

File No LTD/1150

29 September 2004

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

FULL PUBLIC REPORT

Polymer in EFKA-4570

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment and Heritage.

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

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

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

This Full Public Report is available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	www.nicnas.gov.au

**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	4
1. APPLICANT AND NOTIFICATION DETAILS	4
2. IDENTITY OF CHEMICAL	4
3. COMPOSITION.....	5
4. INTRODUCTION AND USE INFORMATION	5
5. PROCESS AND RELEASE INFORMATION.....	5
5.1. Distribution, transport and storage.....	5
5.2. Operation description.....	5
5.3. Occupational Exposure	6
5.4. Release.....	7
5.5. Disposal	8
5.6. Public exposure	8
6. PHYSICAL AND CHEMICAL PROPERTIES.....	8
7. TOXICOLOGICAL INVESTIGATIONS	10
8. ENVIRONMENT.....	10
8.1. Environmental fate	10
8.2. Ecotoxicological investigations.....	10
9. RISK ASSESSMENT	10
9.1. Environment.....	10
9.1.1. Environment – exposure assessment.....	10
9.1.2. Environment – effects assessment.....	10
9.1.3. Environment – risk characterisation.....	10
9.2. Human health	11
9.2.1. Occupational health and safety – exposure assessment.....	11
9.2.2. Public health – exposure assessment.....	11
9.2.3. Human health - effects assessment.....	11
9.2.4. Occupational health and safety – risk characterisation.....	11
9.2.5. Public health – risk characterisation.....	12
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS	12
10.1. Hazard classification.....	12
10.2. Environmental risk assessment.....	12
10.3. Human health risk assessment.....	12
10.3.1. Occupational health and safety.....	12
10.3.2. Public health.....	13
11. MATERIAL SAFETY DATA SHEET	13
11.1. Material Safety Data Sheet.....	13
11.2. Label	13
12. RECOMMENDATIONS.....	13
12.1. Secondary notification	14
13. BIBLIOGRAPHY	14

FULL PUBLIC REPORT

Polymer in EFKA-4570

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Ciba Specialty Chemicals Pty Ltd (ABN 97 005 061 469)

235 Settlement Road

Thomastown VIC 3074

Multichem Pty Ltd (ABN 47 006 115 886)

Suite 6, 400 High St

Kew VIC 3101

NOTIFICATION CATEGORY

Limited: Polymer with NAMW ≥ 1000 (greater than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical identity

Import volume

Detailed Use

Product formulation details

Identity of customers.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

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

Some physico-chemical properties.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

USA (TSCA)

Canada (DSL)

2. IDENTITY OF CHEMICAL

OTHER NAME(S)

Polymeric acrylic dispersant.

MARKETING NAME(S)

EFKA-4570 (commercial product containing the notified polymer at 60% in tripropyleneglycol monomethylether).

SPECTRAL DATA

ANALYTICAL Infrared Spectroscopy

METHOD

Remarks Spectra provided

METHODS OF DETECTION AND DETERMINATION

Remarks Not provided.
The notifier states that the levels of residual monomers and impurities have been analysed by GC or HPLC (no spectra or details provided)

3. COMPOSITION

DEGREE OF PURITY
> 90%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS
All hazardous impurities and residual monomers are present at below the relevant cut offs for classification of the notified polymer as a hazardous substance.

DEGRADATION PRODUCTS
No dangerous decomposition products known.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES
The residual monomers may be lost to the environment when the polymer or products containing it are in the liquid state. However, once the paint products are cured, the monomers will be trapped in the solid matrix.

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified polymer will not be manufactured in Australia. It will be imported as a component of EFKA 4570 at 60% (wt) concentration in tripropyleneglycol monomethylether.

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	<1	1-3	1-3	3-10	3-10

USE
Additive in water and solvent based automotive paints.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, transport and storage

PORT OF ENTRY
Melbourne

TRANSPORTATION AND PACKAGING
EFKA 4570 containing the notified polymer at 60% will be imported by sea in 25 kg pails and 200 kg polyethylene coated steel drums. The containers will be transported by road to a storage site, and then supplied to paint manufacturers in Australia, for formulation into a range of paints. The finished paints will be packaged in 1 L, 4 L, and 10 L steel paint cans and 200 L drums. The paints will be distributed to numerous automotive companies within Australia.

5.2. Operation description

Truck drivers will transport the sealed EFKA 4570 containers by road from wharf to the storage warehouse and then as needed to the customer warehouse.

The polymer solution will be formulated into paint products at paint manufacturing establishments. Formulation of the paint products will involve transfer of notified polymer by metered dosing to a mixing vessel and mixing the polymer solution and other ingredients in a sealed vessel fitted with a high speed mixer and local ventilation system. Each batch is to be quality checked and adjustments made as required. The resultant paint will be filtered prior to being dispensed into 1 L, 4 L and 10 L

steel paint cans and 200 L drums using automated filling machine under exhaust ventilation. Paint products containing the notified polymer will be warehoused at the paint manufacturer's site prior to distribution to customer sites.

At the end users site the paint containing the notified polymer is used as a topcoat for original equipment manufacture (OEM) or refinishing in the automotive industry. At the customer sites the paint will be mixed, stirred and diluted then placed in a spray gun. The object to be primed with the paint will be sprayed then heat cured, resulting in the painted article.

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>
<i>Transportation and Storage</i>			
Transporting from dock to Notifier's site for warehousing (loading/unloading trucks)	3	2-3 hours/day	10-15 days/year
<i>Paint manufacture</i>			
Workers involved in weighing, mixing and bead milling operations.	6	30 min to 6 hrs/day	4 days/week 4 weeks/year
Workers involved in filling cans of coating	4	3 hrs/day	4 days/week for 4 week working period
Quality control/chemists and technical service	4-8	1 hr/day	4 days/week for 4 week working period
Cleaning operations	2	30 min/day	4-days/week for 4 week working period
<i>Paint application</i>			
Automotive Industry	> 1000	8 hrs/day	5 days/week

Exposure Details

Transport and Storage: Waterfront, transport and warehouse workers are not expected to be exposed to the notified polymer except in the case of an accident involving spillage of the EFKA-4570 containing the notified polymer at 60%. Spills are cleaned up by absorbing with liquid-binding material (sand, diatomite, acid binders, universal binders or sawdust) and recovered into containers for disposal in accordance with local government regulations. No controls are required. Gloves, coveralls and goggles are available if required.

Paint formulation:

Paint mixing – Workers may be exposed to polymer via dermal and ocular exposure due to drips, spills and splashes during charging of mixer and blending. Workers will wear coveralls, goggles and impervious gloves. Aerosols may be released during blending, but inhalation exposure is expected to be low because of use of enclosed mixing vessels and exhaust ventilation system.

QC testing: Dermal and ocular exposure is possible from drips, spills and splashes during batch adjustment and when taking and testing samples. Workers wear coveralls, goggles and impervious gloves to minimise exposure.

Filling into drums: Dermal exposure may be possible due to drips and spills when connecting filling lines. The paint is filled into drums under local exhaust ventilation and workers are expected to wear overalls, goggles and impervious gloves. Therefore only incidental exposure is expected.

Maintenance: There is possible of skin contact during equipment maintenance. Workers wear coveralls, goggles and gloves.

End use:

Workers exposed to the formulated product will mostly consist of spray painters applying the special paint coatings to surfaces. As the paints are to be used in both OEM and refinish operations, there could be variations in the scale and sophistication of the spray painting operations, and the controls in

place that would affect exposure.

The final concentration of the notified polymer in paints will be < 10%, reducing the potential for worker exposure. Dermal exposure is possible during preparation of paint, which involves stirring, transfer and dilution steps. Aerosols may be formed during spray application and therefore inhalation exposure may be possible. To minimise exposure during end use, the paint is diluted and applied in a well ventilated, down draft spray booth with an effective fume extraction system. Workers also wear anti-static footwear and flame retardant overalls, impervious gloves, eye protection and an air fed breathing mask or respirator if local exhaust ventilation is inadequate.

Spray painting may be carried out without the full range of controls mentioned above, increasing exposure.

Worker exposure to the notified polymer in dried paints is likely to be minimal, as the polymer will be encapsulated as part of the cured paint film.

5.4. Release

RELEASE OF CHEMICAL AT SITE

Local operations will include transport and storage, formulation, filling and packaging and application by end-users using spray gun.

During storage and paint manufacture the notified polymer will be released in the following ways:

- Spills - up to 1%, up to 100 kg annually to landfill
- Import container residue - less than 2%, up to 200 kg annually to waste contractor
- During paint formulation - up to 1%, up to 100 kg generally to next batch

During paint formulation, it is anticipated that there will be minimal release of the notified polymer during manual transfer from the storage containers to the mixers and during filling of paint into containers or during blending since it is undertaken in enclosed systems under exhaust ventilation and in a bunded area. Spills will be contained by the bunding, collected with inert absorbent material (eg sand) and placed in a sealable container ready for disposal. The process equipment, blending tanks and mixers will be cleaned with suitable solvent which is collected and used in the next batch, if possible, otherwise it will be disposed off-site.

Import containers will be rinsed with the rinsate being used in the paint formulation and the rinsed containers will be disposed of off-site.

RELEASE OF CHEMICAL FROM USE

Release of the notified polymer to the environment as a result of its use in the automotive industry is expected to be minimal, unless an accidental spillage occurs, and include:

- Spills - up to 1%, up to 100 kg annually to landfill
- Container residue - up to 2.5 %, up to 250 kg annually to landfill
- Overspray - up to 30%, up to 3000 kg annually to landfill
- Equipment cleaning - up to 5%, up to 500 kg annually to waste contractor

All spills will be contained, collected with inert absorbent material (eg sand) and placed in a sealable container ready for disposal. Since the modern high volume low pressure (HVLP) spray guns have a 70% spray efficiency while the older high pressure guns have an efficiency of only 30%, the former are used more frequently and have been used in the above overspray release estimation. As the paint will be applied within a specialised spray booth, all overspray will be contained and collected for disposal.

Any paint residue in empty paint containers will be allowed to dry and then disposed of with the container.

Painting equipment will generally be cleaned with solvent. This effluent will be collected and reused if possible otherwise it will be disposed of off-site.

5.5. Disposal

The rinsed import containers, 25 kg pails and 200 kg steel drums, and steel end-user paint cans, containing any residual notified polymer (up to 250 kg annually), will be disposed to landfill as industrial waste. At the paint manufacturing plants effluent generated during container rinsing and equipment cleaning effluent (up to 300 kg of waste notified polymer annually) will be collected and reused where possible. Otherwise it will be disposed of to a liquid waste facility by a licensed contractor (eg for solvent recovery). A further 500 kg will go to liquid waste contractors from the cleaning of paint application equipment. There will be no release to sewer.

Any spilt material (containing up to 200 kg annually of the notified polymer) will be disposed of to landfill. The spray booth filters are replaced every 2 to 4 months and the used filters, containing up to 3000 kg of notified polymer annually) will be disposed of to landfill. Any effluent from wet scrubbers, if used, will go to licensed liquid water facilities.

5.6. Public exposure

The general public is not expected to come into contact with EFKA-4570 or products containing it, except in the case of transport accidents where the packaging was breached.

Once the paint containing the notified polymer is applied to the substrate in the automotive industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable.

6. PHYSICAL AND CHEMICAL PROPERTIES

Unless otherwise stated, physico-chemical properties refer to EFKA-4570 rather than the notified polymer.

Appearance at 20°C and 101.3 kPa		Clear Yellow viscous liquid
Boiling Point		243°C at 101.3 kPa (for solvent tripropyleneglycol monomethylether)
Density		1020 kg/m ³ at 20°C
Remarks	Method not specified.	
Vapour Pressure		1.33x10 ⁻³ kPa at 20°C (for solvent tripropyleneglycol monomethylether)
Water Solubility		Soluble
METHOD	Qualitative testing only was carried out. A 50 g sample of EFKA-4570 was mixed with an equivalent amount of water in a flask and heated to the boiling point of water. After cooling the result was a homogeneous slightly hazy one-phase system. No change in appearance of the one phase system was observed over several hours.	
Remarks	The presence of solvents (40%) in EFKA-4570 can affect the relevance of this test. The notified polymer contains functionalities that would confer water solubility, however, this may be somewhat offset by the very hydrophobic grouping present.	
TEST FACILITY	Not stated.	
Hydrolysis as a Function of pH		Not determined.
		The notified polymer contains functional groups in side chains which may undergo hydrolysis under extreme conditions. However, this is unlikely in the environmental pH range 4-9.
Partition Coefficient (n-octanol/water)		Not determined.

The notifier expects the notified polymer to partition mostly into octanol phase based on the presence of the hydrophobic group. However, in its structure it possesses elements that would allow it to partition to either water or n-octanol. Therefore it cannot be accurately determined without the undertaking of a test.

Adsorption/Desorption

Not determined.

Due to the structural components present it is not possible to estimate the likely extent of sorption to solids or sediments.

Dissociation Constant

Not determined

METHOD

Remarks

The notified polymer contains a tertiary nitrogen atom with pK_a ranging from 9.0 – 11.0.

Particle Size

Not applicable as imported in solution.

Flash Point

121°C (for solvent tripropyleneglycol monomethylether)

Flammability Limits

(for solvent tripropyleneglycol monomethylether)

Upper: 7%

Lower: 1.1%

Autoignition Temperature

277°C (for solvent tripropyleneglycol monomethylether)

Explosive Properties

Does not present an explosion hazard

Remarks

Statement by notifier

Reactivity

Stable under normal conditions of use. No dangerous reactions known. No dangerous decomposition products known.

Remarks

Statement by notifier.

7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted

8. ENVIRONMENT

8.1. Environmental fate

No environmental fate data were submitted.

8.2. Ecotoxicological investigations

No ecotoxicological data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Exposure will only occur due to use of the notified polymer as it will not be manufactured in Australia. It will be reformulated into paints that will be used across Australia by professional trades people in the automotive industries, ie will not be available for general consumer use. The proposed use pattern and waste management indicate a low potential for environmental release of the notified polymer. Solid wastes (containing up to 3450 kg of notified polymer annually) resulting from the paint manufacture and paint use will be collected and sent to landfill or incineration.

Liquid effluents (containing up to up to 800 kg) produced from paint formulation and use will be sent to liquid waste plants, including solvent recovery, where the notified polymer will end up in any resultant sludge which will be disposed of to landfill. A small amount of the notified polymer may be present in effluent discharged to sewer, which is expected to undergo further treatment prior to eventual discharge to the aquatic environment. The notified polymer has the potential to be cationic. Cationic polymers with a number average molecular weight greater than 1,000 are assumed to partition mainly to the solids phase and to be 90% removed relative to the total influent concentration. The remaining 10% is assumed to be discharged to receiving waters although much of this material is likely to be in the form of polymer sorbed to suspended solids (Boethling and Nabholz 1997). However, in the pH of the sewer, most will be in the undissociated form.

Following application and curing, the notified polymer is likely to be tightly cross-linked within an inert matrix. Due to its high molecular weight, the potential for bioaccumulation is very low.

9.1.2. Environment – effects assessment

No ecotoxicological data were provided for the notified polymer, thus a PNEC cannot be estimated. Following application and curing, the notified polymer will be within an inert matrix and be unavailable to organisms. However, being potentially cationic any unbound polymer is likely to exhibit significant toxicity to aquatic organisms, particularly algae (Boethling and Nabholz 1997).

9.1.3. Environment – risk characterisation

The notified polymer will interact with other components to form a stable chemical matrix and, once dry, is expected to be immobile and pose little risk to the environment. After the useful life of painted article, the notified polymer will suffer the same fate as the article. If the article is recycled then the notified polymer will be destroyed during the heating process to release water vapour, oxides of carbon and nitrogen.

Within a landfill environment, the notified polymer (up to 3450 kg) contained in waste from paint manufacture and paint application, including cured paint, will be immobile and is

expected to breakdown at a very slow rate.

The notified polymer is not likely to present a risk to the environment when it is stored, transported, used, recycled and disposed of in the proposed manner.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

During transport and storage, worker exposure to EFKA-4570 containing the notified polymer or to products containing it, is expected to be very low, and would only occur if accidental spillage of the materials occurred.

During processing of EFKA-4570 into paint formulations there is potential for dermal/ocular exposure of workers. However standard engineering controls for formulation, eg enclosure and local exhaust ventilation, would limit this to incidental exposure. Exposure at this stage could occur to EFKA-4570 containing 60% of the notified polymer, or to paint formulations containing < 10% of the notified polymer.

Potential for exposure occurs at the end-use stage, when paint formulations containing < 10% of the notified polymer are prepared for application and sprayed onto automotive components. Dermal/ocular exposure is likely during cleaning of the equipment and during the small-scale preparation for spraying, which may involve stirring the paint, diluting with solvent, and transfer to the spray gun. During the spraying process itself, inhalation and possibly ingestion exposure is possible, because aerosols containing the notified polymer would be formed during atomisation of the paint. The extent of dermal/ocular and inhalation exposure will depend on the controls in place, including isolation and engineering measures. It is estimated that > 1000 workers will carry out spray painting using formulations containing the notified polymer. Some of this will occur at large facilities manufacturing new automotive components. Some will occur as refinishing at crash repair shops which may vary in the type and effectiveness of spray booths or other equipment. While much of the spray painting may be carried out with a high level of controls, the possibility of less effective control measures and therefore higher worker exposure cannot be ruled out.

It should be noted that worker exposure to the notified polymer in paint would leave obvious staining, and would therefore be avoided by workers wherever possible.

Worker exposure to the notified polymer in dried paints is likely to be minimal, as the polymer will be encapsulated as part of the cured paint film.

9.2.2. Public health – exposure assessment

Once the paint containing the notified polymer is applied to the substrate in the automotive industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable. Therefore no significant dermal or inhalation exposure to the public is expected

9.2.3. Human health - effects assessment

The high molecular weight of the notified polymer should limit absorption across biological membranes. However systemic toxicity cannot be ruled out because 4% of low molecular weight species < 1000 is present. Hazardous monomers are present only at low levels, well below the cut-off concentration for classification as a hazardous substance under the NOHSC . *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2002).

As no toxicological data have been submitted the notified polymer cannot be classified under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2002).

9.2.4. Occupational health and safety – risk characterisation

The health effects of the notified polymer have not been characterised. Its absorption into the

body is expected to be limited by its high molecular weight. However some low molecular weight species < 1000 are present.

The notified polymer will be imported in 25 kg pails and 200 L drums as a 60% solution in solvent as EFKA-4570. It will be used as an additive in industrial automotive paints for spray application, in both original equipment manufacture (OEM) and refinishing applications.

Dermal/ocular exposure to the notified polymer may occur during paint manufacture and paint application by spray painting. In addition inhalation and possibly ingestion exposure may also occur during spray painting.

During formulation, exposure and the consequent risk of systemic health effects would be reduced by engineering controls such as enclosed tanks. This risk would be further reduced by use of protective clothing including gloves.

In spray painting both engineering controls such as spray booths and full personal protective equipment are needed to reduce the exposure to a low level. The risk of possible systemic effects resulting from exposure would be further reduced by spray painting being carried out according to the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b).

Once the final paint mix has hardened, the notified polymer is bound within the matrix and unavailable for exposure. Therefore, should exposure occur, the risk of health effects from the polymer is low.

Overall the health risk to workers is considered low, if appropriate engineering controls are in place to prevent exposure.

9.2.5. Public health – risk characterisation

Once the paint containing the notified polymer is applied to the substrate in the automotive industry, the notified polymer is bound in an insoluble polymeric matrix and is not bioavailable. Therefore no significant exposure to the public is expected.

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

10.1. Hazard classification

Based on the available data the notified polymer is not classified as a hazardous substance under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

and

As a comparison only, the classification of notified polymer using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations, 2003) is presented below. This system is not mandated in Australia and carries no legal status but is presented for information purposes.

Based on available data the notified polymer is not classified for health effects under the GHS. For the environment it is not possible to categorise the notified polymer according to the GHS.

10.2. Environmental risk assessment

The notified polymer 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 when used as a paint additive.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the product containing the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 2003). It 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 polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994). The accuracy of the information on the label remains the responsibility of the applicant.

12. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following isolation and engineering controls to minimise occupational exposure to the notified polymer:
 - Closed tanks and lines for formulation and filling of paint containing the notified polymer;
 - Use of engineering controls in spray painting to minimise exposure of workers.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer;
 - Avoid splashing, spills and generation of aerosols during formulation and filling processes;
 - Spray application of paint containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b)
 - Workers using spray products containing the notified polymer should be instructed in their proper handling and use, including information about the additional risks posed by spray application.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
 - Protective gloves
 - Safety glasses or goggles
 - Industrial clothing
 - Respiratory protection during spray painting, or if aerosols are formed
 - Full body protection during spray painting

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

- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of

State and Territory hazardous substances legislation must be in operation.

Environment

- The following control measures should be implemented by paint manufactures and warehouse sites to minimise environmental exposure during paint formulation and storage of the notified polymer:
 - All process equipment and storage areas should be banded.

Disposal

- The notified polymer should be disposed of to landfill for solids and to licensed waste contractors for liquids.

Emergency procedures

- Spills/release of the notified polymer should be contained by soaking up with inert absorbent material and dispose of as special waste in compliance with local and State regulations as recommended in the MSDS.
- Use detergent in cleaning up.
- Prevent product from entering drains.

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 Subsection 64(1) of the Act; if
 - Due to the potential cationic nature of the notified polymer, there are any changes to the use pattern which significantly increases the potential for aquatic exposure, whereby full ecotoxicity studies for fish, daphnia and algae would need to be submitted for assessment.

or

- (2) Under Subsection 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.

13. BIBLIOGRAPHY

Boethling RS and Nabholz JV (1997) Environmental Assessment of Polymers under the U.S. Toxic Substances Control Act, Chapter 10. In: Ecological Assessment of Polymers: Strategies for Product Stewardship and Regulatory Programs. Hamilton JD and Sutcliffe R (Eds), Van Nostrand Reinhold NY.

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets, [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1999a) List of designated hazardous substances [NOHSC:10005(1999)]. Sydney, National Occupational Health and Safety Commission.

NOHSC (1999b) National Guidance Material for Spray Painting. Australian Government. National Occupational Health and Safety Commission, 1999. Accessed at <http://www.nohsc.gov.au/ohslegalobligations/nationalstandards/spraypainting> 2/9/04

NOHSC (2002) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2002)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

NOHSC (2003) National Code of Practice for the Preparation of Material Safety Data Sheets, 2nd edn [NOHSC:2011(2003)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

United Nations (2003) Globally Harmonised System of Classification and Labelling of Chemicals (GHS). United Nations Economic Commission for Europe (UN/ECE), New York and Geneva.