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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Z-47

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Director
Chemicals Notification and Assessment

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Lubrizol International, Inc. of 28 River Street, Silverwater, NSW 2128

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

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical name, CAS number, molecular and structural formula, molecular weight, spectral data, purity, non-hazardous impurities, manufacture/import volume, weight percentage and ingredients, residual monomers/other ingredients, molecular weight, low molecular weight species, degradation products and loss of monomers, additives, impurities.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
United States (PMN P-01-757); Canada (NSN#11144); listed in Japan (2-3295 and 2-297). Exempt from notification in Europe.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Z-47

3. COMPOSITION

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS
None

MOLECULAR WEIGHT
Number Average Molecular Weight (Mn) >2000

DEGRADATION PRODUCTS
Not expected to depolymerize

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES
In normal use there would be no natural loss of monomers or reactants.

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED POLYMER (100%) OVER NEXT 5 YEARS
Imported as a component of PuriNOx™ 1122

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<30	<100	>100	>100	>100

USE
The notified polymer is an emulsifying agent in a diesel fuel additive.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY
Sydney

IDENTITY OF MANUFACTURER/RECIPIENTS
Manufacture: The Lubrizol Corporation, 29400 Lakeland Blvd, Wickliffe, OH44092-2298
Importer: Lubrizol International, Inc., 28 River Street, Silverwater, NSW 2118

TRANSPORTATION AND PACKAGING
PuriNOx™ will be transported in isotainers directly shipped to the refinery's terminal and pumped into customer's storage tank.

5.2. Operation Description

Manufacture
The notified polymer is not manufactured in Australia. It will be blended into products such as PuriNOx™ 1122 (at 15%) before being imported.

Shipping and Transport
The PuriNOx™ product will be received in Sydney by Lubrizol in bulk ISOtainers and transferred by pipe to 1mT IBCs for delivery to customer sites, where the contents will be transferred by pipe to the manufacturing process unit.

Reformulation
The imported product will be blended with diesel oil and water in a fully automated, totally enclosed system to make a blended fuel. In each batch, approximately 375 L (100 gallons) of finished emulsion fuel are blended at one time. The blending process takes about 16 minutes. The finished fuel contains <1.0% of the notified polymer.

Distribution and use
The PuriNOx™ water blended diesel fuel emulsion is used by centrally fuelled fleets in both on- and off-highway service. It will not be sold at normal retail petrol outlets.

5.3. Occupational exposure

Transport and Storage of Fuel Additive
Exposure of dockside or transport workers is not expected except in the event of a spill.

Reformulation
Two workers at Lubrizol, and two workers at each of two customer sites, will be potentially exposed to dermal contact from drips and spills of the notified polymer. The duration of exposure at all sites is expected to be 180 minutes per month. At the customer site, the processing unit operates in continuous mode. The product is transferred to the processing unit through fixed lines and the blended diesel fuel is piped through fixed lines to storage tanks in the refinery. The handling of PuriNOx™ is similar to the handling of diesel fuel. As required, the blended diesel fuel is passed through fixed/enclosed pipes to the road tankers for delivery to customers.

End Use of Blended Diesel Fuel
The finished fuel will be sold to diesel fleet operators. The transport, storage and end use of the fuel

could involve a large number of workers, but should involve little risk of exposure to the notified polymer due to its low concentration in the fuel and the precautions normally taken to prevent contact with diesel.

5.4. Release

RELEASE OF CHEMICAL AT SITE

No release of the notified polymer is expected at the customer site during transport and blending, except in the event of an accidental spill. Any spills occurring during blending operations are to be contained by inert material and collected for disposal by incineration. The notifier has indicated the customer will be using PuriNOx™ blending technology to blend the fuel. This comprises a fully automated and closed blending unit about the size of a shipping container, which controls and monitors the blending process, and includes safety features, such as spill containment and explosion-proof controls. The notifier estimates approximately 1% of the additive may remain in the import containers after emptying. This equates to about 5 tonnes per year, assuming the maximum yearly import volume. The isotainers and any residual product will be sent to a reconditioning facility, where they are to be cleaned with mineral oil and the residues disposed of by incineration.

RELEASE OF CHEMICAL FROM USE

No release of the notified polymer is expected at end use because the substance will be consumed in the automotive engine along with the diesel to generate primarily carbon dioxide and water. The notifier has indicated that combustion efficiency is higher in water blended diesel fuel, in which the water promotes a finer atomisation of the fuel mixture during injection into the engine, leading to greater fuel efficiency and a reduction in nitrogen oxides and particulate matter.

5.5. Disposal

Incineration is the recommended disposal method. Spills occurring on land can be scraped up and incinerated. Spills occurring on water are expected to float on the surface and can be skimmed off with absorbent material for incineration.

5.6. Public exposure

As the blended diesel fuel will not be available through normal retail outlets, public exposure to the notified polymer and formulation containing the notified polymer is likely to be limited. It is expected that the notified polymer will be totally consumed during combustion in diesel engines so environmental exposure of the public is also unlikely.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20ºC and 101.3 kPa Amber liquid

Pour Point 15.9 ±3ºC

METHOD OECD TG 102 Melting Point/Melting Range.
EC Directive 92/69/EEC A.1 Melting/Freezing Temperature.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Boiling Point 385 ± 0.5ºC at 101.3 kPa

METHOD OECD TG 103 Boiling Point.
EC Directive 92/69/EEC A.2 Boiling Temperature.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Density 919 kg/m^3 at 20ºC

METHOD OECD TG 109 Density of Liquids and Solids.
EC Directive 92/69/EEC A.3 Relative Density.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Vapour Pressure <6.0 X 10^{-5} Pa at 25°C (or 20°C).

METHOD EC Directive 92/69/EEC A.4 Vapour Pressure.
Remarks The vapour pressure of the notified polymer was determined using a vapour pressure balance with a sensitivity of 0.1 µg. Determination involved measuring, in a series of 5 runs, the change in mass of the polymer placed under a vacuum when subject to temperatures in ranges between 24 and 210ºC. The run with the longest period under vacuum was selected for extrapolation to 25ºC. No statistical analysis was performed owing to the low and variable balance readings. The results indicate the notified polymer is not volatile.
TEST FACILITY Safepharm Laboratories Limited (2002b)

Water Solubility Predicted: 1000 g/L at 20°C (amine component)
Measured: <2.36 X 10^{-4} g/L (acid component)

METHOD OECD TG 105 Water Solubility.
Remarks The notified polymer is an ammonium salt, comprising a succinic acid component and an amine component. Following a preliminary test, mixtures of the test material (≈0.1 g), adjusted to pH 7 using 1M sodium hydroxide, were added to flasks of distilled water and shaken at 30°C for approximately 45 hours, then left to stand for 24 hours (at 20°C). The contents were then centrifuged for 30 minutes. The concentration of the test substance remaining in solution was determined by GPC. No test material was detected in any of the test samples. Therefore the water solubility was determined near the limit of detection for the acid component (notified component). The water solubility of the amine component was predicted to be high and modelled using the software WSKOW package based on the fragment-constant methodology.
TEST FACILITY Safepharm Laboratories Limited (2002a).

Hydrolysis as a Function of pH Not determined.

Remarks The hydrolysis test was considered not technically feasible given the low water solubility of the notified polymer. The notified polymer does not contain any hydrolysable groups.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Partition Coefficient (n-octanol/water) Not determined

METHOD Estimated by KOWWIN version 1.66 software, Syracruse Research Corporation, William Meylan, 1993-2000, using fragment-constant methodology.
Remarks It was not possible to measure the partition coefficient using the OECD and EEC methods for the notified polymer, which exhibits surfactant properties and is ionic. The results of modelling indicate the log P_{OW} of the amine and acid components of the test substance are –2.72 and >8, respectively. These results should be viewed with caution.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Adsorption/Desorption log K_{OC} = -0.395 for the amine component and >4.25 for the succinic acid component.

METHOD Estimated by QSAR methods
Remarks The notified polymer is a salt with a complex structure and having some organic acid groups present giving it surfactant like properties. The adsorption coefficient could therefore not be determined using OECD test methods. Instead, the adsorption coefficient was estimated using QSARs. These results were estimated for the neutral components and since both fragments are ionisable, as they are in the notified polymer, the results should be viewed with caution, as should the results for the partition coefficient.
TEST FACILITY Safepharm Laboratories Limited (2002a)

Dissociation Constant Not determined

Remarks The notified polymer is an ammonium salt and is expected to be fully dissociated once solubilized in water. However, due to its low water solubility, it was not technically feasible to measure the dissociation constant.

Particle Size Not applicable

Flash Point 92±2°C at 101.325 kPa

METHOD EC Directive 92/69/EEC A.9 Flash Point.
TEST FACILITY Safepharm Laboratories Limited (2002b)

Flammability Limits Not determined

Autoignition Temperature 354±5°C

METHOD 92/69/EEC A.15 Auto-Ignition Temperature (Liquids and Gases).
TEST FACILITY Safepharm Laboratories Limited (2002b)

Explosive Properties Not determined

Reactivity

Remarks The notified polymer does not have oxidising properties.

7. TOXICOLOGICAL INVESTIGATIONS

The test material OS#173329 consists of 68% notified polymer and 32% mineral oil.

Endpoint and Result	*Assessment Conclusion*
Rat, acute oral LD50 >2000 mg/kg bw	low toxicity
Genotoxicity - bacterial reverse mutation	non mutagenic

7.1. Acute toxicity – oral

TEST SUBSTANCE	OS#173329
METHOD	OECD TG 401 Acute Oral Toxicity.
Species/Strain	Rat/Wistar
Vehicle	Used as received.
Remarks - Method	Animals were observed 1,2, and 4 hours postdose and once daily for 14 days for toxicity and pharmacological effects.

RESULTS

Group	*Number and Sex of Animals*	*Dose mg/kg bw*	*Mortality*
1	5 male	2000	0
2	5 female	2000	0

LD50	>2000 mg/kg bw
Signs of Toxicity	None
Effects in Organs	None
Remarks - Results	

CONCLUSION	The notified polymer is of low toxicity via the oral route.
TEST FACILITY	MB Research Laboratories (2002)

7.8. Genotoxicity - bacteria

TEST SUBSTANCE	OS173329
METHOD	OECD TG 471 Bacterial Reverse Mutation Test. Plate incorporation procedure/Pre incubation procedure
Species/Strain	*S. typhimurium*: TA1535, TA1537, TA98, TA100 *E. coli*: WP2 uvrA.
Metabolic Activation System	Aroclor 1254-induced rat liver S9
Concentration Range in Main Test	a) With metabolic activation: 0.01 to 1.0 µg/plate. b) Without metabolic activation: 0.01 to 1.0 µg/plate.
Vehicle	DMSO
Remarks - Method	A preliminary cytotoxicity test was not performed. Some toxicity was observed against strains TA98, TA1535 and TA1537. Toxicity is suggested by the absence of a confluent bacterial lawn, the presence of pinpoint colonies, and/or a substantial decrease or lack of revertant colonies.

RESULTS

Remarks - Results	No precipitation was observed. No increases in the growth of bacteria meeting the test criteria for a positive result were observed.

CONCLUSION	The notified polymer was not mutagenic to bacteria under the conditions of the test.
TEST FACILITY	Litron Laboratories (2002)

8. ENVIRONMENT

8.1. Environmental fate

No environmental fate data were submitted. The MSDS indicates the notified polymer has limited biodegradation in acclimated sludge.

8.2. Ecotoxicological investigations

No ecotoxicity data were submitted for the notified polymer. The notifier submitted toxicity test reports for an analog material which has a different structure to PuriNOx 1122 in that it has the quaternary ammonium in the polymer rather than as a counter ion as is the case with the notified polymer. In fact the structure is close to that of the PuriNOx polymer assessed as NA/774, where these data were also presented (except the mysid shrimp test). However, owing to the structural differences the analog may be expected to show higher toxicity than the notified polymer. The ecotoxicity tests are summarised below.

8.2.1. Acute toxicity to fish

TEST SUBSTANCE	OS47550
METHOD	In house method. Acute Toxicity for Fish - Rangefinding Dispersion Method Test (based on OECD)/static conditions.
Species	Fathead minnow (*Pimephales promelas*)
Exposure Period	96 hours
Auxiliary Solvent	None
Water Hardness	160 mg $CaCO_3$/L
Analytical Monitoring	Dissolved oxygen, pH, temperature
Remarks – Method	Nominal concentrations of test material were combined with dilution water in test tanks, and were continuously mixed with a three-blade propeller inside a cylinder fitted into the tanks. The test tanks containing 330 and 3300 mg/L had insoluble material on the surface and were cloudy, while the test vessels containing 33 mg/L were cloudy, throughout the test period.

RESULTS

Concentration mg/L	*Number of Fish*	*Mortality*		
Nominal		*48 h*	*72 h*	*96 h*
0 (control)	10	0	0	0
0.33	10	0	0	0
3.3	10	0	0	1
33	10	0	0	0
330	10	0	0	0
3300	10	0	10	10

LC50	1,000 mg/L at 96 hours (95% CI = 330-3330 mg/L).
NOEC (or LOEC)	330 mg/L at 96 hours.
Remarks – Results	The 96 h LC50 was calculated by the binomial interpolation method. The NOEC was defined as the highest concentration that allowed at least 90% survival and did not cause sublethal effects, which differs from standard definitions of the highest concentration causing no effects. Due to the insolubility of the test substance at concentrations of 330 and 3300 mg/L, observation of fish was impossible until they were removed from the test vessels, so unobserved sublethal effects may have occurred.
CONCLUSION	The test substance is practically non-toxic to fish.
TEST FACILITY	T.R. Wilbury Laboratories, Inc. (1996).

8.2.2. Acute/chronic toxicity to aquatic invertebrates

TEST SUBSTANCE	OS47550
METHOD	Static Acute Toxicity to the Mysid Shrimp.
Species	*Mysid bahia*
Exposure Period	96 hours
Auxiliary Solvent	Filtered Natural Seawater
Water Hardness	Not reported
Analytical Monitoring	Dissolved oxygen, salinity, temperature, and pH, TOC, particulate matter.
Remarks - Method	Two replicates groups containing 10 juvenile mysid shrimps each were exposed to 6 concentrations of the WAF of the test material. The WAF was prepared by mixing individual solutions, allowing to settle for 1 hour and then siphoning the solution off. At least 84-88% of the test media in each vessel was renewed at 24, 48, and 72 hours. Only the highest test concentration formed a cloudy mixture, all other concentrations had no observable signs of test material. The number of surviving organisms and the occurrence of sublethal effects (immobilisation) were determined visually at 0, 24, 48, 72, and 96 hours.

RESULTS

Concentration mg/L		*Number of Animals*	*Number of Survivors*	
Nominal	*Actual*		*48 h*	*96 h*
0 (control)	0	20	19	19
77.76	77.85	20	20	20
129.6	129.64	20	20	20
216	216	20	20	20
360	360.01	20	18	18
600	600.07	20	19	16
1000	1000	20	17	4

LC50	744.25 mg/L at 96 hours (WAF)
NOEC (or LOEC)	360.01 mg/L at 96 hours
Remarks - Results	Results were interpreted by standard statistical techniques or computer methods and based on actual concentrations. Note: No analytical analysis of the test media was carried out. The "actual" concentration refers to the amount weighed into each vessel rather than an analytically derived concentration, whereas the "nominal" concentration refers to the target concentration. The NOEC was defined as the highest concentration that allowed at least 90% survival and did not cause sublethal effects, which differs from standard definition of the highest concentration causing no effects. Sublethal affects were also observed in 8 organisms surviving at the highest test concentration after 48 hours of exposure.
CONCLUSION	The test material is practically non-toxic to mysid shrimp.
TEST FACILITY	EnviroSystems, Incorporated (1997).

8.2.4. Inhibition of microbial activity

TEST SUBSTANCE	OS47550W
METHOD	OECD TG 209 Activated Sludge, Respiration Inhibition Test.
Inoculum	Activated sludge from residential wastewater treatment plant.
Exposure Period	3 hours
Concentration Range	1, 10, 100, 1000, and 10000 mg/L

Nominal	
Remarks – Method	The oxygen consumption of microorganisms exposed to 5 nominal concentrations of the test substance was measured after 3 hours incubation time, and compared to that of microorganisms in a blank control and a reference substance (3,5-dichlorophenol) incubated under the same conditions.

RESULTS

IC50	>10000 mg/L
Remarks – Results	All concentrations of test material produced inhibition of respiration. The variation in consumption between the test substance and blank controls was between 19.8 and 47.8%. The EC_{50} of the reference substance was 11.2 mg/L, which is in the acceptable range 5-30 mg/L, therefore the test was valid.

CONCLUSION	The test material is practically non-toxic to microorganisms.
TEST FACILITY	Woodward-Clyde Consultants (1994)

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

The notified polymer will be imported pre-blended with other components in a diesel fuel additive package. Therefore most of the notified polymer will be burned in the engine along with the diesel fuel. No release to the environment is expected during blending and use, except in the case of accidental spills. Up to 5 tonnes per year of the notified polymer could remain in the import containers after emptying.

The notified polymer is an emulsifying agent, having both polar and non-polar components, and exhibiting surfactant properties, and as such is expected to reside at the interfaces between water and oil/organic matter. Spills occurring on land would be expected to be immobile and to remain in the surface soil layer, while spills occurring on water are expected to float on the surface. The containers and any residual product is to be sent to a reconditioning facility, where they are to be cleaned with mineral oil and the residues disposed of by incineration.

Incineration and combustion in engines will produce water vapour and oxides of carbon and nitrogen. The notifying company claims improved combustion efficiency for their water blended diesel, and their website indicates a reduction in smog-forming nitrogen oxides of up to 30%, and in particulate matter of up to 50%, compared to conventional diesel fuels. Information supporting these claims was submitted in the form of a technical report (van Helden, 2002), which compared emissions from Ultra Low Sulfur Diesel with fuel containing a similar additive formulation to PuriNOx™1122. The tested additive formulation contains 38% Z-47, compared to 23% in PuriNOx™1122 (both additive packages contain two emulsifiers including Z-47, and the total concentration of the two emulsifiers is about 53% for both packages). The tested additive formulation contains 12% water, whereas PuriNOx™1122 contains 5% water (as listed in the MSDS).

The test data indicate combustion of PuriNOx containing Z-47 reduced NOx emission by 14-15%, and particulate emissions by 16-35% depending on driving conditions (three driving cycles – steady state cycle, European transient cycle, Dutch Urban Bus Cycle). While accompanying these reductions, under all test conditions, emissions of HC increased by about 30% and CO_2 emissions increased by from 1.0-1.5%. Emissions of CO increased under steady-state and decreased under dynamic conditions. While the HC emissions rose, they were still well below the Euro 2 standard.

These results are very similar to the more extensive PuriNOx™ 20 emissions data assessed for NA/774, where typical engine reductions of up to 10% in NOx and up to 30% in particulate emissions were demonstrated.

The mechanisms whereby the pollutant emissions are reduced appear to be associated with the presence of significant quantities of dispersed water droplets within the diesel fuel emulsion which when atomised in the engine cylinders promote more even fuel combustion at lower combustion temperatures. As such, the lower water content in PuriNOx™1122 may be expected to result in less pronounced reduction in emissions of NOx and particulates than was seen in the tested additive package.

Because water has no energy content, the PuriNOx™ fuel blend may result in decreased power output. The decrease in engine power output translates into increased volume in fuel consumption, although the actual consumption of hydrocarbons is not very different from the consumption of conventional diesel fuel. Nevertheless, use of the new fuel may have some implications for emissions of greenhouse gases, but without substantially more data and rigorous scientific analysis it is not possible to confirm this or to quantify potential changes in these emissions.

9.1.2. Environment – effects assessment

No environmental effects data were submitted for the notified polymer. The following data were derived from toxicity tests using a structurally similar polymer to the notified polymer:

LC50 for fish >1000 ppm; LC50 for saltwater invertebrates (mysid shrimp) = 774 ppm and EC50 for bacteria >1000 ppm. These data indicate the notified polymer is practically non-toxic to fish, shrimp and sewage microorganisms.

For the amine component, Verschueren (1996) lists a 24 h critical range of 80-120 mg/L for the Creek chub (*Semolitus atromaculatus*) (critical range = the range of concentrations below which all fish lived for 24 hr and above which all fish died).

9.1.3. Environment – risk characterisation

No environmental release of the notified polymer is anticipated except in the case of accidental spills. The majority of the polymer will be burnt in engines along with the diesel fuel. Any material lost as a result of spills, or remaining as residues in containers, is expected to be recovered and disposed of by incineration.

There are not enough data to determine if use of the new fuel will have implications for emissions of greenhouse gases. However, given that the combustion products arising from the notified polymer comprise only a small fraction (<1.0%) of the total amount of combustion products released by fuel burning itself, the notified polymer is not expected to add significantly to greenhouse gas emissions. Overall it appears that the use of the water blend diesel fuels prepared with the new polymer can offer significant reductions in exhaust pollutant emissions, but maximum benefit is achieved in conjunction with the addition of oxidation catalysts and/or particulate traps. It is also apparent from the available data that the extent of reductions in these pollutants achieved through use of these fuels may also depend on the type and design of the engines themselves.

Ecotoxicity endpoints for a structurally similar polymer indicate the notified polymer is practically non-toxic to fish, salt-water invertebrates and bacteria. The main hazard to organisms arising from the notified polymer would occur in the event of a fuel spill into water, whereby organisms such as birds may become coated with the fuel. However, such spills are expected to be a rare occurrence, and the proposed use pattern is expected to result in negligible exposure to the aquatic environment.

The MSDS indicates limited biodegradation with acclimated sludge. Consequently, any material released to the soil or water compartments through accidental spills or leaks would be expected to degrade slowly through bacterial action. Owing to its high molecular weight the polymer is not expected to cross biological membranes and bioaccumulate.

The environmental hazard from the notified polymer is low when it is blended into diesel and used in the manner indicated by the company.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

As the notified polymer is not volatile, spills and splashes resulting in dermal and/or ocular contact are the most likely exposure scenario. Exposure is most likely to occur during transfer of the product containing the notified polymer between storage/transport containers and blending facilities, and fuel during the transfer of blended diesel from the blending unit to storage and to subsequent transport, and during the fuelling of vehicles with the blended diesel fuel.

9.2.2. Public health – exposure assessment

Public exposure is not expected to occur unless there is an accidental spill and/or release of either the fuel additive or the blended diesel fuel.

9.2.3. Human health - effects assessment

The notified polymer is of low acute oral toxicity and is not mutagenic according to tests provided by the notifier. The polymer is a surfactant, so the possibility of irritation, particularly to the eyes must be considered. No skin or eye irritation tests have been provided. According to information provided on the MSDS, the polymer is a weak to moderate eye irritant based on data from similar materials, and does not meet Canadian D2B or EU R36 criteria as an eye irritant. It

is not expected to be a primary skin irritant based on data from similar materials.

9.2.4. Occupational health and safety – risk characterisation

The product containing the notified polymer, PuriNOx™, is a hazardous substance according to the criteria of NOHSC, and may cause irritation of the skin, eyes and respiratory tract. During transport of this product, and the blending of the diesel fuel, controls exist to limit occupational exposure to the hazardous substances. The use of local exhaust ventilation is recommended to control mist and vapours and to maintain the concentration of other ingredients below exposure levels. Personal protective equipment including nitrile or neoprene gloves, chemical goggles or face shields, and long sleeves are recommended.

After blending, the concentration of the notified polymer in the diesel fuel is low. Fuelling of vehicles usually occurs in the open air, and without the use of protective clothing. However, exposure occurs for a period of only a few minutes, and the concentration of the notified polymer in the diesel fuel is low.

Due to the its low toxicity, and controls in place to prevent exposure to hazardous chemicals in the products in which it occurs, the risk to workers from the notified polymer is expected to be low.

9.2.5. Public health – risk characterisation

As there is not likely to be public exposure to the notified polymer, no characterisation of the risk is required.

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

10.1. Hazard classification

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

10.2. Environmental risk assessment

Based on the expected low toxicity and low potential for aquatic exposure, the notified polymer is not considered to pose a risk to the environment when used in accordance with its reported use pattern.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

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

10.3.2. Public health

There is Negligible Concern to public health when used as an emulsifying agent in a fuel additive.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer and product containing the polymer (PuriNOx™1122) provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 notified polymer and product containing the polymer (PuriNOx™1122) provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. RECOMMENDATIONS

REGULATORY CONTROLS

CONTROL MEASURES

Occupational Health and Safety

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer as introduced in the product PuriNOx™:
  - Nitrile or neoprene gloves, chemical goggles or face shields, and long sleeves.

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

- A copy of the MSDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

Disposal

- The notified polymer should be disposed of by incineration.

Emergency procedures

- Spills/release of the notified polymer should be soaked up with inert material and placed in labelled containers for recycling or disposal by incineration.

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

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