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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

RCP-29655

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Director
NICNAS

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RCP-29655

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
DuPont (Australia) Ltd (ABN 590 007 6469)
49-53 Newton Rd
Wetherill Park NSW 2164

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:

1) Other names or synonyms excluding the marketing name RCP-29655
2) Chemical name
3) Molecular formula
4) Structural formula
5) Functional groups
6) Infrared spectrum
7) Molecular weight
8) Monomer composition including catalysts or process additives
9) Any technique or technology surrounding the manufacture of polymer RCP-29655 or paint using RCP-29655
10) % notified polymer in paint not otherwise disclosed by the MSDS or label.
11) Volume of import or manufacturing of RCP-29655 or any associated paint.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Vapour pressure
Partition coefficient
Adsorption /desorption

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
Nil

NOTIFICATION IN OTHER COUNTRIES
USA TSCA, TS1174 (2001)
Canada, NSN1716 (2002)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
RCP-29655

3. COMPOSITION

DEGREE OF PURITY
> 70%

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, but will be imported as a component of finished paint products at a concentration of between 1 and potentially 80%. The notified polymer will also be imported as resin solution RCP-29655 for paint manufacture in Australia.

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

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

USE
Paint resin for refinishing of vehicles.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY
The notified polymer will be manufactured in Europe or the USA and imported by sea freight through Sydney or Melbourne.

IDENTITY OF MANUFACTURER/RECIPIENTS
The imported RCP-29655 resin solution will be formulated at DuPont's Sydney plant into finished automotive spray paints.

TRANSPORTATION AND PACKAGING
Imported Product:
The finished paint will be imported in 0.95 L, 3.785 L or approved mild steel cans, boxed as part of a FCL shipment to the warehouse, where it is stored until distribution to end users. The FCL holding the cans of paint will be transported by road from the wharf to the notifier's warehouse site, where it will be re-aggregated into a carton for transport by road to the distributors' stores/warehouses, and then on to individual smash repair shops. These cans may be sold singly or packed in cardboard cartons, each carton holding four 0.95 L, 1 L, 3.785 L or 4 L cans.

DuPont Coatings Local Manufacture:
RCP-29655 will be imported in FCLs of 200 L steel drums weighing 18 tonnes. These drums will be transported by road from the wharf to the notifier's manufacturing plant site, where they will initially be stored in bunded storage. From time to time, 200 L drums of the resin solution will be taken for manufacturing into DuPont automotive refinish products. The product will then be filled into 1 L, 4 L and 5 L open head mild steel approved cans, which will be labelled before being palletised into cardboard trays, each carton containing eight cans for transport to the warehouse. The paint cans will then be re-aggregated into cartons with other paint types to be transported by road to the individual distributors' stores.

STORAGE FACILITIES & STORAGE REQUIREMENTS

Warehouse storage of finished product:

The contract warehouse is a licensed Dangerous Goods-approved facility with bunding and layout according to AS1940 for storing class 3 flammable goods. The site has the required wastewater, storm water and fire water control systems to control the release of chemicals into the environment in event of a catastrophic disaster. All distributors also conform to AS 1940 and are contractually required to have current Dangerous Goods storage license and to operate according to law.

DuPont Coatings Local Manufacture:

Imported resins will be stored in bunded areas with layout and storage according to AS# 1940. The site is approved for storage of bulk class 3 flammable goods. The storage area is bunded so that in the event of an emergency (such as a fire) the resin will be trapped by the bund. The bund has a rainwater overflow so that any excess fire or rainwater carrying paint or solvents can be directed to a wastewater pit and not released into waterways. When the product containing RCP-29655 is finished in manufacturing it is sent to the warehouse.

5.2. Operation Description

Local formulation into paint products:

The 200 L drums of notified polymer solution are received and stored. Resin is transported and emptied using a trolley jack with a tilt facility into a covered tank mixer. Bulk solvents are added to the batch slowly, via piping, directly into the mixer, and stirred without human contact. When loading of the product formulation components is complete, the mixture is stirred before quality control staff tests the batch.

The final paint product will then be filled into cans, which will be labelled before being palletised into cardboard trays, each carton containing eight cans for transport to the warehouse. The cans will then be distributed for use by the spray-painting industry.

Application by spray painters:

Spray painters mix the RCP-29655 as a component of DuPont RK8162 (part A) with isocyanate catalyst (part B) according to the product recipe (1:4) in a well-ventilated area.

After mixing the two parts, it is loaded into a spray gun and sprayed out onto the vehicle in a spray booth with an exhaust/filter system to catch overspray (according to AS/NZS 4114:1995). The spraying process normally takes a maximum of 2 h per 4 L unit, which will respray two cars or truck cabs.

After the refinishing is complete, the spray gun and lines are emptied and any residual paint is placed into a “paint waste” drum for recycling. The spray gun and mixing equipment is then cleaned at an earthed recycled solvent wash station, which has exhaust ventilation. The used solvent and both paint (catalysed and uncatalysed) and washings are placed in a waste solvent drum for disposal by a solvent recycling firm.

5.3. Occupational Exposure

Number and Category of Workers

Category of Worker	*Number*	*Exposure Duration (hours/day)*	*Exposure Frequency (days/year)*
Import and Distribution of Finished Product			
Transport driver inwards	1	4	1
Warehouse storemen	10	0.05	100
Transport drivers Outwards	30	0.5	167
Local Manufacturing			
Storemen	1	2	40
Factory hand (mixing resin solution)	1	6	40
Filling room		6	
Quality Control	1	0.66	40
Local Use by Spray painters			
Weighing and mixing	7600	0.8	3
Spraying	7600	0.6	3
Cleaning	7600	0.25	3

Exposure Details

Import and distribution of resin or paint:

Registered Dangerous Goods couriers perform transport from wharf to the warehouse (finished paint) or the plant (RCP-29655 resin). Goods are shipped in FCL or other sealed containers (eg individual paint cans), with MSDS and EPG (or Dangerous Goods guidebook) as required by the Australian Dangerous Goods code. The product is stored in a Dangerous Goods approved warehouse with appropriately trained personnel. All of these workers should not be exposed to the notified polymer except in the event of a transport emergency or an accident.

Any spillage will be limited to single units of the product containing the polymer, which will be treated by soaking with absorbent material, collection with non-sparking tools and disposal in a suitable container.

Local Manufacture by DuPont Protective Coatings:

The drums of notified polymer solution are moved and emptied into a tank mixer. Bulk solvents are added. Personal protective equipment that will be worn by workers during the formulation processes includes safety glasses or goggles, impermeable gloves, industrial clothing and footwear, and respiratory protection.

When loading of the product formulation is complete, the mixture is stirred before quality control staff tests the batch for colour, turbidity, specific gravity and weight of solids. These staff will wear PPE that is appropriate for their potential level of exposure.

Local use in the refinishing of motor vehicles requiring repair or re-spraying:

The spray-painters are equipped with supplied air respirators, face shields, gloves and protective suits conforming to AS and NZ standards. Spray painting of vehicles should be carried out in a spray booth with an exhaust/filter system to catch over spray. The cleaning of spray guns and mixing equipment is performed at an earthed wash station, under exhaust ventilation. A minimum of gloves and protective eyewear should be worn when cleaning out spray equipment.

OTHER OCCUPATIONAL HAZARDS

The associated solvents and isocyanates and solvents used with Dupont RK8162 as a paint system provide the most significant risk to users. The PPE required to protect workers against these chemical hazards will also minimise exposure to the notified polymer.

5.4. Release

RELEASE OF CHEMICAL AT SITE

At the paint manufacturing site the notified polymer will be released via equipment cleaning, spills and drum residues. The mixing equipment is cleaned by a solvent wash using recycled washout solvent. The resultant dirty wash solvent will be sent to a solvent recycling firm for recycling where the

resultant solids, containing the waste notified polymer, will be land filled or used in road base after being treated to meet NSW EPA protocol for water extractable fractions. This will account for up to 168 kg of the notified polymer per year. Spills may occur on the filling line but are usually limited to a 5 L can unit which is adsorbed with sand or vermiculite and shovelled into an open head drum for disposal.

A drum-reconditioning firm will remove any residual resin, either by washing out with solvent or by incineration after the tops of the drums have been removed. Wash solvent is recycled and any polymer residues cooked to form a solid polymer mass that complies with NSW EPA specifications for water-soluble fractions. The residual polymer mass may then be either land filled or sent to a asphalt manufacturer to be used as a modifier in road base, this will equate to up to 200 kg of waste notified polymer.

RELEASE OF CHEMICAL FROM USE

Waste attached to disposed container:
Up to 5% of the imported volume of the notified polymer will be accounted for in the residual paint in the empty containers. Traditionally, used paint cans have been crushed and sent to landfill after being scraped clean or rinsed with activator to polymerise any residuals. Without this practice, cans are considered dangerous goods and demand more costly transport requirements as hazardous waste for disposal. Additionally, steel cans in use by industry may be incinerated in a steel furnace or similar.

Residues from Paint as sprayed:
Paint over spray will be between 20-50**%** of total local RCP-29655 used in paint. It will be captured by the water curtain of spray booth/room filters or by masking materials as dried, catalysed, insoluble polymers. Thus a maximum of 50% of the local use of RCP-29655 will be either collected by solvent recovery firms and reduced to an insoluble polymer mass or sent to landfill.

Residues from Paint in Mixing Container and from Cleaning Spray Equipment:
Residual paint remaining in the mixing container or spray equipment is washed out with solvent, which is sent to solvent reclamation. This residual paint is estimated to be up to 5%. This solvent waste is placed in a dirty solvent drum for solvent recycling. In the recycling the resin is dried and land filled.

Hence the maximum total amount of waste RCP-29655 resin land filled or incinerated due to end use activity is:

$5\%_{container} + 50\%_{over\ spray} + 5\%_{mixing} + 5\%_{cleaning} = 65\%$ of RCP-29655 used in Australia.

5.5. Disposal

Unused paint and dirty paint laden wash solvent are treated by solvent recycling contractors resulting in reusable solvent and solids, which will contain the notified polymer. Once the solids mass conforms to the NSW EPA water extractable fraction requirements, it may be sent to landfill or combined with asphalt to be used as road base modifier.

If released into the environment, the notified polymer would not be expected to be mobile. It would be more likely to attach to organic matter of the soil or aquatic sediments, rather than partition into the aquatic phase.

Ultimately, the majority of the notified polymer will be disposed of with the vehicle when it has reached the end of its useful life. Generally the polymer will be destroyed via incineration releasing water and oxides of carbon during the metal recycling process.

5.6. Public Exposure

The resin is to be used as a clear topcoat on motor vehicles. The fully cured, finished topcoat will come in contact with the general public. However, at this stage the polymer will be fully cured, cross-linked and adhered to the vehicle's outer surface. The notified polymer thus forms part of a continuous, totally insoluble molecule of infinite size. Thus, it is non-hazardous, not bioavailable, and immobile. Therefore, the public will not be exposed to the notified polymer, except in the unlikely event of a major accident during transport of the notified polymer.

6. PHYSICAL AND CHEMICAL PROPERTIES

As the notified polymer is manufactured in and never isolated from solution, so the data presented are for the solution RCP-29655. In addition, the notifier proposed to use the polymers notified as STD/1077 and STD/1078 as analogues for physico-chemical parameters. These are not considered as acceptable analogues since they are not chemically similar as only one monomer is common. However, the data have been used as supporting information since the notified polymer is a polyester and there is essentially no release to the aquatic compartment.

Appearance at 20°C and 101.3 kPa Clear low viscosity liquid.

Melting Point/Freezing Point -84°C for RCP-29655

METHOD DuPont QC Method similar to OECD TG 102 Melting Point/Melting Range.
TEST FACILITY DuPont QC Specification & MSDS

Boiling Point 77°C at 101.3 kPa for RCP-29655

METHOD DuPont QC method similar to OECD TG 103 Boiling Point
TEST FACILITY DuPont MSDS

Density 1080 kg/m^3 for RCP-29655

METHOD DuPont QC method similar to OECD TG 109 Density of Liquids and Solids.
TEST FACILITY DuPont QC Specification & MSDS

Vapour Pressure < 7.6 kPa at 35°C

Remarks The polymer's vapour pressure is estimated on the basis that it must be lower than the vapour pressure of any of its comprising monomers.

Water Solubility 63 g/L at 20°C

METHOD Method agreed with Environment Canada based on OECD TG 120.
Remarks Samples (~1 g) of the test material (containing the notified polymer as a solution of ~85% in water miscible organic solvents) were suspended in 100 mL of ASTM grade water. The mixtures were stirred for 3.5 days and centrifuged at 3000 rpm for 2 hours. Aliquots of the supernatant were transferred to a pre-weighed glass vial and the water was evaporated to dryness and weighed. The difference between the masses was taken as the water extractable fraction. However, this seems to largely reflect the solvent present, as little if any water solubility is expected based on the structure of the notified polymer.

Hydrolysis as a Function of pH Not determined

METHOD
Remarks Due to low water solubility, the polymer is not expected to hydrolyse under environmental conditions (pH 4-9), despite the presence of groups that are potentially hydrolysable.

An analogue, RCP-29191 (previously notified as STD/1078), was modelled using the HYDROWIN v1.67 module of EPIWIN v3.11 (6/20/03). The modelling gave a half-life of 175 days at pH 8 (modelling report not cited).
TEST FACILITY E.I Dupont, EMSE, Glasgow Site, 300 Newark DE1974-6101 USA

Partition Coefficient (n-octanol/water) $logK_{ow}$ ranged from 1.30-5.91

METHOD HPLC method
Remarks Six standards were used with log Kow values ranging from 2.13-6.11. For the sample 14 peaks were observed between calculated log Kow values of 1.3-5.91.
TEST FACILITY DuPont USA Marshall laboratory

Adsorption/Desorption Not determined

METHOD
Remarks While this was not attempted, it is expected that the polymer will adsorb to or associate with soils and sediments due to its hydrophobic structure.

An analogue KG11518 (previously notified as STD/1077) was modelled using EPIWIN v3.11, module PCKOC v1.66 (6/10/03). The modelling gave a logKoc of 9.9 at 25ºC for the analogue (modelling report not cited).
TEST FACILITY E.I DuPont MSE Glasgow site 300 Newark DE

Dissociation Constant The molecule is not ionised in the environmental pH range of 4-9 based on structure.

METHOD Modelled, SPARC on-line calculator, University of Georgia
TEST FACILITY E.I. DuPont, EMSE, Glasgow Site 300, Newark, DE 19714-6101 USA

Particle Size Not applicable – film forming solution polymer

Flash Point - resin solution -6.7-22.8°C for the polymer solution.

Resin solids do not flash.

METHOD Closed cup method.
TEST FACILITY Dupont MSDS

Flammability Limits Upper: 11.2%
Lower: 2.2%

METHOD DuPont test method similar to EC Directive 92/69/EEC A.11 Flammability (Gases).
Remarks Above data for the solution polymer. The dry polymer does not have a high vapour pressure and is expected to be combustible but not flammable.
TEST FACILITY DuPont MSDS

Autoignition Temperature 427ºC

METHOD DuPont test method similar to 92/69/EEC A.15 Auto-Ignition Temperature (Liquids and Gases).
TEST FACILITY DuPont MSDS

Explosive Properties Not expected to be explosive based on structure.

Reactivity
Remarks The polyester is formed with excess hydroxyl functionality to ensure the acid groups are fully consumed during polymerisation, with residual hydroxyl functionality for cross-linking with isocyanates during application. The chemical potential for this cross-linking comes from the isocyanate; the hydroxyl is a commonplace low reactivity group present in many biological systems.

RCP-29655 will oxidise and combust at high temperatures. The solvents associated with RCP-29655 (in the resin and paint) are flammable.

7. TOXICOLOGICAL INVESTIGATIONS

Endpoint and Result	*Assessment Conclusion*
(Analogue 1) Rat, acute oral LD50 >3400 mg/kg bw	low toxicity
(Analogue 2) Rat, acute oral LD50 >11000 mg/kg bw	low toxicity

7.1. Acute toxicity – oral (analogue 1)

TEST SUBSTANCE — KG11518 (analogue of notified polymer, see STD/1077)

METHOD — OECD TG 401 Acute Oral Toxicity.
- Species/Strain: Rat/Crl:CD (SD)IGS BR
- Vehicle: 2-heptanone
- Remarks - Method: Single oral dose by intragastric intubation

RESULTS

Group	*Number and Sex of Animals*	*Dose mg/kg bw*	*Mortality*
1	1 male	670	None
2	1 male	2300	None
3	1 male	3400	None

- LD50: >3400 mg/kg bw
- Signs of Toxicity: No clinical signs were observed, and no significant body weight losses occurred during the study.
- Effects in Organs: None
- Remarks - Results: Under the conditions of study, the oral approximate lethal dose (ALD) for KG11518 was > 3400 mg/kg bw. This polymer is considered to be slightly toxic when administered as a single oral dose to male rats.

CONCLUSION — The tested polymer is of low toxicity via the oral route.

TEST FACILITY — E.I. du Pont de Nemours Company, Newark, USA

7.1. Acute toxicity – oral (analogue 2)

TEST SUBSTANCE — RCP 29101(analogue of notified polymer, see STD/1078)

METHOD — OECD TG 401 Acute Oral Toxicity.
- Species/Strain: Rat/Crl:CD (SD)IGS BR
- Vehicle: 2-heptanone
- Remarks - Method: Single oral dose by intragastric intubation

RESULTS

Group	*Number and Sex of Animals*	*Dose mg/kg bw*	*Mortality*
1	1 male	670	No
2	1 male	2300	No
3	1 male	3400	No
4	1 male	5000	No
5	1 male	7500	No
6	1 male	11000	No

- LD50: >3400 mg/kg bw
- Signs of Toxicity: The animal dosed with 7500 mg/kg bw exhibited a body weight loss of 4% of initial weight on the day after dosing. No other significant body

	weight losses occurred during the study.
	The animal dosed with 11000 mg/kg bw exhibited brown nasal and oral discharge on the day after dosing. Hair loss was observed during the study in the animals dosed with 2300 and 11000 mg/kg/day.
Effects in Organs	Not determined.
Remarks - Results	Under the conditions of study, the oral approximate lethal dose for KG 11518 was greater than 3400 mg/kg bw body weight. This polymer is considered to be of very low toxicity when administered as a single oral dose to male rats.
CONCLUSION	The tested polymer is of low toxicity via the oral route.
TEST FACILITY	E.I. du Pont de Nemours Company, Newark, USA

8. ENVIRONMENT

8.1. Environmental fate

8.1.1. Ready biodegradability

The report for an analogue was submitted as part of the Canadian assessment document. The notifier proposed to use STD/1077 as an analogue for environmental fate. This is not considered as an acceptable analogue since it is not chemically similar with only one monomer is common and it has a considerably lower number average molecular weight. However, the data has been used as supporting information since the notified polymer is a polyester and there is essentially no release to the aquatic compartment.

TEST SUBSTANCE	KG 11518
METHOD	OECD TG 301 B, Ready Biodegradability: CO_2 Evolution Test (Modified Sturm Test).
Inoculum	Activated sludge
Exposure Period	28 days
Auxiliary Solvent	None
Analytical Monitoring	
Remarks - Method	Reference substance – sodium benzoate Toxicity test – test substance + reference substance

RESULTS

Test substance		*sodium benzoate*	
Day	*% degradation*	*Day*	*% degradation*
0	0	0	0
5	5	5	22
10	10	10	54
12	10	12	62
28	13	28	-

Remarks - Results	Percentage degradation of the reference substance was greater than 60% by day 12, thus validating the study. In the toxicity test the degradation was greater than 25% within 10 days, thus indicating that the test substance was not inhibitory to the microorganisms in the inoculum.
CONCLUSION	The degradation of the test substance did not reach 60% within the 28 days, thus the test substance is not readily biodegradable.
TEST FACILITY	CCER (2001)

8.2. Ecotoxicological investigations

The notifier proposed to use polymer notified as STD/1077 as an analogue for environmental fate. This was not considered an acceptable analogue since it is not chemically similar - only one monomer is common to both - and has a considerably lower number average molecular weight. However, the data have been used as supporting information since the notified polymer is a polyester resin with essentially no release to the aquatic compartment.

TEST SUBSTANCE	Polyester resin
METHOD	OECD TG 203 Fish, Acute Toxicity Test – unaerated, static.
Species	*Oncorhynchus mykiss*
Exposure Period	96 hours
Auxiliary Solvent	None
Water Hardness	Not reported
Analytical Monitoring	None
Remarks – Method	Temperature was maintained at 12.6-12.8ºC. Dissolved oxygen and pH were measured at the start and end of the study and ranged between 10.2–10.7 (0 h) and 7.7–8.8 (96 h) mg/L and 7.0-7.1 (0 and 96 h) respectively.

RESULTS

Concentration mg/L		*Number of Fish*	*Mortality*				
Nominal	*Actual*		*1 h*	*24 h*	*48 h*	*72 h*	*96 h*
0	-	10	-	0	0	0	0
1	-	10	-	0	0	0	0
10	-	10	-	0	0	0	0
100	-	10	-	0	0	0	0
1000	-	10	-	4	6	9	10

LC50	316 mg/L (95% CI = 100–1000) at 96 hours.
NOEC (or LOEC)	100 mg/L at 96 hours.
Remarks – Results	At the start of the study visual examination concluded that the control, 1, 10 and 100 mg/L concentrations were clear and colourless, while the 1000 mg/L concentration was cloudy. By the end of the study undissolved material was present in all concentrations except the control. Dissolved oxygen and pH varied within acceptable limits.
CONCLUSION	The test substance is very slightly toxic to fish (Mensink, 1995)
TEST FACILITY	Haskell (2001)

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

There will be no manufacturing of the notified polymer in Australia, and therefore no release during this stage.

The notified polymer will be initially imported in ready-to-use paint but at a later stage may be imported in a solution for use in paint manufacture. This is taken into account in the environmental assessment and it is presumed that the paint will all be used in Australia as a worst-case scenario (i.e. no allowance has been made for export of manufactured paint).

Approximately 368 kg of notified polymer is expected to enter the environment each year due to paint manufacture, while up to 6.5 tonnes of notified polymer will released locally due to wastes generated during paint use in motor vehicle workshops initially but this could increase to 65 tonnes if 100% of the paint manufactured is used locally. It is expected that waste generation and disposal will occur in a diffuse manner owing to the nationwide use of the paint products, with the majority being released through overspray (accounting for up to 50 tonnes annually assuming 100% local use at the maximum import volume), which will be directly disposed of to landfill. Up to 15 tonnes will go to solvent recovery companies and then to landfill in the sludge that is generated. In soil environments, the notified polymer is not expected to be mobile or leach from the soil into ground or surface water, but rather is expected to bind to the organic phases in soils. Under these conditions it would be slowly degrade to gases such as carbon dioxide through the agency of abiotic and biotic processes.

Under normal usage, the notified polymer is not expected to enter the aquatic environment. Most of the polymer will be incorporated into automotive re-finish paint, which upon drying, will become inert. The polymer incorporated in this matrix will ultimately be disposed of along with the car, which will generally go to a metal recycler. Thus, the paint matrix will be destroyed via incineration, generating water and oxides of carbon.

Due to the nature of the release pattern a Predicted Environmental Concentration (PEC) cannot be estimated.

In the event that the polymer enters the aquatic environment, it is expected to partition mainly into sediment and sludge owing to its low water solubility

9.1.2. Environment – effects assessment

Only ecotoxicological data for the fish toxicity of an analogue of the notified polymer (KG 11518) were available. Since there are only data for one trophic level, a safety factor of 1000 is used to calculate a PNEC with the LC_{50} for fish of 316 mg/L.

On this basis, the PNEC is 0.316 mg/L. However, the analogue is not considered to be acceptable as it is not chemically similar (only one monomer is common and has a considerably lower number average molecular weight).

9.1.3. Environment – risk characterisation

A risk quotient cannot be calculated, as an accurate PEC cannot be estimated. However, the notified chemical is not expected to pose any significant hazard to the environment. The usage pattern, and the anticipated nationwide use of the product indicate that the levels of release of the chemical to the environment will be low. Under normal usage there will be no release into the aquatic environment.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

While no toxicological data have been provided for the notified polymer, it can be predicted to be of low toxicity (from structure and data for analogues). The notified polymer will be imported as part of a resin solution or paint, both containing hazardous solvents. It will be used in conjunction with an isocyanate curing system in the spray painting industry. Therefore, the primary exposure of workers to the notified polymer will be dermal.

The personal protective equipment (PPE) that is used to limit exposure of workers to the solvents and isocyanate will also limit exposure to the notified polymer. In addition, proposed engineering controls (such as exhaust ventilation and piping of solvents during formulation) will limit worker exposure to the notified polymer. Once the final film has hardened the notified polymer will not be bioavailable.

9.2.2. Public health – exposure assessment

The notified polymer, when cured by cross-linking with isocyanates in automotive spray-paint, forms a single non-reactive film of infinite molecular size. Although the public may touch the final cured film, the cross-linking means there is no possibility of reactivity or bioavailability.

9.2.3. Human health - effects assessment

The notified polymer is a high molecular weight (NAMW > 1000) polyester resin and contains no moderate or high concern reactive functional groups. It contains no components that would result in its classification as a hazardous substance. Acute toxicity studies for two analogous polymers have confirmed the expected low toxicity for the class of compounds. Therefore, the notified polymer is not likely to be harmful via the oral route. Therefore, it can be predicted to be of low hazard.

9.2.4. Occupational health and safety – risk characterisation

Given the appropriate use of PPE and correctly functioning engineering controls, the exposure of workers to the notified polymer should be low. Therefore, combined with its low probable level of hazard, it is unlikely to present a significant risk to the safety and health of workers.

9.2.5. Public health – risk characterisation

The public is unlikely to be exposed the notified polymer, as they will only come into contact with the cured film on coated automotive panels. In this form, the notified polymer presents a negligible risk to public health.

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

10.1. Hazard classification

The notified polymer is not classified as a hazardous substance under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

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 the notified polymer is used as a paint resin for refinishing of vehicles.

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 products 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

- No specific engineering controls or work practices are required for the safe use of the notified polymer itself; however, these should be selected on the basis of all ingredients in the formulation.

- 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.

- End users should read the appropriate MSDS prior to using any products containing the notified polymer.

Environment

- The following control measures should be implemented by the paint manufacturer to minimise environmental exposure during paint manufacture of the notified chemical:
  - Undertake work in bunded areas only
  - Collect all wastes and recycle where possible, otherwise contain in open drums and allow material to dry and then dispose to polymer recyclers or to landfill.

- The following control measures should be implemented by end users (spray painters) to minimise environmental exposure during use of the notified polymer:
  - Exhaust ventilation with filter.

Disposal

- The notified polymer should be disposed of to solvent recycling firms or incinerated.
- Empty containers should be sent to local recycling or waste disposal facilities.

Emergency procedures

- Small spills of either the notified polymer or paint in transport or warehouse should be cleaned up promptly using non-reactive absorbent materials such as sand or vermiculite and non-sparking tools. The adsorbed material should be placed in an open head steel drum and disposed of to landfill or solvent recovery. Contaminated containers can be re-used after cleaning.
- Larger spills of the notified polymer or paint at the manufacturing facility should follow emergency plan procedures. Spills should be contained and controlled by bunding, and then pumped or scooped into drums and sent for solvent recovery or incineration. Residual spillage should be cleaned up promptly using absorbent materials such as sand. A licensed waste disposal company should place these materials into containers for solvent recovery or disposal.
- Workers undertaking clean-up should read the MSDS taking note of the flammability and use the Personal Protective Equipment recommended for spray painters.

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(2) of the Act:

- if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

CCER (2001) Biodegradability of DOC750 using the Modified Sturm Test (OECD 301B). Report number. EMSER 027-01. Environmental and Microbial Sciences and Engineering, Corporate Centre for Engineering Research, Newark, Delaware (unpublished report provided by notifier).

Haskell (2001) H-24828: Static, Acute 96 hour Screening Test to *Oncorhynchus mykiss*. Laboratory Project ID: DuPont–6022. Haskell Laboratory for Toxicology and Industrial Medicine, Newark, Delaware (unpublished report provided by notifier).

Nabholz J V, Miller P and Zeeman M, Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act TSCA Section Five, in *Environmental Toxicology and Risk Assessment*, W.G. Landis, J.S. Hughes and M.A. Lewis (Eds), pp 40-55.

NOHSC (1999) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)], Australian Government Publishing Service, Canberra.

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