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

PUBLIC REPORT

TEA6EO-NAA201

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health, and 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.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

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

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**Director
NICNAS**

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

| ASSESSMENT REFERENCE | APPLICANT(S) | CHEMICAL OR TRADE NAME | HAZARDOUS CHEMICAL | INTRODUCTION VOLUME | USE |
|-------------------------|---|---------------------------|-----------------------|-------------------------|----------------------|
| LTD/1762 | Idemitsu International (Asia) Pte Ltd | TEA6EO-NAA201 | ND* | < 5 tonnes per annum | Diesel fuel additive |

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unreasonable risk to public health.

Environmental risk assessment

On the basis of its limited aquatic exposure and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced (in diesel fuel):
 - Clean up spills promptly.
- A copy of the (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals* (GHS) as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- The notified polymer in fuel should be disposed of in accordance with local regulations for recycling, re-use or recovery of calorific content.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of 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 even when the notified polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 64(1) of the Act; if
 - the polymer has a number-average molecular weight of less than 1000;or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the polymer has changed from a diesel fuel additive, or is likely to change significantly;
 - the amount of polymer being introduced has increased, or is likely to increase, significantly;
 - the polymer has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the polymer 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.

(Material) Safety Data Sheet

The (M)SDS of the notified polymer and products containing the notified chemical provided by the notifier were reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Idemitsu International (Asia) Pte Ltd (ABN: 20 960 769 454)
163 Penang Road,
#06-01/05 Winsland House II, 238463
Singapore

NOTIFICATION CATEGORY

Limited: Synthetic polymer with Mn \geq 1,000 Da.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formulae, molecular weight, analytical data, polymer constituents, residual monomers, and import volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: all physico-chemical endpoints.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

TEA6EO-NAA201

MOLECULAR WEIGHT

> 1,000 Da

ANALYTICAL DATA

Reference IR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

> 99%

DEGRADATION PRODUCTS

None expected under normal use conditions.

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Light brown solid

| Property | Value | Data Source/Justification |
|------------------------------|---------------------------------------|--|
| Melting Point/Freezing Point | 51 °C | (M)SDS |
| Boiling Point | Not determined | The notifier states that decomposition is expected to occur prior to boiling point being reached. |
| Density | | Not determined |
| Vapour Pressure | 2.68 x 10 ⁻²⁸ kPa at 25 °C | Calculated |
| Water Solubility | Not determined | Expected to be low based on the predominantly hydrophobic structure and high molecular weight of the notified polymer. |

| | | |
|---|-------------------|--|
| Hydrolysis as a Function of pH | Not determined | Contains hydrolysable functionalities. However, the notified polymer is not expected to be significantly hydrolysed in the environmental pH range (4 – 9). |
| Partition Coefficient (n-octanol/water) | Not determined | Expected to partition from water to n-octanol based on its expected low water solubility |
| Adsorption/Desorption | Not determined | Expected to adsorb to soil, sediment and sludge based on its expected low water solubility, high molecular weight and potential cationicity |
| Dissociation Constant | Not determined | The notified polymer has potential to be ionised under normal environmental conditions (pH 4 – 9) |
| Particle Size | Not determined | The notified polymer will be imported in a solution form. |
| Flash Point | 282 °C at 101 kPa | (M)SDS |
| Flammability | Not determined | Not expected to be flammable based on flash point. |
| Autoignition Temperature | Not determined | Expected to be high, based on flash point. |
| Explosive Properties | Not determined | The notified polymer is not expected to have explosive properties based on the structure.. |
| Oxidising Properties | Not determined | The notified polymer is not expected to have oxidising properties based on its structure. |

DISCUSSION OF PROPERTIES

Reactivity

The notified polymer is expected to be stable under normal conditions of use. Decomposition will occur at elevated temperatures.

Physical hazard classification

Based on the submitted physico-chemical data depicted in the above table, the notified polymer is not recommended for hazard classification according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

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

The notified polymer will not be manufactured in Australia. The notified polymer will be imported as a component of diesel fuel at 0.008% concentration.

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

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

PORT OF ENTRY

Major ports in Australia (Sydney, Melbourne, Brisbane and Perth).

IDENTITY OF MANUFACTURER/RECIPIENTS

Idemitsu International (Asia) Pte Ltd

TRANSPORTATION AND PACKAGING

The imported diesel fuel containing the notified polymer (at 0.008% concentration) will be shipped in bulk (in isotainers up to 26000 L) by sea. The diesel fuel will be offloaded onto tank trucks or rail cars and transported to importer's storage facilities, or directly distributed to customer sites/end-users.

USE

The notified polymer will be used as an additive in diesel fuels.

OPERATION DESCRIPTION

The notified polymer will not be manufactured in Australia. It will be imported in isotainers (up to 26000 L) as an additive in diesel fuels. There will be no reformulation or repackaging of the imported product containing the notified polymer. The imported diesel fuels containing the notified polymer will be transported from wharf by road or rail to importer storage facilities or to refuelling stations. At the refuelling station, the diesel fuel will be pumped and transferred from the isotainer into underground storage tanks. A 10 cm hose with coupling mechanism and air back flush system will be used to reduce any spills or leak during transfer. Service stations are also fitted with fill/dip or spill containment to collect any overfills.

It is expected that diesel fuel containing the notified polymer will be used to refill cars, trucks and other vehicles.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

| <i>Category of Worker</i> | <i>Exposure Duration (hours/day)</i> | <i>Exposure Frequency (days/year)</i> |
|----------------------------|--|---|
| Dockside worker | 1-2 | 12 |
| Transport and storage | 1-12 | 50 |
| Service station attendants | 0.5 | 300 |

EXPOSURE DETAILS

Dockside workers

Dermal and ocular exposure of workers to the notified polymer is not likely to occur during unloading of the imported isotainers from the ship and onto the trucks or trains using cranes except in the case of an accident involving damage to the isotainers.

Transport and storage workers

Transport and storage workers are not likely to be exposed to large quantities of the diesel fuel containing the notified polymer except in the case of an accident involving damage to the isotainers. Dermal and ocular exposure may also occur during filling underground tanks of the service stations using the transfer pump and lines (connecting and disconnecting the transfer lines). The transfer equipment has controls that would reduce spills and overfill.

Service station attendants

Service station workers may be incidentally exposed to the notified polymer through dermal and ocular routes through refilling vehicles, contact with equipment and during cleaning up any spills using spill kits (adsorbent material). Inhalation exposure is not expected during these operations.

Workers refilling vehicles may have incidental dermal and/or ocular contact with the fuel containing the notified polymer.

Some workers will be using personal protective equipment such as goggles, impervious gloves and coveralls during the above operations, to protect against exposure to hazardous components of diesel fuel; however for operations such as re-filling vehicles use of PPE is not expected.

6.1.2. Public Exposure

The notified polymer will not be made available to the general public. The public may experience accidental dermal and ocular exposure to diesel fuels containing the notified polymer at 0.008% concentration when filling vehicles at the service station.

6.2. Human Health Effects Assessment

No toxicological data was provided on the notified polymer. The high molecular weight >1000 and the expected low water solubility would limit the potential for dermal absorption, however the polymer contains a proportion of low molecular weight species <1000 and <500 that may be absorbed.

Health hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, or the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

Dermal and ocular exposure will be the main routes of worker exposure to the notified polymer (0.008% in diesel fuel). Exposure is expected to be reduced by safe work practices for handling fuel such as transfer, dispensing and cleaning processes. The notified polymer is expected to be combusted as part of the diesel fuel and will then not be available for further exposure. Therefore, the notified polymer is not expected to pose an unreasonable risk to workers.

6.3.2. Public Health

The public may be incidentally exposed to the notified polymer in diesel fuel at 0.008% through operations such as refuelling vehicles. Due to the low concentration of the notified polymer in the diesel fuel and the expected low hazard of the notified polymer, the risk to the public from use of diesel fuel containing the notified polymer at 0.008% is not considered to be unreasonable.

It is expected that the notified polymer will be combusted as part of the diesel fuel, and will not be available for further exposure.

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 or reformulated/repackaging in Australia. Therefore, release of the notified polymer from these activities is not expected.

RELEASE OF CHEMICAL FROM USE

The notified polymer will be imported as an additive in diesel fuel. No significant release of the notified polymer to aquatic systems is expected when it is used as diesel fuel additive.

Environmental release from spills of diesel fuel containing the notified polymer may be expected during the transfer of the diesel fuel. Spills during refilling of the diesel fuel to underground storage tanks from isotainers, and to car fuel tanks at fuel bowzers are expected to be insignificant (<1% of the total import volume). These spills are expected to be contained in on-site interceptor drains at service stations to trap and filter the diesel fuel containing the notified polymer. Hence, the notified polymer will be prevented from entering the sewer via rainwater runoff. Larger spills will be dammed and collected using a suitable adsorbent material within spill kits which are present at service station sites. The collected spills are expected to be disposed of to landfill. Isotainers, containing residues of diesel fuel and the notified polymer, are expected to be reused during transporting the diesel fuel. Most of the notified polymer will be consumed during the combustion of the fuel in the vehicle engine.

RELEASE OF CHEMICAL FROM DISPOSAL

Empty import containers containing residues of the notified polymer are expected to be recycled by accredited waste management companies or disposed of according to local regulations.

7.1.2. Environmental Fate

No environmental fate data were submitted. Most of the notified polymer in fuel will be consumed and degraded during use. Minor amounts of the notified polymer are expected to be released to landfill as residues in containers or treatment wastes. Release to the aquatic compartment is unlikely based on the reported use pattern. In landfill, the notified polymer is not expected to be mobile or bioavailable due to its high molecular weight, low water solubility and potential cationicity. It is not expected to be readily biodegradable based on its structure. The notified polymer is unlikely to cross biological membranes due to its high molecular weight. Therefore, it is unlikely to be bioaccumulative. The notified polymer is expected to slowly degrade by biotic and abiotic processes in landfill, or by thermal decomposition, to form water and oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental Concentration (PEC) has not been calculated since no significant release of the notified polymer to the aquatic environment is expected from the reported use pattern.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted for the notified polymer. The notified polymer has functionality that has potential to be cationic. Therefore, the notified polymer has potential to be toxic to aquatic life. However, no significant exposure of the notified polymer to aquatic organisms is expected based on the reported use pattern.

7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) has not been calculated for the notified polymer as, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

7.3. Environmental Risk Assessment

Calculation of the risk quotient (PEC/PNEC) is not possible since neither the PEC nor the PNEC is available. The majority of the notified polymer will be thermally decomposed during its use as an additive in fuels. Exposure to the aquatic compartment is unlikely based on the reported use pattern. On the basis of its limited aquatic exposure and assessed use pattern, the notified polymer is not expected to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

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

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