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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

REACTIVE RED 7520 FAT 40508/A

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act 1989,* 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 Human Services and Health.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the hours of 10.00 a.m. and 12.00 noon and 2.00 p.m. and 4.00 p.m. each week day except on public holidays.

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT

REACTIVE RED 7520 FAT 40508/A

1. APPLICANT

Ciba-Geigy Australia Pty Ltd of 235 Settlement Road, Thomastown, Victoria 3074 has submitted a standard notification statement for an assessment certificate for Reactive Red 7520 Fat 40508/A.

2. IDENTITY OF THE CHEMICAL

Reactive Red 7520 FAT 40508/A has been classified as hazardous by Worksafe Australia due to its skin sensitisation properties. However. for commercial reasons, the chemical identity, chemical composition, methods of detection and determination, and spectral data have been granted exemption from publication in the Full Public Report and Summary Report. The conditions of this being permitted are:

- A descriptive generic name be used to identify the substance in public reports and the MSDS,
- The relevant employee unions shall be informed of the conditions of use of , Reactive Red 7520 FAT 40508/A
- The full chemical name shall be provided to any health professionals in the case of a legitimate need where exposure to the chemical may involve a health risk,
- The full chemical name shall be provided to those on site who are using the chemical and to those who are involved in planning for safe use, etc. in the case of a legitimate need,
- The Director of NICNAS will release the full chemical name etc in the case of a request from a medical practitioner,
- Confidentiality will expire after a 3 year period,
- The chemical be identified as a sensitiser in the Health Effects Section of the MSDS, and that reference to its assessment by NICNAS be made on the MSDS,
- These conditions shall be published in the Chemical Gazette.

Other names: Reactive Red 7520 FAT 40508/A (contains 50.7% notified chemical)

Molecular weight: 1030.98

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Dark red powder
Melting Point:	> 300°C
Density:	1850 kg/m^3
Vapour Pressure:	< 4 x 10^{-10} kPa at 20°C (extrapolated) and < 9 x 10^{-10} kPa at 25°C (extrapolated) mm Hg
Water Solubility:	86.3 g/L at 20°C
Surface Tension (of aqueous solution):	33.6 - 34.3 mN/m solutions of 10 g/L 49.7 - 49.9 mN/m solutions of 1.0 g/L 70.0 - 71.7 mN/m solutions of 0.1 g/L
Fat Solubility:	≤ 0.04 mg/100 g of standard fat at 37°C
Partition Co-efficient (n-octanol/water) log P_{OW}:	- 6.1 at 20°C
Hydrolysis as a function of pH:	half-life at 25°C pH 4.0 50.3 days pH 7.0 < 3 hours pH 9.0 < 3 hours
Adsorption/Desorption:	Not supplied

Dissociation Constant pKa: The estimated dissociation constants in water were:

-SO_3^- -2.5 >	pKa ~ -3.0	acidic (3x)	Ph-
NH-Tr	pKa ~ 0.8	basic (1x)	Ph-
N(Et)-Tr	pKa ~ 0.8	basic (1x)	
OH in a-Naphthal:	pKa > 11	acidic (1x)	

Flash Point:	Not applicable
Flammability Limits:	Not applicable
Autoignition Temperature:	**280°C**
Explosive Properties:	Not explosive
Decomposition Temperature:	> 150°C
Reactivity/Stability:	based on the structure, in the absence of reactive groups which could support oxidation, the notified chemical is not likely to react exothermically with flammable material

Particle size: 18.9 μm (diameter)
Median mass distribution

· **Comments of physico-chemical properties**

With regard to adsorption/desorption the notifier supplied the following argument, "Given the low entry of the substance into the soil and its stated improved fixation properties the test was considered unnecessary. As stated in this notification, strong adsorption to sediment may be expected." The comparison is made to the strong fixation of the dye to the organic matter in the fabric.

4. PURITY OF THE CHEMICAL

Degree of purity: ≥ 50.7%

5. INDUSTRIAL USE, FORMULATION AND IMPORT VOLUME

The notified chemical, Reactive Red 7520 FAT 40508/A is part of a formulation of the commercial dye Lanasol Red GN-7520 to be used as a colouring agent for wool yarn and textiles by exhaust dyeing methods.

Annual imports of Reactive Red 7520 FAT 40508/A over the next five years are projected to range between 1 and 5 tonnes.

6. OCCUPATIONAL EXPOSURE

The notified chemical is imported in robust (30 kg nett weight) lined cardboard boxes.

Normally the product containing the notified chemical will be directly supplied to the customers in 30 kg packages. Repacking of Lanasol Red GN-7520 is expected to be minimal and the notifier states the notified chemical will be contained within the packaging area during weighing and repacking by use of local exhaust ventilation.

The dye is manufactured in a non-dusting form, that is, use of an antidusting agent in the powder formulation to minimise dust formation. It is advised that, the dye kitchens in the dyehouses will, most likely, be equipped with downdraught local exhaust ventilation.

It is estimated that 8 dyehouses will use the notified chemical. At each dyehouse 3 to 4 workers per shift (two shifts per day), quality control (QC) testing staff and a laboratory technician involved with the matching of coloured and shades
will be exposed to the dye. Approximately 6 to 7 workers will be exposed to the notified chemical per shift at any one dyehouse. The nature and possible duration of exposure of the workers to the notified chemical is as follows:

Worker type	Nature of Work	Exposure: hrs/day	Exposure: days/year	Physical Form
Weighing staff	weighing dye material for mixing	4 - 7	75	powder
QC testing staff	product testing	1	75	powder and liquid
Operators	dyeing process	6 - 8	75	liquid

The dye is instantaneously soluble in cold water which reduces the time for preparation of padliquors and consequently, the potential for exposure. Following dissolution in a premix tank, the dye solution is added to the dyebath by pump or gravity feed. The dye bath may or may not be enclosed.

Operators will be wearing as a minimum, impervious gloves, overalls and safety glasses.

7. PUBLIC EXPOSURE

No public exposure to the notified chemical is expected to occur during its distribution to dye-houses by road or rail.

Considering a fixation of 95% of the dye to wool fibres and assuming retention of 50% of the dye in sediment in the dyehouse effluent system, approximately 2.5% of the notified substance is expected to be released into the sewage as unfixed dye. Public exposure from dye dispersed in this manner is expected to be negligible.

Public contact with the dye may be extensive, due to its proposed use in retail fabrics. Considering that the dye stuff is irreversibly bound to the fibre, and that it has a high molecular weight and low fat solubility, dermal absorption is expected to be low.

Disposal of the notified chemical is not expected to result in significant public exposure.

In the case of accidental spillage during transport, the public may be exposed to the notified chemical

8. ENVIRONMENTAL EXPOSURE

. Release

The bulk of the dye will become chemically bound to fibre and in this state is not expected to impact on the environment. Some minor losses to the environment might occur from ventilation of dusts to air or through spills at the warehouse, during transit, or at the dyehouse. Due to its high water solubility and its use in dyeing, however, the major potential loss to the environment is from the dye being released into the dyehouse effluent system (ie. the dyehouse biological effluent treatment works or the community Sewage Treatment Plant) after washing the fabric free of unfixed dye.

. **Fate**

The major breakdown process will be first order hydrolysis which will take place in the neutral or slightly basic conditions of the wash water and the sewerage treatment works.

Any surviving unfixed residues, after entering the sewerage works, may be removed through degradation (chemical or biological) or sorption to sludge. In view of the high water solubility, it is likely that some quantities will remain in the aquatic compartment. Residues that survive sewerage treatment will enter freshwater or marine environments in solution.

While azo dyes are generally stable under aerobic acidic conditions, they are susceptible to reductive degradation under the anaerobic conditions characteristic of sediment (1).

Dyestuff could also enter sediment by precipitation of the calcium salt, as several calcium salts of sulphonic dyes are known to be insoluble at modest concentrations (2). Degradation of such dyes in sediment water systems proceeded with a half-life of 2-16 days. Accordingly, no significant increase in dissolved concentrations over time is predicted, while residues bound to sediment are expected to undergo reductive degradation.

<u>Biodegradation</u>

. Ready biodegradation

A 28-day DOC DIE-AWAY test was performed on the notified substance (purity 60%) to determine its ready biodegradation. The concentration of the test substance, was at 40 +/- 4 mg/L DOC nominal. After the test period, the measured biodegradation of Reactive Red 7520 FAT 40508/A was 0.1%. This would rate as not readily biodegradable.

. Inherent biodegradability

The inherent biodegradability of the notified substance (purity 60%) was determined using the Zahn-Wellens test. It was found that at concentrations of 150 mg/L DOC. the concentration of Reactive Red 7520 FAT 40508/A was unchanged after 28 days.

. Bioaccumulation

The notified substance has a high water solubility (86.3 g/L solution at 20°C), very low partition coefficient (log Pow = -6.1) and low fat solubility (<0.04 mg/l00 g fat at 37°C). Given these physio-chemical characteristics, it is considered that Reactive Red 7520 FAT 40508/A is unlikely to bioaccumulate.

9. EVALUATION OF TOXICOLOGICAL DATA

9.1 Acute Toxicity

Table 1 Summary of the acute toxicity of FAT 40508/A

Test	Species	Outcome	Reference
Acute oral toxicity	Rat	LD_{50} > 2000 mg/kg	(4)
Acute dermal toxicity	Rat	LD_{50} > 2000 mg/kg	(6)
Skin Irritation	Rabbit	slight irritant	(7)
Eye irritation	Rabbit	slight irritant	(9)
Skin sensitisation	Guinea-pig	strong sensitiser	(10)

9.1.1 Oral Toxicity (4)

LD_{50}: > 2000 mg/kg *Species/strain*: Albino rats (Tif:RAI f1)

Number and sex of animals: 10/sex

Method of administration (vehicle): gavage (distilled water)

Clinical observations: Piloerection, hunched posture and dyspnea were seen, being common symptoms in acute tests. Additionally, respiratory sounds were recorded in one male.
The animals recovered within 3 days.

Mortality: no deaths *Morphological findings:* no deviations from normal morphology were found in any animal.

Test Method: OECD 401, 92/69/EEC (5) Test B1

9.1.2 Dermal Toxicity (6)

LD_{50}: > 2000 mg/kg *Species/strain:* Albino rats (Tif: RAI f (SPF))

Number and sex of animals: 10/sex

Method of administration (vehicle): distilled water

Clinical observations: no symptoms were observed in this study

Mortality: no deaths *Morphological findings:* no deviations from normal morphology were found

Test Method: OECD 402; 92/69/EEC (5) Test B3

9.1.3 Skin Irritation (7)

Result: slight irritant in rabbits

Species/strain: Male New Zealand White rabbits *Number of animals:* 3

Method of administration: A gauze patch bearing 0.5g of the test article was applied to the right shaved flank of each animal for four hours. A control gauze patch was applied to the contralateral flank.

Test Method: directive OECD 404; 92/69/EEC (5) Test B4

Draize (8) Scores[i]:

Animal	Time after decontamination			
	60 min	1 day	2 days	3 days
ERYTHEMA				
1	*	*	*	*
2	*	*	*	*
3	*	*	*	*
OEDEMA				
1	2	2	1	1
2	2	2	1	0
3	2	1	1	1

* red staining by the test article restricted evaluation of possible erythema up to 72 hours

9.1.4 Eye Irritation (9)

Result: slight irritant in rabbits

Species/strain: Male New Zealand White rabbits *Number of animals:* 3

Method of administration: 32 mg of test substance was placed into the conjunctival sac of the left eye of each animal

Test Method: OECD 405; 92/69/EEC (5) Test B5

Draize (8) Scores[ii]

Animal	Time after instillation							
	1 Hour		1 day		2 days		3 days	
CORNEA:	opacity area		opacity area		opacity area		opacity area	
1	1		0		0		0	
2	1		1		0		0	
3	1		1		0		0	
IRIS								
1	1		1		0		0	
2	1		1		0		0	
3	1		1		0		0	
CONJUNCTIVA	r[a]	c[b]	r[a]	c[b]	r[a]	c[b]	r[a]	c[b]
1	2	2	2	2	2	1	1	1
2	2	2	1	1	1	1	1	1
3	2	2	2	1	1	1	1	1

[a] redness [b] chemosis

9.1.5 Skin Sensitisation (10)

Result: moderate to extreme sensitiser

Species/strain: Albino female guinea-pigs/ Pirbright White Strain (Tif:DHP)

Number of animals: 10 in test group, 5 in control group

Induction at day 0: Test group: injections of adjuvant/saline mixture 1:1 (v/v); 5% notified chemical in physiological saline (w/v); 5% notified chemical in the adjuvant/saline mixture.

Control group: injections of adjuvant/saline mixture 1:1 (v/v); adjuvant/saline mixture 1:1 (v/v); physiological saline.

Induction at day 8: Test group:Topical: 50% (w/v) notified chemical in physiological saline.

Control group: physiological saline only

Challenge ay day 21: Test and control group: 30% notified chemical in physiological saline and physiological saline only.

Results:

Challenge Concentration	24 hrs		48 hrs	
	test	control	test	control
0%	0/5	0/5	0/5	0/5
30%	6/10	0/10	10/10	0/10

Under the experimental conditions employed, 60% and 100% of the animals of the test group showed skin reactions 24 and 48 hours after removing the dressings, respectively.

Therefore, Fat 40508/A can be considered as a moderate to extreme sensitiser in albino guinea pigs according to the grading of Magnusson and Kligman.

Test Method: directive 92/69/EEC (5) Test B6

9.2 Repeated Dose Toxicity (11)

Species/strain: Albino rats / Tif: RAlf (SPF) *Number/sex:* 60/sex

Method of administration (vehicle): orally by gavage

Dose/ Duration of administration: 0, 50, 200 or 1000 mg/kg/day for 28 day to a total of 60 albino rats. Administered quantities of the test article solution were adjusted daily to individual bodyweight.

Toxicologically Significant Observations:

1. Clinical

No clinical signs of toxicity observed in any of the animals.

2. Clinical Chemistry/Haematology

The treatment had no influence on the hematological profile.

A minimal and reversible elevation of plasma potassium concentrations was recorded for animals of group 4 (1000 mg/kg). A dose-related increase of plasma chloride levels was observed at week 5 investigation in all treated groups (50, 200 and 1000 mg/kg).

3. Necropsy Findings/ Histopathology

There were no treatment-related macroscopical changes which were associated with a tissue damage.

Microscopical examination revealed in 3/5 males of group 4 (1000 mg/kg) cytoplasmic vacuolization of cortical collecting tubules of the kidneys. This lesion was reversible within 2 weeks of recovery.

Under the conditions of this test, treatment with the notified chemical did not provoke overt signs of toxicity. A reversible nephrotropic effect occurred, which was revealed by water consumption data, laboratory investigations, organ weight analysis and microscopical finding.

All effects were reversible within the 2-weeks recovery period at all dose levels.

Test Method: directive 92/69/EEC (5) Test B7

9.3 Genotoxicity

9.3.1 Salmonella and escherichia / mammaliam-microsome mutagenicity study (12)

Result: In both experiments, performed with and without metabolic activation on strain *Salmonella typhimurium* TA 100, FAT 40508/A led to a minor increase in the number of back-mutants at the highest concentration 8333.0 µg/plate only. These negligible effects are, however, not sufficient as indication of a mutagenic property of the test substance. An occasionally observed slight increase in the number of revertants with strains *S. typhimurium* TA 102 and *E. coli* WP2 uvA was not reproducible and therefore did not fulfil the criteria for a positive response.

Strains: *Salmonella typhimurium* TA 98, TA 100, TA 102, TA 1535, TA 1537 and *E.coli* WP2 uvrA

Concentration range: The test was performed with and without the addition of rat-liver post mitochondrial supernatant (S9 fraction) as an extrinsic metabolic activation system.

520.8 to 8333.0 µg/ plate
and
1646.0 to 8333.0 µg/ plate (to confirm results, the experiments were repeated with and without metabolic activation within this range)

Metabolic activation: rat liver S9 *Solvent:* Aqua bidest

Test Method: directive 84/449/EEC (5) Test B1

9.3.2 *In Vivo* micronucleus assay in bone marrow cells of the mouse. (13)

Result: No evidence for clastogenic effects was obtained in mice treated with the notified chemical.

Dose levels: The mice were injected with notified chemical at doses of 2500, 1250 and 625 mg/kg

Comments: No statistically significant increase in the number of micronucleated polychromatic erythrocytes was observed when compared with the respective negative control group.

Test Method: 84/449/EEC (5) Test B12

9.3.3 *In Vitro* Cytogenetic Assay in Chinese Hamster V79 cells (14)

Result: The notified chemical and its metabolites exerted a clastogenic effect in Chinese hamster ovary cells *in vitro*.

Dose levels: 18 h: 156.25, 234.38 and 312.5 µg/ml
(without metabolic activation)

3 h treatment followed by 15 hours recovery period: 312.5, 468.75 and 625 µg/ml (with metabolic activation)
Mitomycin C (0.2 µg/ml) was used as a positive control in the 18 hour experiments.

Experiment repeated with identical doses except 28 h dose level at 500 µg/ml
Cyclophosphamide (20.0 µg/ml) was used as a positive control in the 3 hours/15 hours experiments.

Metabolic activation: rat liver S9

Comments: Without metabolic activation and in both experiments with metabolic activation statistically significant increased numbers of metaphases containing specific chromosomal aberrations were observed. In the experiments with activation the incidences of aberrant metaphases were clearly concentration-dependent. .

Test Method: 84/449/EEC (5) Test B10

9.4 Overall Assessment of Toxicological Data

Fat 40508/A was of low toxicity via the oral (LD_{50} > 2000 mg/kg) and dermal (LD_{50} > 2000 mg/kg) routes in the rat. No inhalation acute toxicity data were presented. Slight oedema of the skin and slight ocular irritancy of the cornea, iris and conjunctivae were noted in rabbits. It is a strong sensitiser to the skin of the guinea-pig. Fat 40508/A was found to be non-mutagenic *in vitro* to *Salmonella typhimurium* strains TA 1537, TA 1535, TA 98, TA 100 and TA 102 and *E.coli* WP2 uvrA. There was a significant increase in the frequency of chromosomal aberrations in an *in vitro* study on Chinese hamster ovary cells both in the presence and absence of metabolic activation. However, an *in vivo* Micronucleus test found no significant increase in the frequency of micronucleated polychromatic erythrocytes. Rats given oral doses of FAT 40508/A at 1000 mg/kg body weight/day had slightly elevated plasma potassium levels, elevated plasma chloride levels (also noted in 200 mg/kg body weight rats), increased kidney weights, and 3/5 males had cytoplasmic vacoulisation of cortical collecting tubules of the kidneys. All these effects were reversible.

On the basis of submitted data, the notified chemical would be classified as hazardous in accordance with Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1994)] in relation to sensitising effects (skin).

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

Ecotoxicological data were provided, for a number of species. The testing was done with nominal concentrations of the notified substance.

Table 2.

Test	Species	Outcome
Acute Toxicity	Zebra fish	96h LC_{50}: 213 $mg.L^{-1}$ NOEC 101 $mg.L^{-1}$
Acute Immobilisation	*Daphnia magna*	48h EC_{50}: > 180 $mg.L^{-1}$ NOEC 100 $mg.L^{-1}$
Alga, Growth Inhibition	*Scenedesmus subspicatus*	72 h $E_{\mu}C_{50}$ and E_bC_{5O}: > 100 $mg.L^{-1}$

Fish, Acute Toxicity

An acute toxicity (96 hour) test was performed on Zebra fish. The concentrations were 0, 56, 100, 178 and 316 $mg.L^{-1}$. The 'No Observable Effect Concentration' (NOEC) after 96 hours was determined to be 101 mg/L and the LC50 was calculated to be 213 mg/L. The results of this study indicate that the notified substance has a low toxicity to Zebra fish.

Daphnia sp.. Acute Immobilisation

A 48 hour acute toxicity test was performed on *Daphnia magna* to determine the toxicity of the notified substance. The concentrations tested were 0, 32, 58, 100 and 180 $mg.L^{-1}$. The 'No Observable Effect Concentration' (NOEC) after 48 hours was determined to be 100 $mg.L^{-1}$ and the LC_{50} was 180 $mg.L^{-1}$. The results of this study indicate that Reactive Red 7520 FAT 40508/A has a low acute toxicity to Daphnia magna.

Alga, Growth Inhibition Test

The toxicity of the notified substance to *Scenedesmus subspicatus* in a modified algal growth inhibition test for coloured test substances was investigated. The test concentrations were 0, 0.01, 3.2, 1.0, 3.2, 10.0, 32.0 and 100 $mg.L^{-1}$. The real toxic effect of the notified substance resulted in about 47% growth inhibition up to the highest test concentration of 100 $mg.L^{-1}$. The 72 hour $E_{\mu}C_{50}$ (growth rate) and E_bC_{5O} (algal biomass) for Reactive Red 7520 FAT 40508/A was determined to be greater than 100 $mg.L^{-1}$. Note the USEPA considers the algal species tested to be relatively insensitive (USEPA[iii]).

In summary the notified substance can be expected to be practically non toxic to fish, daphnia and algae.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

As indicated above, the notifier states that >95% of the dye is fixed in the dyeing process, A maximum of 5% of the dye used could be discharged into effluent of the dye houses. Calculations of the concentration of discharge for a typical dye house batches of 100 kg of fabric and are as follows:

Use of Lanasol Red GN-7520 per batch (Ciba-Geigy Pers Comm)	= 1 kg
Amount of dye used per batch (65% pure)	= 0.65 kg
Fixation rate of 95%, quantity passing to effluent	= 0.0325kg
Total volume of wash waters:	=10,500 L
Effluent concentration from dye bath	=3.1 ppm
Dilution in other waste waters of the dye house @ 10:1	= 0.31 ppm

Worst case release would be release to sewage and the receiving waters for an inland rural based dye house. City based dye houses would have their effluent diluted in at least 50 times more water than the country locations.

•Dilution in sewage treatment plants for:

Rural treatment plant 5 ML per day	= 6.2 ppb

•In final receiving waters:

Inland waterway (2:1 dilution)	= 3 ppb

These calculations are based on no removal of Reactive Red 7520 FAT 40508/A through adsorption to sludge in the sewage treatment plant. The calculations give expected environmental concentrations significantly below the levels of concern for fish, daphnia and algae (Table 2).

The dye is not expected to accumulate in the sediment as it will be broken down by hydrolysis and other chemical means. It is not expected to bioaccumulate.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

In common with a number of other reactive dyes, the notified chemical is likely to be a skin sensitiser in humans and should be considered a potential respiratory sensitiser, in addition it also may be a slight skin and eye irritant.

The notified chemical is imported as a powder The use of an antidusting agent in the powder formulation is expected to minimise dust formation and hence exposure. This suggests that inhalational exposure is unlikely to occur. The use of local exhaust ventilation or the use of respirators will further reduce exposure to dust.

When the dye is in aqueous solution, skin contact is possible. Transfer from the premix tank where the dye is dissolved to the dyebath is by pump or gravity feed. Thus the potential for spillage or splashing appears to be controlled. Dissolution of the dye in cold water is said to be instantaneous and mists are not formed during mixing.

Most dyebaths using the notified chemical are closed systems although there are open dyebaths in some dyehouses.

Although the notified chemical should be regarded as a potential respiratory sensitiser, the risk of respiratory sensitisation would appear to be low given that the dye is in a non-dusting form and minising exposure by the use of personal protective equipment. There is clearly a risk of skin sensitisation from the notified chemical and personal protective equipment as outlined below should be used.

The public will not be exposed to FAT 40508/A during its importation and application to textiles by commercial dye-houses. The public will come into contact with the fixed dye in retail fabrics such as clothing and carpets. Since the notified chemical is irreversibly bound to wool fibres, has low potential for dermal absorption and is of low acute dermal toxicity, the notified chemical is unlikely to constitute a hazard to public health.

13. RECOMMENDATIONS

To minimise occupational exposure to Reactive Red 7520 FAT 40508/A the following guidelines and precautions should be observed:

. good general and local exhaust ventilation should be provided in weighing areas;

. particular care should be taken to avoid spillage or splashing of the dye solution;

. production of mists in the workplace during mixing operations should be avoided;

. good personal hygiene should be practiced to minimise the potential for ingestion; and

. when handling the dye personal protective equipment which conforms to and is used in accordance with Australian Standards (AS) for eye protection (AS 1336, AS 1337) (15,16), long impervious gloves (AS 2161) (17) protective clothing (AS 3765.1, 3765.2) (18,19) and, if there is any possibility of dust generation, respiratory protection (AS 1715) (20), should be worn.

14. MATERIAL SAFETY DATA SHEET

The Material Safety Data Sheet (MSDS) for Reactive Red 7520 FAT 40508/A was provided in a suitable format (21).

This MSDS was provided by Ciba-Geigy Australia Pty Ltd as part of their notification statement. The accuracy of this information remains the responsibility of Ciba-Geigy Australia Pty Ltd.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of Reactive Red 7520 FAT 40508/A 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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14. *Cytogenetic Test on Chinese Hamster Cells in Vitro (EC-Conform),* Project No. 940826, data on file, CIBA-GEIGY Limited, 4002 Basel, Switzerland, Septmeber 1994.

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17. Australian Standard 2161-1978, *Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)*, Standards Association of Australia Publ., Sydney, 1978.

18. Australian Standard 3765.1-1990, *Clothing for Protection Against Hazardous Chemicals, Part 1: Protection Against General or Specific Chemicals*, Standards Association of Australia Publ., Sydney, 1990.

19. Australian Standard 3765.2-1990, *Clothing for Protection Against Hazardous Chemicals, Part 2: Limited Protection Against Specific Chemicals*, Standards Association of Australia Publ., Sydney, 1990.

20. Australian Standard 1715-1991, *Selection, use and maintenance of Respiratory Protective Devices*, Standards Association of Australia Publ, Sydney 1991.

21. Worksafe Australia, February 1990, Guidance Note for a Completion of a Material Safety Data Sheet, Australian Publishing Service, Canberra.

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[i]The Draize Scale for evaluation of skin reactions is as follows:

Erythema Formation	**rating**	**Oedema Formation**	**rating**
No erythema	0	No oedema	0
Very slight erythema (barely perceptible)	1	Very slight oedema (barely perceptible)	1
Well-defined erythema	2	Slight oedema (edges of area well-defined by	2
		by definite raising)	
Moderate to severe erythema	3	Moderate oedema (raised approx. 1mm)	3
Severe erythema (beet redness)	4	Severe oedema (raised more than 1 mm and	4
		extending beyond area of exposure)	

[ii] The Draize scale for evaluation of eye reactions is as follows:

CORNEA		
Opacity rating	**rating**	**Area of Cornea involved**
No opacity 1	0 none	25% or less (not zero)
Diffuse area, details of iris clearly visible 2	1 slight	25% to 50%
Easily visible translu cent areas, details of iris slightly obscure 3	2 mild	50% to 75%
Opalescent areas, no details of iris visible, 4 size of pupil barely discernible	3 moderate	Greater than 75%
Opaque, iris invisible	4 severe	

CONJUNCTIVA					
E rating	**rating**	**Chemosis**	**rating**	**Discharge**	
Vessels normal 0 none	0 none	No swelling	0 none	No discharge	
Vessels definitely injected slight	1 slight	Any swelling above normal	1 slight	Any amount different from normal	1
More diffuse, deeper crimson mod.	2 moderate	Obvious swelling with partial	2 mild	Discharge with moistening of lids and adjacent hairs	2
red with individual vessels not easily discernible		eversion of lids			
Diffuse beefy red severe	3 severe	Swelling with lids half-closed	3 mod.	Disharge with moistening of lids and hairs and considerable area	3
around eye		Swelling with lids half-closed to comp- letely closed	4 severe		

IRIS	
Values rating	
Normal 0 none	
Folds above normal, congestion, swelling, circumcorneal injection, iris reacts to light	1 slight
No reaction to light, haemorrhage, gross destruction severe	2

[iii] USEPA, *Environmental Effects Test Guidelines*, Algal acute toxicity test, EG-8, 1982.