

File No: STD/1041

7 August 2003

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

**FULL PUBLIC REPORT**

**Metal Hardener # 1**

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**FULL PUBLIC REPORT****Metal Hardener # 1****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT

Coates Brothers Australia Pty Ltd (ABN12000 079 550)  
323 Chisholm Rd, AUBURN NSW 2144

## NOTIFICATION CATEGORY

Standard: Chemical other than polymer (more than 1 tonne per year).

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name,  
Other name,  
CAS number,  
Molecular formula,  
Structural formula,  
Molecular weight,  
Spectral data,  
Information on purities & impurities,  
Use,  
Import volumes,  
Formulation details,  
Available study reports.

## VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows:

Vapour pressure,  
Absorption/desorption,  
Dissociation constant,  
Explosive properties,  
Acute dermal toxicity,  
Acute inhalation toxicity,  
Eye irritation,  
Repeat dose toxicity,  
Genetic toxicity.

## PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT

None

## NOTIFICATION IN OTHER COUNTRIES

TSCA (USA) January 2002,  
NDSL (CANADA) 1998,  
EINECS (EEC) 1990  
PICCS (PHILIPPINES) 2000

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME

Metal Hardener # 1

## METHODS OF DETECTION AND DETERMINATION

ANALYTICAL      Infrared (IR) spectroscopy  
METHOD  
Remarks      A reference spectrum was provided.

**3. COMPOSITION**

DEGREE OF PURITY  
High

HAZARDOUS IMPURITIES  
None present at concentrations which would lead to the notified chemical being classified as a hazardous substance.

**4. INTRODUCTION AND USE INFORMATION**

## MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified chemical will be imported as a pure powder and will be reformulated in Australia to produce ink containing <5% of notified chemical.

## 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>	<3	<3	<3	<3	<3

USE  
The notified chemical performs as a chelating agent in printing inks.

**5. PROCESS AND RELEASE INFORMATION****5.1. Distribution, Transport and Storage**

PORT OF ENTRY  
Sydney

IDENTITY OF MANUFACTURER/RECIPIENTS  
Coates Australia Pty Ltd. The ink will be supplied to approximately 10-20 printing factories around the country.

TRANSPORTATION AND PACKAGING  
The notified chemical will be imported in packaging of 25kg plastic pails and will be transported from the dockside to Coates Australia's manufacturing site at Auburn. Printing inks containing the notified chemical will be transported by road.

**5.2. Operation Description***Ink Manufacture*

The notified chemical will be loaded manually into a suitable mixing tank to be cold stirred into an intermediate (organic solution of the notified chemical). The resulting product is filtered and pumped into steel drums (200 kg). The intermediate will be used to blend white printing inks in a high speed stirrer. The printing inks will be packaged in 20kg and 200kg steel containers. The finished inks are then stored on site or transported to Coates Australia sites in Melbourne, Brisbane, Perth and Adelaide and also to printing companies.

*Printing*

Printing ink containing the notified chemical is reduced in viscosity with solvent blends, typically 80:20 ethanol/n-propyl acetate. The ink is then distributed around the printing press by circulation pumps. The inking units are essentially enclosed chambers and ink components, apart from solvents, are of low volatility.

### 5.3. Occupational exposure

#### *Number and Category of Workers*

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Dock, transport and warehousing personnel	6-9	incidental	10-15 days/year
Conversion, blending and quality control	7-13	6-8 hrs/day	50-70 days/year
Printers	50-100	15-24 hrs/day	230 days/year

#### *Exposure Details*

##### Dock, transport and warehousing personnel

These workers are not expected to be exposed to notified chemical, as they will only handle closed containers. However, there is potential for exposure during accident (rupture of plastic pails). The applicant has not indicated whether they would be wearing any protective clothing.

##### Conversion, blending and quality control

The notified chemical, at Coates Australia site, will be converted into an intermediate solution for subsequent ease and accuracy in blending into printing inks. This conversion involves high-speed cold stirring in large mixing tanks with lids to minimise evaporation of the solvents used to dissolve the substance. The notified chemical is manually loaded into the mixing tanks along with mixed organic solvent. The intermediate is used to blend white printing inks in a high speed stirrer. The steps involved in transfer of the intermediate to the equipment used for ink blending were not described by the notifier. It is possible that dermal exposure to drips and spills of the 50% solution could occur, particularly if flexible transfer hoses with connections requiring coupling and recoupling are used.

Blending personnel are required to wear coveralls, dust masks, gloves and eye goggles at all times. The loading operation is done under a dust extractor, which collects fine particulates, if any, in collection bags.

Quality control staff will sample the product to make sure that it is within the specifications during blending. They are also required to wear protective clothing, gloves and goggles when handling the formulated material. The notified chemical typically represents <50% of the total intermediate formulation and ultimately <5% in the finished ink.

##### Printers

Printing inks containing the notified chemical will be applied by flexographic printing to various substrates and the solvent extracted. The ink is thinned to low viscosity at the press before application, and is distributed around the printing press by pumping units. In addition, the inking units are essentially enclosed chambers, and the thinned formulation contains the notified chemical at very low concentration (<0.05%). The printed substrate will be laminated, thus trapping the dry printed film between two or more layers of substrates

Consequently, the risk of exposure during the printing process will be low. Exposure potential will be higher during the cleaning operations. In normal practice, the printing runs are very long and may involve a few hours per shift to several working shifts. This greatly reduces the requirement of cleaning, which is only done at the end of the print run and only if a different colour is required in that particular printing unit. Workers wear coveralls, gloves and eye goggles during the cleaning operations.

### 5.4. Release

#### RELEASE OF CHEMICAL AT SITE

The notified chemical will be imported into Australia from Europe and will be formulated into flexographic printing inks prior to being distributed to approximately 10-20 printing factories around the country. The notifier indicates that the blending process is efficient and will only result in up to 20

kg per annum of waste containing the notified chemical. This will be derived predominantly from the washing of formulation and transfer equipment.

#### RELEASE OF CHEMICAL FROM USE

The notified substance will be applied to snack food and confectionery packaging using a flexographic process. Therefore, most of the notified chemical will be disposed of to landfill bound to the packaging onto which it has been applied. Printing equipment will be cleaned with solvents (a blend of ethanol, isopropanol and ethyl acetate) and either sent for solvent reclamation, reuse or disposal by incineration. It is estimated that up to 30 kg per annum of waste will result from the cleaning of printing equipment.

#### 5.5. Disposal

The total import volume of the notified chemical will ultimately be disposed of in either landfill or be incinerated.

#### 5.6. Public exposure

The notified chemical will not be sold to the public, and will only be available dissolved in printing inks for industrial use. The printed substrate will be laminated, thus trapping the dry printed film between two or more layers of substrates. The laminate will be used for packaging dry foods stuff, e.g. snack foods, confectionary etc.

The public is unlikely to be exposed to printing inks containing the notified substance during the transport and storage, ink manufacture, printing, and ink and waste disposal. The printing inks used on food packaging are not in direct contact with food. The printing ink film once dried and cured is firmly attached to the surface of the substrate.

### 6. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance at 20°C and 101.3 kPa

<b>Melting Point</b>	Decomposes at 325°C
Method	Thermogravimetric analysis

<b>Bulk Density</b>	Tamped 1.14g/cm <sup>3</sup> Untamped 0.98g/cm <sup>3</sup>
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Remarks	Method not stated.
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#### Vapour Pressure

Remarks	Not determined
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<b>Water Solubility</b>	1 mg/L at 20°C
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Remarks	The notified chemical (2 g) was added to water (100 mL) and boiled for 20 min. After this time the suspension was filtered and the filter cake washed with near boiling water. The filter paper and residue were pyrolysed and the resulting ash weighed and the water insoluble content determined.
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Test Facility	This result quoted for water solubility is characteristic of this class of complex. [Manufacturer] (2003).
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<b>Hydrolysis as a Function of pH</b>	Not determined.
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Remarks	The notified chemical is a coordination complex between an organic ligand and a transition metal. Hydrolysis to an insoluble metal hydrous oxide and an organic acid may occur but the extent will be limited by its polymeric structure and low water solubility in the environmental pH range of 4-9.
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<b>Partition Coefficient (n-octanol/water)</b>	Not determined.
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Remarks The low water solubility of the notified chemical and its likely hydrophobic nature are indicative of partitioning into the octanol phase. This is further supported by the high solubilities of the notified chemical in ethanol (> 150 g/L) and isopropanol (>65 g/L).

**Adsorption/Desorption** Not determined.

Remarks The notified chemical is expected to have a high affinity for soil and sediment and be immobile in the environment due to its low water solubility.

**Dissociation Constant** Not determined

Remarks The notified chemical is a hydroxy-bridged transition metal complex which contains carboxylic acid groups. These are not expected to dissociate in the environmental pH range of 4-9.

**Particle Size**

METHOD HELAS Particle Size Analysis.

<i>Range (<math>\mu\text{m}</math>)</i>	<i>Mass (%)</i>
<1.1	4.9
1.1-7.50	28.22
7.50-36.50	71.78

Test Facility Sympatec GmbH (2003).

**Flash Point** Flash point is >75°C.

Remarks A result only was provided; no experimental details or description of method was submitted.

**Flammability Limits** Not flammable

Remarks A result only was provided; no experimental details or description of method was submitted

**Autoignition Temperature** Auto-ignition temperature >400°C.

Remarks A result only was provided; no experimental details or description of method was submitted

**Explosive Properties**

Remarks Not determined. No groups which are expected to confer explosive properties are present.

**Reactivity**

Remarks Stable under normal environmental conditions.

## 7. TOXICOLOGICAL INVESTIGATIONS

<i>Endpoint and Result</i>	<i>Assessment Conclusion</i>
Rat, acute oral LD50 >3300 mg/kg bw	low toxicity
Rat, acute dermal	not determined
Rat, acute inhalation	not determined
Rabbit, skin irritation	non-irritating
Rabbit, eye irritation	irritating
Guinea pig, skin sensitisation - adjuvant test.	no evidence of sensitisation.
Repeat dose toxicity	not determined
Genotoxicity tests	not determined
Developmental and reproductive effects	not determined
Carcinogenicity	not determined

### 7.1. Acute toxicity – oral

TEST SUBSTANCE                      Notified chemical.

METHOD                              Standard Operating Procedures of BIBRA and GLP

Species/Strain                      Rat/not stated.

Vehicle                                Not stated.

Remarks - Method                None

#### RESULTS

<i>Group</i>	<i>Number and Sex of Animals</i>	<i>Dose mg/kg bw</i>	<i>Mortality</i>
I	Not stated	0	None.
II	Not stated	100	None.
III	Not stated	330	None.
IV	Not stated	1000	None.
V	Not stated	3300	None.

LD50                                      >3300 mg/kg bw

Signs of Toxicity                      No toxic symptoms were observed with the notified chemical at any dose level.

Effects in Organs                      There were no direct effects on any particular organ or tissue.

CONCLUSION                              The notified chemical is of low toxicity via the oral route. The low levels of toxicity observed following oral administration were thought to be due to the insolubility of the materials.

TEST FACILITY                              BIBRA (1986a).

### 7.2. Acute toxicity - dermal

No test results were submitted.

### 7.3. Acute toxicity - inhalation

CONCLUSION                              No test results were submitted. However, the notifier has submitted a published study in men working with compounds containing the metal of which the notified chemical is a salt at one site and exposed to them (mainly <10 mg/m<sup>3</sup>) over many years. Chest radiographs and lung function measurements were carried out on all men and as estimate of cumulative exposure was compound from job title and likely exposure in each area. No evidence was found that exposure to these compounds resulted in abnormal chest radiographs or impaired pulmonary functions in men (Marcus, 1996).



**7.2. Irritation – skin**

TEST SUBSTANCE	Notified chemical.
METHOD	Standard Operating Procedures of BIBRA, GLP and Draize (1959)
Species/Strain	Rabbit, strain not stated.
Number of Animals	4
Vehicle	Not stated.
Observation Period	72 hrs
Type of Dressing	Not stated.
Remarks - Method	None.

**RESULTS**

Remarks - Results                      The mean indices of irritation were 0.

CONCLUSION                              The notified chemical is non-irritating to skin.

TEST FACILITY                            BIBRA (1986b).

**7.5. Irritation - eye**

No test results were submitted.

**7.6. Skin sensitisation**

TEST SUBSTANCE	Notified chemical.	
METHOD	OECD TG 406 Skin Sensitisation – Magnusson-Kligman Maximisation Test	
Species/Strain	Guinea pig/Dunkin-Hartley	
PRELIMINARY STUDY	Maximum Non-irritating Concentration: 75% intradermal: not stated. topical: 75%	
MAIN STUDY		
Number of Animals	Test Group: 20	Control Group: 20
INDUCTION PHASE	Challenge Group: 4 Induction Concentration: intradermal injection : 2% topical application: 75%	
Signs of Irritation	No signs of erythema or oedema were observed.	
CHALLENGE PHASE	topical application: 75%	
Remarks - Method	No significant protocol deviations.	

**RESULTS**

Remarks - Results                      No dermal reactions were seen at challenge in either the test or control groups.

CONCLUSION                              There was no evidence from results that the notified chemical is a sensitiser under the conditions of the test.

TEST FACILITY                            Inveresk (1993).

**7.7. Repeat dose toxicity**

No test results were submitted.

**7.8. Genotoxicity - bacteria**

No test results were submitted.

**7.9. Genotoxicity – in vitro**

No test results were submitted.

**7.10. Genotoxicity – in vivo**

No test results were submitted.

**8. ENVIRONMENT****8.1. Environmental fate****8.1.1. Ready biodegradability**

TEST SUBSTANCE	Notified chemical
METHOD	OECD TG 301 B Ready Biodegradability: CO <sub>2</sub> Evolution Test.
Exposure Period	28 days
Remarks - Method	Activated sludge was mixed with the test substance to give a final test concentration of 47.1 mg/L which equates to 10 mg C/L. The study was carried out in darkness at 21°C.

**RESULTS**

<i>Test substance</i>		<i>Sodium benzoate</i>	
<i>Day</i>	<i>% degradation</i>	<i>Day</i>	<i>% degradation</i>
28	71	28	81

Remarks - Results      The sodium acetate standard attained 81% biodegradation after 28 days, indicating the test conditions were valid. After 28 days, the biodegradation of the test substance was determined to be 71%.

CONCLUSION      Despite this level the notified chemical is not considered to be readily biodegradable under the conditions of OECD TG 301B because it failed to satisfy the 10 day window validation criterion, whereby 60% degradation must be attained within 10 days of the degradation exceeding 10%.

TEST FACILITY      Safepharm (2000a).

**8.2. Ecotoxicological investigations****8.2.1. Acute toxicity to fish, daphnia and algae of [metal] compounds. (Safepharm 2000b)**

The notifier has provided a literature review on the toxicity of compounds of the metal of which the notified chemical is a salt to fish, daphnia and algae. A summary of this document is presented below.

**Fish:**

Levels of toxicity to fish reported in the literature range by an order magnitude depending on the water hardness with the metal toxicity being greater in soft water. Fathead minnow have exhibited acute toxicities (96 h) of 14.4 and 17.8 mg/L to the metal sulphate and the metal chloride, respectively, in soft water. Toxicity values of greater than 20 mg metal ion per litre have been reported for rainbow trout in hard water.

**Daphnia:**

Generally the toxicity of the metal compounds to daphnia are lower than those exhibited to fish but do exhibit the same water hardness trends. Studies with the metal chloride showed that there were no significant acute effect over a 96-hour period at concentrations up to 20 mg metal ion per litre but prolonged exposure to these

compounds (in a 9 week reproduction study) produced fewer young. The authors have noted that, with the exception of a metal carbonate complex, “flocks” were observed in the studies such that true concentrations of the metal could not be determined.

#### Algae:

Studies have shown that at low levels (0.02 mg/L) the metal has a stimulatory effect on growth while at high concentrations it will inhibit the growth of algae. Recent studies on *Scenedesmus subspicatus* grown in the presence of a metal carbonate complex showed significant inhibition of growth at levels of less than 1 mg/L. However, it is thought that complexation of phosphate ions by the metal compound and their subsequent removal from solution caused the toxic effects observed. It has further been reported that compounds of the metal bind strongly to the surface of micro-algae and cyanobacteria resulting in the inhibition of growth.

#### 8.2.4. Inhibition of microbial activity

TEST SUBSTANCE	Notified chemical.
METHOD	OECD TG 209 Activated Sludge, Respiration Inhibition Test. EC Directive 88/302/EEC C.11 Biodegradation: Activated Sludge Respiration Inhibition Test
Inoculum	Activated sewage sludge
Exposure Period	3 hours
Concentration Range	
Nominal	1000 mg/L
Remarks – Method	After 3 h the EC50 for the 3,5-dichlorophenol standard was calculated to be 12 mg/L indicating the test conditions were valid.
RESULTS	
EC50	> 1000 mg/L
NOEC	1000 mg/L
Remarks – Results	No significant inhibition of respiration was observed at the test concentration employed.
CONCLUSION	The ecotoxicity data indicates the notified chemical is non-toxic to sewage sludge organisms.
TEST FACILITY	Safepharm (2000c).

### 9. RISK ASSESSMENT

#### 9.1. Environment

##### 9.1.1. Environment – exposure assessment

The notified chemical will enter environmental compartments indirectly by disposal of the printed snack food and confectionery packaging (to landfill or for incineration) and by direct release from empty containers at landfill sites. Limited, if any, release to the aquatic compartment is expected. It is anticipated that prolonged residence in an active landfill environment would degrade the notified substance to water vapour and oxides of carbon and metal salts. Incineration of waste paper will destroy the compound with the generation of water vapour and oxides of carbon, and metal salts

Based on the import volume and low concentration of the notified chemical in ink, release of the notified chemical to the environment is expected to be low but widespread.

Although it is not considered to be readily biodegradable, significant biodegradation of the notified chemical is expected to occur. The low water solubility indicates the notified chemical will be predominantly distributed to soil and sediment.

##### 9.1.2. Environment – effects assessment

Based on surrogate data, the notified chemical is expected to be harmful to fish and daphnia and toxic to algae. However, there will be limited release to water.

#### **9.1.3. Environment – risk characterisation**

The notified chemical will be used as an ingredient of printing ink formulations, and most will eventually be disposed of in landfill. The chemical is not readily biodegradable (71% over 28 days) and has low water solubility suggesting that most of the material would partition to soil and sediment and once bound to soil is expected to degrade by the processes described above.

The above considerations indicate minimal hazard to the environment when the notified chemical is used as a component of ink in the manner and at the levels indicated by the notifier.

### **9.2. Human health**

#### **9.2.1. Occupational health and safety – exposure assessment**

The maximum occupational exposure is expected for workers handling the solid form of the notified chemical, during conversion into an intermediate solution. Dermal/eye/inhalation exposure may occur to the notified chemical during transport of the notified chemical from drums to mixing vessels and mixing with the solvents.

The second maximum exposure is expected for workers involved in blending the intermediate solution (<50% notified chemical) with the ink ingredients in a high speed stirrer. Dermal exposure to dips and spills during transfer and dermal, ocular and inhalation exposure to splashes and mist could occur, particularly if blending occurs in open vessels. Quality staff will also be exposed to the formulated product containing <5% of the notified chemical during sampling. Dermal exposure to small quantities may occur for these workers.

Although above exposure occurs on a frequent (approximately 6-8 hrs/day, 50-70 days/year) basis, the use of protective clothing, gloves, eye goggles, and dust masks should minimise exposure. Furthermore, the loading operation is done under a dust extractor, which collects fine particles, if any, in collection bags.

Printers may be exposed to the notified chemical in the finished ink during thinning process. The thinned ink (<0.05% notified chemical) is then distributed around the printing press in essentially enclosed automated chambers. Exposure is expected to be low for workers, as they will be handling the finished ink containing low levels (<5%) of the notified chemical. Furthermore, as printing is done in automatic chambers, exposure will be low for printers. Exposure potential will be higher during the cleaning operations. However, cleaning is done on an infrequent basis. These factors coupled with the low concentration of the notified chemical in the thinned formulations (<0.05%), means that worker exposure will be very small.

All other workers (waterside, transport & warehouse) are expected to handle the solid form of the notified chemical only in sealed containers, or handle only the finished product containing up to <5% notified chemical. Exposure of waterside, transport & warehouse workers is likely to occur only in the event of an accident/spill.

#### **9.2.2. Public health – exposure assessment**

The notified chemical will not be sold to the public, and will only be available dissolved in printing inks for industrial use. Public exposure will occur by dermal contact with printed substrate, where the ink will contain < 5% of the notified chemical. Furthermore, the printing substrate will be laminated, thus significantly reducing any chance of dermal contact or contact with food through packaging.

The public will only be exposed during the transport and handling of the notified chemical if there is an accident resulting in spillage.

#### **9.2.3. Human health - effects assessment**

The notified chemical was of low oral toxicity in rats. The notified chemical was not a skin irritant in rabbit or a skin sensitiser in guinea pigs. The notified chemical has potential for eye

irritation due to hydrolysis to form small amounts of an organic acid and the notifier has accepted the possibility of an eye irritation (R36).

Compounds of the metal of which the notified chemical is a salt are mostly insoluble and very poorly absorbed from their site of deposition, either from oral or inhalation routes.

The notifier has not provided data for a number of toxicological endpoints for the notified chemical. However, there is literature on the effects of long term animal exposure and occupational human exposure to compounds of the metal, and this is relevant to consideration of subchronic toxicity and mutagenicity of the notified chemical.

Several studies have shown low absorption from the gastrointestinal tract. Studies on deposition and retention of the metal on inhalation in animals have shown a high level of retention in the lung and pulmonary lymph nodes but few toxic effects, except where the anhydrous metal chloride (which forms HCl on hydrolysis) was used (Beliles, 1994). No adverse effects were seen during a lifetime dietary administration study of the metal sulphate for two years or in two 1 year inhalation studies of the metal oxide and the anhydrous metal chloride (ACGIH, 2001). No tumour formation was observed.

There are few studies on the effects of the metal in the workplace. Workers exposed to fumes of the metal reduction process for 1 to 5 years or hand finishers of the metal reactor components for 1 to 17 years, revealed no adverse effects referable to exposure to the metal (Beliles, 1994).

Marcus et al (1996) reported a study in men working exposed to the metal compounds (mainly  $<10 \text{ mg/m}^3$ ) over many years. Chest radiographs and lung function measurements were carried out on all men and as estimate of cumulative exposure was compound from job title and likely exposure in each area. No evidence was found that exposure to these compounds resulted in abnormal chest radiographs or impaired pulmonary functions in men.

The notifier has stated that the notified chemical is classified as an irritant (Xi) according to the EC Directives 67/548/EEC and 88/379/EEC and their amendments.

The notified chemical has an exposure standard of  $5 \text{ mg/m}^3$  Time-Weighted Average (TWA) and  $10 \text{ mg/m}^3$  as Short Term Exposure Limit (STEL) (NOHSC, 1995) based on the exposure standards for compounds of the metal of which the notified chemical is a salt.

#### **9.2.4. Occupational health and safety – risk characterisation**

The main occupational exposure is expected for workers handling the solid form of the notified chemical, and for workers involved in the blending of the intermediate solution of the notified chemical with the ink ingredients. For these workers, the primary risk is expected to arise from inhalation of dusts or mists, and the NOHSC exposure standard referenced above should be observed under these conditions. Under these circumstances, exposure is not expected to lead to significant risk based on the results of animal studies and occupational health studies.

Appropriate personal protection (gloves, safety glasses and respiratory protection) should be worn during handling of these forms of the notified chemical due to eye and inhalation hazards.

The notified chemical is expected to have very low hazard at the concentration used in finished ink ( $<5\%$ ), resulting in low occupational risk for handler of the finished ink. Furthermore, the occupational risk would be further reduced due to the use of automated enclosed inking units, and the wearing of protective clothing during cleaning operations.

#### **9.2.5. Public health – risk characterisation**

The notified chemical is expected to have very low hazard at the concentration used in printing ink. Furthermore, the printing substrate will be laminated. This is the only form in which the public will handle the notified chemical. Therefore, the risk to the public resulting from the use of the notified chemical is expected to be very low.

## 10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

### 10.1. Hazard classification

The notifier has stated that the notified chemical is classified as an irritant (Xi) according to the EC Directives 67/548/EEC and 88/379/EEC and their amendments, with the following risk phrases:

R36 Irritating to eyes  
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### 10.2. Environmental risk assessment

The chemical is not considered to pose a risk to the environment based on its reported use pattern.

### 10.3. Human health risk assessment

#### 10.3.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

#### 10.3.2. Public health

There is Negligible Concern to public health on use of the ink containing < 5% of the notified chemical.

## 11. MATERIAL SAFETY DATA SHEET

### 11.1. Material Safety Data Sheet

The MSDS of the product containing the notified chemical provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). MSDS is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### 11.2. Label

The label for the product containing the notified chemical provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

## 12. RECOMMENDATIONS

### REGULATORY CONTROLS

#### Hazard Classification and Labelling

- Products containing  $\geq 20\%$  notified chemical must carry the following safety directions on the label:

R36 Irritating to eyes  
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Avoid release to the environment.

### CONTROL MEASURES

### Occupational Health and Safety

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical as introduced and in concentrated solution:
  - protective gloves, safety glasses or goggles, industrial clothing, dust masks

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Atmospheric monitoring should be conducted to measure workplace concentrations during formulation of the notified chemical.
- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified chemicals 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 chemical should be disposed of into landfill.

#### Emergency procedures

- Spills/release of the notified chemical should be contained as described in the MSDS (i.e. damp down any spilt material, collect by vacuum or shovel and transfer to a sealable waste container) and the resulting waste disposed of in landfill.

### 12.1. 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 Section 64(1) of the Act; if
    - Imports rise above 1 tonne per annum, in which case a secondary notification should be provided containing a full suite of toxicity tests for aquatic organisms.
- or
- (2) Under Section 64(2) of the Act:
    - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

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