1		3	1		3	1	
Iris															
1	1			1			1			1			1		
2	1			1			1			1			1		
3	1			1			1			1			1		
Conjunctiva	**r[c]**	**c[d]**	**d[e]**	**r[c]**	**c[d]**	**d[e]**	**r[c]**	**c[d]**	**d[e]**	**r[c]**	**c[d]**	**d[e]**	**r[c]**	**c[d]**	**d[e]**
1	2	3	2	3	2	2	3	1	2	3	1	2	2	1	0
2	2	4	3	2	4	3	3	3	3	3	2	3	3	1	2
3	2	3	2	3	3	3	3	3	3	3	2	3	3	2	2

[1] see Attachment 1 for Draize scales
[a] opacity [b] area [c] redness [d] chemosis [e] discharge

Result: the notified chemical was at least severely irritating to the rabbit eye; the damage to the cornea might not be reversible

9.1.6 Skin Sensitisation (8)

Species/strain: guinea pig/Himalayan (albino)

Number of animals: 35/female; 20 test, 10 control, 5 irritation test

Induction procedure:

Day 0: three pairs of intradermal injections
- 0.1 mL of test substance dissolved to 2.5% (w/w) with physiological saline
- 0.1 mL Freund's Complete Adjuvant (FCA); 50:50 with distilled water
- 0.1 mL 5% concentration of test substance emulsified in a 50:50 mixture of Freund's Complete Adjuvant

Day 7: test area treated with 10% sodium dodecyl sulphate (SDS) in petrolatum

Day 8: occluded application of 0.5 mL test

material (50% distilled water) for 48 hours

Challenge procedure: Day 22:occluded application of 0.05 mL at concentrations of 50%, 25% and 10% in distilled water; challenge sites were evaluated 24 and 48 hours after removal of patches

Challenge outcome:

	Test animals		***Control animals***	
Challenge concentration	***24 hours****	***48 hours****	***24 hours***	***48 hours***
50%	1/20**	4/20	0/10	0/10
25%	0/20	0/20	0/10	0/10
10%	0/20	0/20	0/10	0/10

* time after patch removal
** number of animals exhibiting positive response

Test method: similar to OECD Guidelines (2)

Result: the notified chemical has mild sensitising properties in guinea pigs

9.2 Repeated Dose Toxicity (10)

Species/strain: rat/Wistar

Number/sex of animals: 20/sex

Method of administration: gavage; vehicle was distilled water

Dose/Study duration: dose levels were based on the results of a five day range finding study

test material administered daily for a total of 28 days:

control: 0 $mg.kg^{-1}.day^{-1}$
low dose: 50 $mg.kg^{-1}.day^{-1}$
mid dose: 200 $mg.kg^{-1}.day^{-1}$
high dose: 1 000 $mg.kg^{-1}.day^{-1}$

all animals were sacrificed at the end of the treatment period

Clinical observations:	a swollen appearance of the abdomen was seen in all animals receiving 1 000 mg.kg^{-1}.day^{-1} from week 3 of treatment until termination; excessive salivation was noted in more than 75% of the animals receiving this dose; the body weights and food consumption of animals in this group were lower than controls over the four week treatment period; two males and one female developed rales and laboured breathing in rats dosed with 200 mg.kg^{-1}.day^{-1}, excessive salivation was seen in 25% of the animals from day 9 onwards; rales and laboured breathing was noted in one male and one female; body weights and food consumption for animals receiving 200 mg.kg^{-1}.day^{-1} were similar to controls no treatment related effects were noted in animals receiving 50 mg.kg^{-1}.day^{-1}
Clinical chemistry/Haematology	haematological and clinical parameters of treated rats did not show any difference from those of control rats
Histopathology:	macroscopic examination showed enlargement of the caecum, colon or the whole gastro-intestinal tract in all animals receiving 1 000 mg.kg^{-1}.day^{-1}; other findings in this group were pale kidneys, alopecia and a grey-white nodule in the fore-stomach; these findings were noted incidentally and not considered to exceed normal incidences of background variation; absolute and relative organ weights of treated animals were in the same range as controls rats dosed at 1 000 mg.kg^{-1}.day^{-1} with enlarged caecum showed no histopathological lesions, however, one male rat had an inflammatory reaction in the caecum and colon; no microscopic changes were seen in animals receiving 200 or 50 mg.kg^{-1}.day^{-1}
Test method:	similar to OECD Guidelines (2)

Result:	some minor findings (low body weight, reduced food consumption, macroscopic findings in the gastro-intestinal tract were observed in the high dose group of 1000 $mg.kg^{-1}day^{-1}$

9.3 Genotoxicity

9.3.1 *Salmonella typhimurium* Reverse Mutation Assay (11)

Strains:	TA 1535, TA 1537, TA 98 and TA 100
Concentration range:	with S9-mix: 3.3 - 200 µg per plate without S9-mix: 1.0 - 100 µg per plate
Test method:	similar to OECD Guidelines (2)
Result:	the notified chemical was not toxic towards the tester strains at 100 µg per plate in the absence of S9-mix and 200 µg/plate in the presence of S9-mix; there were no significant increases in revertant colony numbers at any dose level either in the presence or absence of metabolic activation (rat liver S9 fraction); the notified chemical is not considered mutagenic in bacteria

9.3.2 *In vitro* Mammalian Cytogenetic Test - Human Lymphocytes (12)

Species/strain:	cultured human lymphocytes
Doses:	10, 33, 100 and 333 $\mu g.mL^{-1}$
Test method:	similar to OECD Guidelines (2)
Result:	in either the absence or presence of S9-mix, there were no induced chromosomal aberrations at fixation intervals of 24 and 48 hours; the notified chemical did not show any evidence of clastogenic activity in a chromosomal aberration test in human lymphocytes *in vitro*

9.4 Overall Assessment of Toxicological Data

The notified chemical exhibited low acute toxicity in rats by oral (LD_{50} > 5 000 $mg.kg^{-1}$) or dermal (LD_{50} > 5 000 $mg.kg^{-1}$) administration.

The notified chemical was found to be at least, severely irritating to the eye in rabbits. Considering the progress of the corneal opacity observed during the study, the damage to the cornea might not be reversible. This may indicate that PF-310 has corrosive potential to the rabbit eye. The chemical was a slight skin irritant in rabbits and showed mild skin sensitisation in guinea pigs at low levels of induction.

In a 28-day repeated oral dose study in rats, administration of the notified chemical at a dose level of 1 000 $mg.kg^{-1}.day^{-1}$ was associated with low body weight, reduced food consumption, swollen appearance of the abdominal area, rales, laboured breathing and excessive salivation. There were no significant haematological changes. The target organ for toxicity was the gastro-intestinal tract.

The notified chemical was found not to be mutagenic by bacterial reverse mutation assay or genotoxic by chromosomal aberration assay in cultured human lymphocytes *in vitro*. No *in vivo* studies were performed.

The notified chemical would be classified as hazardous according to National Occupational Health and Safety Commission's *Approved Criteria for Classifying Hazardous Substances* (Approved Criteria) in relation to serious eye effects but not in relation to the other toxicological data supplied. However, as the notified chemical will be imported as a minor ingredient (less than 1%) of photocopier products (which are not hazardous according to the Approved Criteria), photocopier toners and developers would not be classified as hazardous.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

Ecotoxicological data are not required for chemicals with import volumes less than one tonne per year according to the Act. However, the notifier supplied the following studies, summarised below. The studies were carried out to OECD and to U.S. EPA Guidelines.

Test	Species	Results (see notes below)
Acute Toxicity (OECD TG 203)	Carp *Cyprinus carpinio*	LC_{50} (24 h) =2.4 $mg.L^{-1}$ LC_{50} (96 h) =1.9 $mg.L^{-1}$
Acute Immobilisation (OECD TG 202)	*Daphnia magna*	EC_{50} (24 h) =7.94 $mg.L^{-1}$ EC_{50} (48 h) =4.35 $mg.L^{-1}$ NOEC (48 h) =3.2 $mg.L^{-1}$
Algal Growth Inhibition (OECD TG 201)	Algae *Pseudokirchneriella subcapitata*[1]	E_bC_{50} (96 h) = 0.23 $mg.L^{-1}$ LOEC (96 h) = 0.078 $mg.L^{-1}$ NOEC (96 h) = 0.008 $mg.L^{-1}$
Respiration Inhibition (OECD TG 209)	Aerobic Waste Water Bacteria	EC_{50} (0.5 h) = 43.5 $mg.L^{-1}$

* NOEC - no observable effect concentration; [1]synonymous with *Selenastrum capricornutum*

Toxicological analyses for fish (carp) were conducted in accordance with OECD Test Guideline (2) using semi-static conditions. The fish results are based on measured concentrations taken at the end of the test period. There was 100% mortality after 96 hours exposure at 3.2 $mg.L^{-1}$, while 30 % mortality had occurred after 96 hour exposure to 1.8 $mg.L^{-1}$ of the test substance. The surviving fish also demonstrated hyperactivity and loss of equilibrium. The solutions used in the tests were clear and free of precipitate, although some solutions (5.6 and 10 $mg.L^{-1}$) were foamy, a consequence of the surface active nature of the test compound.

The immobilisation tests on daphnia and the growth inhibition tests on algae (*Pseudokirchneriella subcapitata*) were conducted under static conditions in accordance with OECD Test Guidelines 202 and 201, respectively (2). For both tests the reported results are nominal (as opposed to measured) concentrations.

The tests on respiration inhibition were conducted with solutions containing nominal concentrations of the test material between 3.2 and 100 $mg.L^{-1}$, with the measurements of oxygen respiration rate begun after 30 minutes of constant aeration. The EC_{50} of the reference substance (3,5-dichlorophenol) was determined as 13.1 $mg.L^{-1}$.

These ecotoxicity tests indicate the notified chemical to be moderately toxic to fish and aquatic invertebrates (daphnia) and highly toxic to algae. The toxicity probably resides in the quaternary amine group of the molecule (13).

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

Although the notified chemical is moderately toxic to fish and daphnia, and apparently highly toxic to algae, the very small quantities likely to be released and the diffuse release pattern indicates a low hazard to the environment. In the event of accidental spillage or release of the toner, the clean up operation would

probably entail disposal to landfill. The “long term” fate of the majority of the notified material is expected to be either through paper recycling, landfill disposal or incineration of waste paper. In all three cases it is anticipated that the material would be destroyed either through the agency of a vigorous chemical environment or through (admittedly slow) biological or abiotic processes. Even in the absence of substantial degradation, the relatively low usage rate and diffuse nature of disposal patterns would indicate very slow release into the wider environment, and this at low concentrations.

Part of the molecule is likely to be persistent, but it is expected that this would eventually partition into the atmosphere where it would be converted to water soluble species, and be precipitated in rain water.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

PF-310 will be imported in low volumes as an ingredient (< 1% concentration) in formulated photocopier products. The main occupational exposure to PF-310 is likely to be skin and eye contact. Based on the results of the animal studies, the notified chemical has a low acute oral and dermal toxicity. PF-310 is not a skin irritant, but it is strongly irritating to eyes, posing a risk of serious damage to eyes when tested in an undiluted form. However, as the notified chemical is imported as a minor constituent of formulated products, it is not expected to be a risk to human health.

Exposure of workers to the notified chemical during importation, warehousing and handling of containers is likely to occur only in the event of an accident.

Exposure of service engineers and office workers to photocopier toner containing the notified chemical is expected to be low given the time taken to change the toner cartridge. Accidental spills during this operation are expected to be infrequent. There may be some exposure to toner during cleaning of the machine and machine maintenance but this can be easily avoided by the use of disposable plastic gloves.

Exposure of the general public will most likely be to toner on copied pages. This exposure is expected to be minimal in view of the fact that the toner (containing the notified chemical) is bound strongly to the paper. The chemical becomes fixed in the cured toner. Public exposure to toner (not bound to paper) is expected to be minimal as the product is contained in cartridges or bottles.

13. RECOMMENDATIONS

To minimise occupational exposure to PF-310 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; should exposure occur, the toner should be removed immediately by washing;
- Good personal hygiene should be practised to minimise the potential for ingestion;
- A copy of the relevant Material Safety Data Sheet should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The MSDS for the notified chemical was provided in accordance with the *National Code of Practice for the Preparation of Material Safety Data Sheets* (14).

This MSDS was provided by the applicant as part of the 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

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