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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME

FULL PUBLIC REPORT

PROCION ROYAL H-EXL

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

PROCION ROYAL H-EXL

1. APPLICANT

ICI Australia Pty Ltd, of 1 Nicholson Street, Melbourne 3000, has submitted a standard notification for the assessment of Procion Royal H-EXL.

2. IDENTITY OF THE CHEMICAL

Procion Royal H-EXL has been classified as hazardous by Worksafe Australia due to its skin sensitisation properties. However, for commercial reasons, the chemical identity, composition, methods of detection, and spectral data have been granted exemption from publication in the Full Public and Summary Reports. 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 Procion Royal H-EXL.
- 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.

2. IDENTITY OF THE CHEMICAL

Trade name: Procion Royal H-EXL

Molecular weight >1000

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Blue/black granular powder
Odour:	Not stated
Melting Point:	>300°C
Specific Gravity:	1.74 at 20°C
Vapour Pressure:	Test not performed due to high molecular weight and high melting point indicating vapour pressure will be very low.
Water Solubility:	27.6% w/w at 21°C
Surface Tension:	71.21 mM/m at 23ºC, concentration 1593 mg/L. Not a surface active agent.
Partition Co-efficient (n-octanol/water) log P_{ow}:	-4.4
Hydrolysis as a function of pH:	<10% hydrolysis after 5 days at 50ºC, pH 7. >10% hydrolysis after 5 days at 50ºC pH 4 & 9. The half life was calculated as 50.8 days and 1008 days at pH 4 & 9 respectively.
Adsorption/Desorption:	Test not performed due to high water solubility and low partition coefficient which indicates a low affinity for soil or sediment.
Dissociation Constant pK_a**:**	Test not performed but is expected to be highly dissociated in dilute solution as it is a sodium salt of complex aminosulfuric acids.
Flash Point:	Test not performed
Flammability Limits:	Not flammable
Autoignition Temperature:	390 $\underline{+}$ 4°C
Explosive Properties:	Not explosive under the influence of a flame nor sensitive to shock or friction.
Reactivity/Stability:	Not oxidising

Particle size distribution: range -

Particle equivalent aerodynamic diameter, μm	Weight %
≤ 15	0.00
≤ 35	0.83
≤ 50	6.35
≤ 75	11.62
≤ 115	17.13

. **Comments on physico-chemical properties**

All test were performed according to standard EC methods as described in the Official Journal of the European Communities.

The half-life rates of hydrolysis at 25°C, pH 4 and 9 were calculated from the rate of hydrolysis at 50, 60 and 70°C according to standard EC methods.

4. PURITY OF THE CHEMICAL

notified chemical > 50% pure

5. INDUSTRIAL USE

Procion Royal H-EXL is a dyestuff which will be applied to yarn or fabric manufactured from cellulose fibre or cellulosic fibre blends.

An estimated 1-10 tonnes of chemical in granular form will be imported into Australia annually for the first 5 years.

6. OCCUPATIONAL EXPOSURE

Procion Royal H-EXL will be imported from the UK in 25 kg metal drums with metal lid clamps. It will be transported within Australia by road freight. Exposure of transport workers will occur only in the event of accident.

The chemical will be used for laboratory development and shade matching at ICI Valchem and will then be supplied to customers (potentially 25 throughout Australia) where the chemical will be prepared and applied to yarn or fabric.

At ICI Valchem, exposure will be limited to up to 3 persons for 1/2 h per day. Workers will handle small quantities (1 kg/year). At the customer sites, exposure will be for approximately 8-12 h/day, with an anticipated total of 90-100 employees at maximum sales levels.

Workers employed in the customer colour kitchens will be involved in storage and retrieval of dyestuff drums, weighing of dyestuff, dissolving of dyestuff and transferring

dissolved dyestuff to dyeing machines. Workers will typically be exposed for 1-2 minutes during weighing operations. The dyestuff will be dissolved in water in an open high speed stirrer. During dissolution, workers are expected to be present only during the initial addition of dye to the machines as well as the during removal and rinsing of the stirrer (~1-2 minutes in total). There is potential for exposure to the notified chemical due to splashing, requiring the use of suitable personal protective clothing such as goggles and industrial clothing providing suitable protection

Workers involved in dyehouse operations will add the dissolved dyestuff to the dyeing machines (rinsing the container into the machine) and will sample the fabric and liquor after dyeing. Transfer time to the machines will depend on the distances involved. The applicant states a typical transfer time of 1 minute. Transfers will typically be conducted using trolleys. Addition to the machines, including rinsing of the containers into the machine is expected to take 1-2 minutes.

The applicant lists a number of engineering controls and personal protective equipment to control worker exposure. Workers handling the granulated dye will be instructed to wear overalls, safety glasses and impervious gloves. Exhaust ventilation systems will be employed in the colour kitchens to control exposure to dust as, although the dyestuff is in a non-dusting granular form, dust generation is possible unless the granules are carefully handled, particularly during weighing out. Indoor air will be under slight negative pressure in the weighing and mixing areas to ensure lifted granules are carried away from the work areas and operators.

Once the dyestuff is chemically fixed to the fibre, worker exposure should not be significant.

7. PUBLIC EXPOSURE

The chemical will be imported to Australia either in shipping containers, or by airfreight, and transported by road to commercial dyehouses in the original 25 kg containers. Dyehouse operations involve weighing, mixing with water, addition of the dye to the dyeing machine, sampling of the fabric after dyeing, and sampling of the liquor containing the dye to check pH and exhaustion levels. At a temperature of 80^{o}C, 65-70% of the dye is transferred to the fibre, and this increases to 90%, of which 82% is covalently bound to the fibre, after fixation at pH 10.8-11.2. Of the 18% of the dye not covalently fixed to the fibre, 10% will be in solution in hydrolysed form, and the other 8% will be attached to the fibre, in a hydrolysed form, by hydrogen bonds. This fraction will later be removed in rinsing and 'soap-off' stages. It is estimated that about 18% of the chemical will be discharged to the sewer, or specialised trade waste treatment plants, when disposing of spent liquors. The level of dyestuff in the effluent is estimated to be less than 100 ppm, and is likely to be diluted to less than 1 ppm before discharge to the environment.

The public may be exposed to the chemical in dyed yarns or fibre products, when it has been chemically fixed to the fibre.

8. ENVIRONMENTAL EXPOSURE

. Release

Release to the environment is only from the spent dye liquors and the washing baths. The actual compound expected to be released is mainly the hydrolysed product. In normal usage there should not be any release to the environment during transport, when used in the colour kitchens or during dyeing, apart from accidental spills.

. Fate

The dye is stable and unlikely to readily hydrolyse at environmental pHs. Once released to the environment the dye and hydrolysis product are expected to sorb to the sediments, as other dyes of this type have been shown to have increased adsorption to sediment in the presence of the calcium salts (3).

The dye was tested for its ready biodegradation and was found not to be readily biodegradable (negligible degradation, <1.5% after 28 days, Manometric Respirometry Test, OECD Guideline 301F). The dye and hydrolysis product are not expected to degrade in the environment.

Bioaccumulation is not expected due to high water solubility and low partition coefficient.

8. EVALUATION OF TOXICOLOGICAL DATA

9.1 Acute Toxicity

Table 1 Summary of the acute toxicity of Procion Royal H-EXL

Test	Species	Outcome	Reference
Acute oral toxicity	Rat	LD_{50} > 2000 mg/kg	(4)
Acute dermal toxicity	Rat	LD_{50} > 2000 mg/kg	(5)
Skin Irritation	Rabbit	Slight irritant	(6)
Eye irritation	Rabbit	Slight irritant	(7)
Skin sensitisation	Mouse (local lymph node assay)	Sensitiser	(9)

9.1.1 Oral Toxicity (4)

A dose of 2000 mg/kg was selected for the main study after a sighting study had shown no signs of toxicity in a single female Wistar rat after a 2000 mg/kg gavage dose. In the main study Wistar-derived albino rats (Alpk:APfSD) (5/sex) were administered 2000 mg/kg of the notified chemical in deionised water, by gavage, and observed for 7 days.

There were no deaths or clinical signs of toxicity, and bodyweight gains were normal during the study. The post mortem examination of all rats showed no treatment-related effects.

It was concluded that the acute oral LD_{50} of the notified chemical was greater than 2000 mg/kg in rats.

9.1.2 Dermal Toxicity (5)

Wistar-derived albino rats (Alpk:APfSD) (5/sex) were administered 2000 mg/kg of the notified chemical in deionised water to shaved backskin for 24 hours under an occlusive bandage. The application sites were then wiped free of residual test material with cotton wool soaked in warm water, and tissue paper. The animals were observed for 15 days.

There were no deaths or clinical signs of toxicity, and bodyweight gains were normal during the study. The majority of rats showed signs of slight skin irritation. The post mortem examination showed no effects.

It was concluded that the dermal LD_{50} of the notified chemical was greater than 2000 mg/kg in rats.

9.1.3 Skin Irritation (6)

Approximately 500 mg of the undiluted notified chemical, moistened with a small amount of deionised water, was applied to the shaved flank skin of 3 female New Zealand White rabbits for 4 hours, under an impermeable dressing. The application sites were then wiped free of residual test material with cotton wool soaked in warm water, and tissue paper.

Very slight erythema was observed in 2 rabbits for up to 4 and 14 days. In the third rabbit, blue staining by the test chemical prevented initial assessment for erythema. The staining had decreased sufficiently by day 3 to determine that there was no erythema. Very slight oedema was observed in 1 animal only and had completely regressed after 2 days. Mean erythema scores were 1, 0, and 1, and mean oedema scores were 0, 0.3 and 0, respectively, for the 3 rabbits. On the basis of this data the notified chemical can be considered to be a slight skin irritant in rabbits.

9.1.4 Eye Irritation (7)

Approximately 100 mg of the undiluted notified chemical was instilled to the conjunctival sac of the left eye of 3 female New Zealand White rabbits. The eyes were examined after 1 hour, and 1, 2 and 3 days, and thereafter at intervals up to 21 days, and the Draize (8) scale was used to assess the grade of ocular reaction. Fluorescein staining was used to assess any corneal damage. Accurate assessment of ocular irritation was not possible due to blue dye staining by the chemical. Assessment of the cornea and iris was first possible on days 7-10, and no effects were observed, up to day 21. In 2/3 animals, the staining prevented assessment of conjunctival redness for the duration of the study. In the remaining animal, the conjunctiva became visible after 14 days, at which time no redness was observed. Slight chemosis was observed in all 3 rabbits at 1 hour after treatment, and persisted in 1 rabbit for 2 days. A severe discharge occurred in all 3 rabbits at 1 hour, and persisted as a slight discharge in 1 rabbit at 1 day. No discharge was observed in any rabbit at 2 days. It can be concluded that the notified chemical had the potential to cause no more than mild ocular irritation.

9.1.5 Local Lymph Node Assay (9)

Groups of 4 adult male CBA/Ca mice were administered about 25 μL of a 3, 10 or 30% w/v solution of the notified chemical by micropipette to the dorsum of each ear. A vehicle control was similarly treated using propylene glycol only. The procedure was repeated daily for 3 consecutive days. Three days after the third application, all the animals were injected, via the tail vein, with saline containing ^{3}H-methyl thymidine. About 5 hours later the animals were killed, the draining lymph nodes were removed, and single cell suspensions of the lymph nodes were prepared for scintillation counting. Results were expressed as mean counts per minute per lymph node, for each group. The activity of each test group was divided by the activity of the vehicle control group to give a test:control ratio for each concentration. A positive control group was treated with 1, 3 or 10% of 2-mercaptobenzothiazole in dimethylformamide, and a vehicle control group was treated with dimethylformamide only. The criteria for a positive response was an increase in isotope incorporation for at least one concentration by three-fold or more compared to the vehicle control and data compatible with a biological dose-response.

The ratios of activity (test:control) were 2.68, 2.29 and 4.59, at 3, 10 and 30% respectively, for the notified chemical, which was therefore classified as a skin sensitiser. A significant response was also noted for the positive control, but not for the vehicle control.

9.2 Repeated Oral Dose Study

9.2.1 28-day gavage study in rats (10)

In the main study Wistar-derived albino rats (Alpk:APfSD) (5/sex) were dosed by gavage with the notified chemical at dose levels of 0, 20, 150 or 1000 mg/kg/d for 28 days, and were then sacrificed and subjected to a post-mortem examination. Two additional (recovery) groups were similarly dosed with 0 or 1000 mg/kg/d for 28 days, retained without treatment for a further 14 days, and then sacrificed for post-mortem examination. Haematology, clinical chemistry and urinalysis were performed on all rats at termination.

There were 3 deaths, consisting of 2 males (1000 mg/kg/day) on day 7 and 27, and 1 female (1000 mg/kg/day) on day 18. The death of the recovery male on day 7 was due to pyelonephritis (kidney inflammatory condition). The male that died on day 27 and the female that died on day 18 had moderate/marked tubular necrosis in the kidneys which was attributed to the test chemical. Female body-weights in the main and recovery 1000 mg/kg/d groups were reduced from day 16 onwards, and food consumption in these groups was reduced over weeks 3 and 4. Haematocrit concentration and mean cell volume were slightly reduced, and mean cell haemoglobin was slightly increased, in females at 1000 mg/kg/d in the main study. Haematocrit concentration and mean cell volume were also reduced in recovery females at 1000 mg/kg/d. In the 1000 mg/kg/d main study group, plasma triglycerides were increased in males, and plasma cholesterol was reduced in females. In the main and recovery groups, plasma alanine transaminase activity was reduced in males, and plasma aspartate transaminase activity was found to have increased in females, at 1000 mg/kg/d only.

Renal epithelial cells were observed in the urinary sediment in the 1000 mg/kg/d recovery group, and kidney weights were increased in males and females in the 1000 mg/kg/d main and recovery groups. Increased kidney weights occurred in main study males and females, and recovery females, at 1000 mg/kg/d. Microscopic findings consisted of moderate/marked renal tubular degeneration in main study males and females at 1000 mg/kg/d, and minimal /slight hepatocyte vacuolation and minimal centrilobular single necrosis for main study females given 1000 mg/kg/d. These liver changes were not evident after the recovery period. No toxicity was evident at 20 or 150 mg/kg/d.

9.3 Genotoxicity

9.3.1 Test for mutagenicity in *Salmonella typhimurium* and *Escherichia coli* (11)

In 2 separate bacterial mutagenicity experiments, based on the method of Maron and Ames (10), the notified chemical (200-7289 μg/plate) was negative in *S. typhimurium* strains TA1535, TA1537, TA98 and TA100, and *E. coli* strains WP2P and WP2P*uvrA* in the presence and absence of S9. Positive controls indicated that the assay was performing satisfactorily, the criteria for this being a statistically significant dose-related increase in the mean number of revertant colonies and a two-fold or greater increase in the mean number of revertant colonies which is significant at at least one dose level.

9.3.2 Test for chromosomal aberrations in human lymphocytes *in vitro* (13)

The notified chemical, at concentrations of 50-7289 μg/mL (with S9 mix) and 50-3500 μg/mL (without S9 mix), did not induce chromosomal aberrations in human lymphocytes *in vitro*. Precipitation of the test material was observed at all concentrations but did not affect the quality of the metaphase preparations. Positive controls indicated that the assay was performing satisfactorily, the criteria being that positive control materials, mitomycin C and cyclophosphamide induced statistically and biologically significant increases in the percentage of aberrant cells at concentrations of 0.2μg/ml (in the absence of S9 mix) and 50g/ml (in the presence of S9 mix) respectively in cultures from both male and female donors.

9.4 Overall Assessment of Toxicological Data

The acute oral LD_{50} of the notified chemical was greater than 2000 mg/kg in rats; the acute dermal LD_{50} was greater than 2000 mg/kg in rats. According to the Worksafe Australia's *Approved Criteria for Classifying Hazardous Substances* (1), the notified chemical was not a skin irritant in rabbits. Skin sensitisation was observed in a mouse local lymph node assay. The eye irritancy of the chemical could not be fully assessed due to dye staining, however the observations presented indicate that the chemical is at worst, a moderate eye irritant. An acute inhalation study was not submitted. Reactive dyes similar to the notified chemical have been associated with respiratory sensitisation.

A 28-day gavage study in rats identified the kidney and liver as the main targets, with increased kidney weights, tubular degeneration and renal cells in the urinary sediment, and hepatocyte vacuolation, minimal cell necrosis, and changes in plasma lipids and enzymes, mainly in females, at 1000 mg/kg/d. The liver, but not the kidney toxicity was reversible after a 14-day recovery period. Other effects included reduced body-weight gains and a slight reduction in haematopoiesis in 1000 mg/kg/d females. No toxicity was observed at 20 or 150 mg/kg/d.

Tests for the induction of mutations in *S. typhimurium* and *E. coli*, and chromosomal aberrations in human lymphocytes *in vitro*, were negative.

In accordance with Worksafe Australia's *Approved Criteria for Classifying Hazardous Substances* (1), the notified chemical would not be classified as hazardous with respect to acute lethal effects (oral, dermal), irritant effects (skin, eye) or serious effects after repeated or prolonged exposure. However, on the basis of a positive result in the test for skin sensitisation the notified chemical would be classified as hazardous with respect to sensitising effects (skin).

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

The following ecotoxicity studies have been provided by the notifier for the notified chemical. These studies were performed according to EEC methods.

Test	Species	Result
Acute toxicity	Rainbow trout	96h LC_{50} > 180 mg/L
Acute toxicity	Daphnia magna	48h EC_{50} > 180 mg/L
Respiration of sludge -TG 209	Activated sludge	3 hr EC_{50} >100 mg/L 3 hr NOEC = 100 mg/L

The ecotoxicity studies show that the dye is practically non-toxic to the tested aquatic organisms. The company has not provided any information on the toxicity of the dye to algae. As the other ecotoxic data presented showed no significant toxicological effect and acid dyes in general are not directly toxic to algae (14), the notified substance is not expected to be toxic to algae. Acid dyes can have an indirect effect on algae due to shading, which is transient in nature.

The dye is not expected to have significant environmental effects when released into the environment. It is assumed that the hydrolysed product will have simular ecotoxicity as the reactive dye.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

The applicant has not specified the location of the dyehouses in which the dye is likely to be used, but has stated that about 90% of the expected customers are located in cities. The environmental hazard has been determined for dyehouses located in two Australian locations, one metropolitan based dyehouse and the other country based. These calculations assume that no dye is removed in treatment of the different waste effluents.

The company has provided the following information on use in Australia.

Amount of chemical used:	10 kg
Volume of wastewater from dye bath	50,000 L
Fixation to fibre	82%
Purity of chemical	68.6%
From the above information,	
Concentration of dye in dye bath waste	25 ppm

For a country based dyehouse the assumptions are: 3 dye baths, one of which is using the notified dye, discharging a total of 150,000 L of waste into the municipal sewer with a flow of 5 mL which is then discharged to a river in drought conditions.

Concentration of dye in dyehouse effluent	8.3 ppm
Concentration in sewer outflow	0.25 ppm
Concentration in river (2:1 dilution)	0.13 ppm

For a city based dyehouse the assumption are: 10 dye baths, only one of which is using the notified dye, discharging 500,000 L of effluent into the municipal sewer with a flow of 250 mL which is discharged to the sea.

Concentration of dye in dyehouse effluent	2.5 ppm
Concentration in sewer outflow	0.005 ppm
Concentration in sea (10:1 dilution)	0.0005 ppm

The company has estimated the concentration of the dye (hydrolysis product) to be between 24-87 ppm (from the dye bath). Using the above assumptions and the worst case as presented by the company, eg 87 ppm from dye bath, the concentration in the country scenario is 0.44 ppm (in the river) and for the city 0.0017 ppm (1.7 ppb in the ocean). As these types of dyes have been shown to sorb to sediments (3) and it was assumed there was no dye (hydrolysis product) removed in the waste treatment plants, the actual concentration in the receiving waters is likely to be lower that calculated.

The applicant has also provided a predicted environmental concentration (PEC) calculation for a typical dyehouse in the EEC. The concentration calculated in the sewage outfall was 0.34 ppm, which closely reflects the concentration calculated by the EPA for Australian use.

These calculations show that the exposure to aquatic organisms is several magnitudes below the fish and daphnia EC50 levels. Therefore there is unlikely to be any significant effect on these organisms from use of the dye. There is also unlikely to be any effect on algae (14) and the minimal effect on the other aquatic organisms tested.

The only other source of environmental contamination is from accidental spills etc. The instructions in the MSDS are adequate to limit the environmental exposure and therefore limit the environmental effects.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

The notified chemical is expected to exhibit low toxicity by the oral and dermal routes and is not expected to exhibit serious effects on repeated or prolonged exposure. It is likely to be a slight skin irritant and a slight eye irritant and is unlikely to be genotoxic. However, the notified chemical is likely to exhibit skin sensitisation and respiratory sensitisation.

Skin, respiratory and eye exposure during weighing out of the dyestuff is expected to be minimised due to its non-dusty granular form and the fact that local exhaust ventilation is generally used in colour kitchens. Following dissolution of the dyestuff in water, dermal and eye exposure by splashing is possible during addition to the dyebath, rinsing of equipment and if handling of dyed fabric is required during the dyeing process. Disposal of spent liquors and washings is expected to result in low exposure.

The risk of respiratory sensitisation during weighing out of the dyestuff is expected to be low as a result of its granular form and the use of local exhaust ventilation. However, there would appear to be a potential for dermal contact and sensitisation with the notified chemical in other dyeing operations, requiring adequate personal protective equipment to be used.

The public may come in contact with the yarn or fibre products dyed with the notified chemical. However, as the dyestuff is chemically fixed to the fibre, public exposure is expected to be negligible. The notified chemical is therefore considered not to constitute a significant health risk when used in the proposed manner.

The clean-up procedures and personal protective equipment detailed in the MSDS for Procion Royal H-EXL should ensure worker exposure is kept to a minimum.

13. RECOMMENDATIONS

To minimise occupational exposure to Procion Royal H-EXL the following guidelines and precautions should be observed:

. when using the notified chemical the following protective equipment should be worn:

  - impervious rubber gloves conforming to Australian Standards (AS) AS 2161 (15),

  - protective clothing conforming to AS 2919 (16), and

  - protective footwear conforming to AS/NZS 2210 (17).

. If dust is generated, and engineering controls are not sufficient to control exposure to dust, the following protective equipment should also be worn:

  - respiratory protection conforming to AS/NZS 1715 (18), and

  - protective eye goggles conforming to AS/NZS 1337 (19), AS 1336 (20).

. Good work practices should be implemented to prevent splashing, generation of dust and spills.

. Good personal hygiene practices should be observed.

. A copy of the Material Safety Data Sheet (MSDS) should be easily accessible to employees.

14. MATERIAL SAFETY DATA SHEET

The attached MSDS for Procion Royal H-EXL was provided in Worksafe Australia format (21). This MSDS was provided by ICI Australia (Operations) Pty Ltd as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of ICI Australia (Operations) Pty Ltd.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of Procion Royal H-EXL shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

16. REFERENCES

1. National Occupational Health and Safety Commission, 1994, *Approved Criteria For Classifying Hazardous Substances [NOHSC:1008(1994)]*, AGPS, Canberra, Australia.

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16. Standards Australia, 1987, *Australian Standard 2919 - 1987 Industrial Clothing,* Standards Association of Australia Publ., Sydney, Australia.

17. Standards Australia, 1994, *Australian Standard 2210 - 1994 Occupational Protective Footwear, Part 1: Guide to Selection, Care and Use. Part 2: Specifications,* Standards Association of Australia Publ., Sydney, Australia.

18. Standards Australia, Standards New Zealand, 1994, *Australian/New Zealand Standard 1715 - 1994 Selection, Use and Maintenance of Respiratory Protective Devices*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ., Wellington, New Zealand.

19. Standards Australia, Standards New Zealand 1992, *Australian/ New Zealand Standard 1337-1992, Eye Protectors for Industrial Applications*, Standards Association of Australia Publ., Sydney, Australia, Standards Association of New Zealand Publ. Wellington, New Zealand.

20. Standards Australia, 1994, *Australian Standard 1336-1994, Recommended Practices for Eye Protection in the Industrial Environment*, Standards Association of Australia Publ., Sydney, Australia.

21. National Occupational Health and Safety Commission 1990, *Guidance Note for Completion of a Material Safety Data Sheet 2nd Edition*[1], Australian Government Publishing Services, Canberra, Australia.

[1] This guidance note, to which an MSDS must conform in accordance with the Act, has been superseded by the National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]