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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in UCECOAT® 7849

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and *Industrial Chemicals (Notification and Assessment) Regulations 1990*. 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.

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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

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FULL PUBLIC REPORT

Polymer in UCECOAT® 7849

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Cytec Australia Holdings Pty Limited (ABN: 45 081 148 629)
Suite 1, Level 1 Norwest Quay
21 Solent Circuit
Norwest Business Park
Baulkham Hills NSW 2153

NOTIFICATION CATEGORY
Limited: Polymer with NAMW ≥ 1000 (more than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:

Data items and details claimed exempt from publication:
Identity of Chemical

- Chemical names
- Other names
- CAS Number
- Molecular formula
- Structural Formula
- Molecular weight
- Spectral data

Composition

- Purity
- Identity of toxic or hazardous impurities
- % Weight of toxic of hazardous impurities
- Non-hazardous impurities
- Identity of additives/adjuvants
- % Weight of additives/adjuvants

Manufacture/import volume, Identity of sites, Concentration of the notified polymer in end-use products.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Variation to the schedule of data requirements is claimed as follows:

Physical and Chemical Data

- Melting Point/Boiling Point
- Specific Gravity/Density
- Vapour Pressure
- Hydrolysis as a Function of pH
- Partition Co-efficient
- Absorption/Desorption
- Dissociation Constant
- Flash Point
- Flammability Limits
- Autoignition Temperature
- Explosive Properties
- Reactivity

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None.

NOTIFICATION IN OTHER COUNTRIES
USA (PMN P-04-818 submitted August 17, 2004).

2. IDENTITY OF CHEMICAL

OTHER NAME(S)
Polymer in UCECOAT 7849, RD 6/804

MARKETING NAME(S)
Polymer in UCECOAT 7849

MOLECULAR WEIGHT
Number Average Molecular Weight (Mn) > 1000

ANALYTICAL DATA
A reference IR spectrum was provided.

3. COMPOSITION

DEGREE OF PURITY
>97%

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS
Two hazardous impurities, are present individually at < 1%.

NON HAZARDOUS IMPURITIES/RESIDUAL MONOMERS (>1% by weight)
One impurity at approximately 1%.

ADDITIVES/ADJUVANTS
UCECOAT® 7849 contains the notified polymer at < 40%, water at < 80% and a range of minor impurities (see MSDS).

DEGRADATION PRODUCTS
Degradation products are: nitrous oxides, hydrogen cyanide, aromatic and aliphatic hydrocarbons, carbon monoxide and carbon dioxide.

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

4. PHYSICAL AND CHEMICAL PROPERTIES

The notified polymer is manufactured as an aqueous dispersion and is never isolated. The properties below refer mainly to this dispersion as indicated.

Appearance at 20°C and 101.3 kPa Clear to slight opalescent liquid.

Property	Value	Data Source/Justification
Melting Point/Freezing Point	0°C	MSDS for UCECOAT® 7849 (aqueous dispersion)
Boiling Point	100°C at 101.3 kPa	MSDS for UCECOAT® 7849 (aqueous dispersion)

Density	1000 kg/m^3 at 20^{o}C	MSDS for UCECOAT® 7849 (aqueous dispersion)
Vapour Pressure	0.133 kPa at 20^{o}C	MSDS for UCECOAT® 7849 (aqueous dispersion)
Water Solubility	0.014 g/L	Measured
Hydrolysis as a Function of pH	Not determined	Cannot be determined due to the relatively low water solubility.
Partition Coefficient (n-octanol/water)	Not determined	Expected to be moderately high due to the relatively low water solubility.
Adsorption/Desorption	Not determined	The notified polymer is expected to associate with soil matrix due to the relatively low water solubility.
Dissociation Constant	pKa = 4.41	Estimated
Particle Size	Not determined	Polymer supplied as aqueous dispersion
Flash Point	Not determined	Polymer supplied as aqueous dispersion
Flammability	Not determined	Polymer supplied as aqueous dispersion
Autoignition Temperature	Not determined	Polymer supplied as aqueous dispersion
Explosive Properties	Not determined	Polymer supplied as aqueous dispersion

Discussion of Observed Effects

For full details of the physical-chemical properties tests please refer to Appendix A.

Reactivity

Expected to be stable under normal environmental conditions.

Dangerous Goods classification

Based on the available physico-chemical properties the notified polymer is not classified as a Dangerous Good according to the Australian Dangerous Goods Code (FORS, 1998).

5. INTRODUCTION AND USE INFORMATION

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

As an aqueous dispersion containing < 40% notified polymer.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	3 - 10	3 - 10	10 - 30	10 - 30	30 - 100

PORT OF ENTRY

The dispersion containing the notified polymer will be imported through Sydney, by wharf.

IDENTITY OF MANUFACTURER/RECIPIENTS

Paint formulators.

TRANSPORTATION AND PACKAGING

The notified polymer will be imported in 200 L stainless steel drums as an aqueous dispersion at a concentration of < 40%. It will be transported from the wharf to paint formulators around Australia for warehousing for formulation into a paint product. Truck drivers will transport the sealed UCECOAT 7849 containers by road from the wharf to the paint formulator's warehouse.

USE

UV-curable coatings for substrates such as wood.

OPERATION DESCRIPTION

The notified polymer will be imported in 200 L stainless steel drums as < 40% active material. It will be transported from the wharf to the notifier for warehousing before being supplied to paint formulators for formulation into a paint product. Truck drivers will transport the sealed UCECOAT 7849 containers by road from the wharf to the paint formulator's warehouse. Two incoming goods receiving personnel will unload the containers of UCECOAT 7849 and store them in designated storage areas.

The liquid polymer dispersion will be reformulated into paint products at the paint manufacturing site. Formulation of the notified polymer into paint products will involve transfer of notified polymer by metered dosing to a 1000 kg stainless steel mixing vessel and mixing the notified polymer 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 is filtered prior to being dispensed into 20 L closed head drums under exhaust ventilation for supply to customers. Paint products containing the notified polymer will be warehoused at the paint manufacturer's site in and distributed to end-users.

At the end users site the paint containing the notified polymer is applied to wood boards by roller coater or automatic spray machine.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure assessment

6.1.1. Occupational Exposure

Number and Category of Workers

Category of Worker	*Number*	*Exposure Duration (h/day)*	*Exposure Frequency (d/year)*
Transport and Storage			
Transporting from dock for warehousing at CYTEC before supplying to paint manufacturers for reformulation (loading/unloading trucks)	2	2-3	4
Paint formulation			
Paint make up	3	8	4
QC testing	1	8	4
Filling into drums	3	8	4
Maintenance workers	2	8	4
End-use			
Applied to wood boards using roller coater or automatic spray.	10	8	30

Exposure Details

Transport and Storage: Exposure to the notified polymer is unlikely during transportation and storage. Exposure may result in case of an accidental spill or leak in the container. No controls are required. Gloves, coveralls and goggles are available if required.

Paint formulation:

Paint make up – Workers may be exposed to the notified polymer via dermal and ocular routes from drips, spills and splashes during charging of the mixer and blending. Workers will wear coveralls, goggles and impervious gloves. Aerosols may be released during blending, but inhalation exposure should be controlled due to an 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 wear overalls, goggles and impervious gloves.

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

End use:
Paint will be applied using a roller coater or automatic spray machine. Worker exposure is controlled by the use of engineering controls and personal protective equipment. The industrial painters will wear coveralls, safety goggles and impervious gloves; cartridge type respirators may be used during spray application of paints.

6.1.2. Public exposure

The public will not come into contact with the notified polymer or products containing it. Once the paint containing the notified polymer is applied to the wood boards and the paint has cured, the notified polymer is bound in an insoluble polymeric matrix. Therefore the likelihood of exposure of the public to the notified polymer is considered to be low.

6.2. Human health effects assessment

Endpoint	*Result and Assessment Conclusion*
Rabbit, skin irritation	slightly irritating
Rabbit, eye irritation	slightly irritating

The notified polymer in an aqueous dispersion (≤ 40%) is a slight skin and eye irritant in rabbits. No other toxicological data were submitted.

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

6.3. Human health risk characterisation

6.3.1. Occupational health and safety

The notified polymer is potentially hazardous on the basis that it contains pendant acrylate groups. Acrylate monomers are typically irritant and sensitising. However the notified polymer would not be expected to exhibit sensitisation based on lack of absorption across the skin. Also the notified polymer was shown to be only slightly irritating to rabbit skin and eyes. Therefore, the notified polymer is unlikely to be a hazardous substance. However, there are approximately 10% of low MW species < 500 which could contain pendant acrylate groups and could potentially be sensitising. However, given that the dispersion as tested is only a slight skin irritant and this indicates low reactivity. On balance the likelihood of the imported aqueous dispersion being sensitising is low.

The greatest exposure to workers is expected to be during paint formulation involving transfer of the notified polymer from import containers to the paint mixing vessel. Workers can be exposed to drips and spills when connecting and disconnecting lines and pumps. Typically this low and/or intermittent exposure is controlled by the use of PPE including protective clothing, gloves and goggles. Under these circumstances and coupled with the known hazard of the notified polymer suggests a minimal risk to paint make up workers.

All other workers are likely to be exposed to lower levels of exposure than paint make up workers. For example, transport and storage workers should only be exposed in the event of an accident. Quality control workers will normally be exposed to small samples and exposure during cleaning and maintenance is also normally expected to be to small amounts of the formulated paint. End use workers applying the formulated paints to wood products via roller coater or automatic sprayer are expected to be using adequate PPE to control exposure in addition to using automated machinery. Therefore the risk to these workers is also expected to be low.

6.3.2. Public health

The formulated paints will not be sold to the public so there are limited scenarios in which the public could be exposed. Exposure could occur after a transport accident but these are expected to be rare. Exposure to products coated with the dry polymer film should not result in transfer to the skin and there is therefore a low risk of health effects.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1 Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer will not be manufactured in Australia. Local operations will include transport and storage, formulation, filling and packaging and application by end-users using roller coater or automatic spray machine.

The notified polymer will be transported to Australia by ship in 200 L stainless steel drums as a <40% aqueous dispersion. It will be transported directly to paint formulator's site for warehousing and paint formulation. The finished paint products will be drummed into 20 L closed head drums.

Release at paint formulator's site to the environment may occur in the unlikely event of an accident during transport or an accidental leak. It is estimated that a maximum of 1% of the notified polymer would be lost during spillage. Spills are contained and soaked up with inert absorbent material (sand, diatomite, acid binders, universal binders or sawdust) and placed in a sealable container and disposed of to landfill.

The empty containers (20 L drums) will be rinsed with water. The washings from the mixing vessel and process line will be collected and reused. The empty drums will be collected by a licensed waste contractor for disposal to landfill. There will be no release of the notified polymer to sewer during formulation.

RELEASE OF CHEMICAL FROM USE

If accidental spillage occurs during normal operating procedures at the end-users site, it will be contained and soaked up with inert absorbent material (sand) and placed in a sealable container for disposal. Waste material is disposed of to landfill.

The coating is applied to the wood boards at the end-users site using the roller coater or automatic spray machine. The wood board coatings will be applied at approximately 60% by rollers and up to 40% by spraying. The following maximum losses are estimated below:

Overspray

A loss of 30% of the ready-for use material is achieved by the use of HVLP spray guns and slightly higher loss with the more outdated high pressure guns. The engineering controls for over-spray are typically spray booth filters and water scrubbers. The spray booth filters are usually renewed every 2-4 months. The filters are disposed of according to Local, State, National EPA regulations as are the scrubber waters. Up to 30% of the total annual import volume may be lost as over-spray during application procedures. This is expected to be captured, and after allowing to dry, be disposed of to landfill.

Equipment cleaning and spills

The equipment such as rollers and spray equipment are cleaned with water which is collected and sent off site to a liquid waste treatment facility. It is estimated that 2% of the import volume may be lost from cleaning of equipment.

Residues in the empty containers

The residues in the drums are expected to account for up to 2% of the import volume. The drums are rinsed with water before collected by waste disposal contractors. The rinsate is reused in painting.

There will be no release to sewer during end-use the products containing the notified polymer.

RELEASE OF CHEMICAL FROM DISPOSAL
Any disposal of the notified polymer will occur to landfill.

7.1.2 Environmental fate

No environmental fate data were submitted.

7.1.3 Predicted Environmental Concentration (PEC)

Based on the data submitted by the notifier, release to the aquatic environment is not expected at any stage. Therefore, it is not possible to calculate a PEC.

7.2. Environmental effects assessment

No ecotoxicity data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer. In addition, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups (Nabholz *et al*. 1993).

7.2.1 Predicted No-Effect Concentration

As the results of ecotoxicity testing are not available, it is not possible to derive a PNEC value.

7.3. Environmental risk assessment

Without a PNEC, it is not possible to calculate a Risk Quotient (Q) for the proposed use pattern and volume. However, given that release to the aquatic environment is not expected at any stage, the risk to the aquatic environment is not expected to be unacceptable. Notified polymer that is disposed of to landfill is expected to be entrapped within a stable coating matrix and overtime degrade via abiotic and biotic pathways to form simple organic and nitrogen containing compounds. Notified polymer associated with substrate is expected to share a similar fate, being either disposed to landfill or thermal decomposition by burning.

8. CONCLUSIONS – SUMMARY OF RISK ASSESSMENT FOR THE ENVIRONMENT AND HUMAN HEALTH

8.1. Hazard classification

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

8.2. Environmental risk assessment

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

8.3. Human health risk assessment

8.3.1. Occupational health and safety

Under the conditions of the occupational settings described, the risk to workers is considered to be acceptable.

8.3.2. Public health

When used in the proposed manner the risk to the public is considered to be acceptable.

9. MATERIAL SAFETY DATA SHEET

The MSDS of a product containing the notified chemical provided by the notifier was reviewed by NICNAS and is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant. The MSDS was found to be in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 2003).

10. RECOMMENDATIONS

CONTROL MEASURES
Occupational Health and Safety

- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical 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 notified chemical should not be released to the aquatic environment.

Disposal

- The notified chemical should be disposed of by incineration or to landfill.

11. REGULATORY OBLIGATIONS

This risk assessment is based on the information available at the time of notification. If the circumstances under which the notified chemical was assessed change a reassessment may be needed. Under the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply whether or not the notified chemical has been listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, 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(2) of the Act; if

- the function or use of the chemical as a component of a UV curable coating has changed, or is likely to change significantly;
- the amount of chemical being introduced (up to 100 tonnes per annum) has increased, or is likely to increase, significantly;
- if the chemical has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

No additional secondary notification conditions are stipulated.

12 . BIBLIOGRAPHY

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Huntingdon Life Sciences (1999a) UCECOAT® 7849 Skin Irritation to the Rabbit. Project No. UCB 657/984545/SE. Huntingdon Life Sciences Ltd, Cambridgeshire, England (unpublished report submitted by notifier).

Huntingdon Life Sciences (1999b) UCECOAT® 7849 Eye Irritation to the Rabbit. Project No. UCB 657/984544/SE. Huntingdon Life Sciences Ltd, Cambridgeshire, England (unpublished report submitted by notifier).

Nabholz JV, Miller P and Zeeman M (1993) Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act (TSCA) Section Five. In: Landis WG, Hughes JS & Lewis MA ed Environmental Toxicology and Risk Assessment, ASTM STP 1179, American Society for Testing and Materials, Philadelphia, PA.

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NOHSC (2004) Approved Criteria for Classifying Hazardous Substances, 3rd edition [NOHSC:1008(2004)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

NOHSC (2003) National Code of Practice for the Preparation of Material Safety Data Sheets, 2nd edition [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.

Appendix A: Physico-Chemical Properties

The notified polymer is manufactured as an aqueous dispersion and is not isolated. Therefore, the physico-chemical properties relate only to this dispersion.

Freezing Point Approximately 0 °C

Boiling Point 100°C at 101.3 kPa

Density Approximately 1000 kg/m^3 at 20 °C

Vapour Pressure < 0.133 kPa at 20°C

Water Solubility 14 mg/L

METHOD OECD TG 120 - Solution/Extraction Behaviour of Polymers in Water
Remarks 1 g micronized polymer was added to 100 mL milli-Q water, RT, followed by filtration and weighing of filter. Characterisation of dry residue by GPC, mass spectrometry and NMR spectrometry indicate that soluble portion is likely to be residues and or impurities.
TEST FACILITY CYTEC (2006)

Hydrolysis as a Function of pH Not determined.

Remarks This parameter is to be provided for water-soluble chemicals only (water solubility greater than 10^{-3} mole/L). The degree of hydrolysis at 25°C is required at pH values normally found in the environment (pH 4-9) and under more acidic conditions (pH 1-2) for physiological purposes. Therefore, not applicable for a polymer dispersion in water. The notified polymer contains a significant proportion of hydrolysable functional groups, however hydrolysis is not expected to occur under ambient environmental conditions.

Partition Coefficient (n-octanol/water) Not determined.

Remarks While this is difficult to predict, it is reasonable expect this to be moderate to high based on the relatively low water solubility of the notified polymer.

Adsorption/Desorption Not determined.

Remarks If it is accepted that the water solubility of the notified polymer is relatively low, then the notified polymer is likely to associate with the soil matrix and sediments and as such will be immobile in terrestrial and aquatic compartments.

Dissociation Constant Not determined

Remarks Not required for chemicals with low water solubility. The dissociation constant can be estimated at 4.41.

Particle Size Not determined

Flash Point Not determined

Remarks Aqueous dispersion is not expected to be flammable.

Flammability Limits Not determined

Remarks Aqueous dispersion is not expected to be flammable.

Autoignition Temperature Not determined.

Remarks The notified polymer is imported and used in an aqueous dispersion at normal ambient temperatures.

Explosive Properties Not determined.

Remarks Notified polymer not expected to be explosive.

Reactivity

Remarks Expected to be stable under normal environmental conditions subject to storage at < 40°C as suggested in the MSDS for the aqueous dispersion. Acrylate groups are subject to further reaction. Hazardous exothermic polymerisation may occur.

Appendix B: Toxicological Investigations

B.1. Irritation – skin

TEST SUBSTANCE	UCECOAT® 7849
METHOD	OECD TG 404 Acute Dermal Irritation/Corrosion.
Species/Strain	Rabbit/New Zealand White
Number of Animals	3 males
Vehicle	None
Observation Period	72 hours
Type of Dressing	Semi-occlusive.
Remarks – Method	Examination of the treated skin was made approximately 70 minutes after removal of the bandage. This deviation was not considered to have affected the integrity or validity of the study. There were no other deviations from the protocol.

RESULTS

Lesion	*Mean Score* Animal No.*			*Maximum Value*	*Maximum Duration of Any Effect*	*Maximum Value at End of Observation Period*
	1	2	3			
Erythema/Eschar	1	0	0	1	Day 14	1
Oedema	0.33	0	0	1	Day 6	0

*Calculated on the basis of the scores at 24, 48, and 72 hours for EACH animal.

Remarks – Results	There were no signs of toxicity or ill health in any rabbit during the observation period. Slight erythema and oedema were seen in one animal. Slight erythema persisted and was still evident in this animal at study termination on Day 14. No dermal irritation was observed in the other two animals throughout the duration of the study.
CONCLUSION	The notified chemical slightly irritating to skin.
TEST FACILITY	Huntingdon Life Sciences (1999a)

B.2. Irritation – eye

TEST SUBSTANCE	UCECOAT® 7849
METHOD	OECD TG 405 Acute Eye Irritation/Corrosion. EC Directive 92/69/EEC B.5 Acute Toxicity (Eye Irritation).
Species/Strain	Rabbit/New Zealand White
Number of Animals	3 male
Observation Period	72 hours
Remarks – Method	There were no deviations from the protocol.

RESULTS

Lesion	*Mean Score* Animal No.*			*Maximum Value*	*Maximum Duration of Any Effect*	*Maximum Value at End of Observation Period*
	1	2	3			
Conjunctiva: redness	0	0	0	1	1 hour	0
Conjunctiva: chemosis	0	0	0	0	-	0
Conjunctiva: discharge						0
Corneal opacity	0	0	0	0	-	0
Iridial inflammation	0	0	0	0	-	0

*Calculated on the basis of the scores at 24, 48, and 72 hours for EACH animal.

Remarks – Results

There were no signs of toxicity or ill health in any rabbit during the observation period.

No corneal damage or iridial inflammation was observed.

Transient hyperaemia of blood vessels of the conjunctivae was observed in all three animals. All reactions had resolved by one day after instillation.

CONCLUSION

The notified chemical is slightly irritating to the eye.

TEST FACILITY

Huntingdon Life Sciences (1999b)