File No PLC/1098

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Tego Dispers 750 W

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

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

November 2012

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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 SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1098	Brenntag Australia Pty Ltd	Polymer in Tego Dispers 750 W	No	≤ 50 tonnes per annum	Additive for paints and fertilisers

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public, provided that appropriate PPE is used by workers during spray application of the paint products and during foliar boom-spray application of the fertilisers containing the notified polymer.

Environmental Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
  - Respiratory protection during spray applications of the paint products and during foliar boom-spray application of the fertilisers containing the notified polymer

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

- If liquid aerosols are formed during the use of the notified polymer, engineering controls and respiratory protection should be used to prevent inhalation exposure.

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

- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

- 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 should be disposed to landfill.

Emergency Procedures

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

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 polymer 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 polymer, 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 notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from being an additive in paint products and fertilisers, or is likely to change significantly;
- the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
- the notified polymer has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the notified 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 MSDS of the products containing the notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Brenntag Australia Pty Ltd (ABN: 84 117 996 595)
262 Highett Road
HIGHETT VIC 3190

Exempt Information (Section 75 of the Act)

Data items and details claimed exempt from publication: chemical name, other names, CAS number, structural formula, molecular weight, polymer constituents, use details, import volume, and site of reformulation.

2. IDENTITY OF POLYMER

Marketing Name
Tego Dispers 750 W (product)

Molecular Formula
Unspecified

Molecular Weight
Number Average Molecular Weight (Mn) is > 1,000 Da

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Amber colour liquid (product)
Density	1075 kg/m^3 at 25 °C
Water Solubility	Not determined
Dissociation Constant	Not determined. The notified polymer is a salt and expected to be ionised under environmental conditions.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 50	< 50	< 50	< 50	< 50

Use
The notified polymer will be imported into Australia at a concentration < 50%.
Products containing the notified polymer will be reformulated in Australia.
The notified polymer will be used as an additive in paint products at a concentration < 0.2% and in fertilisers at a concentration < 10%. The paint products will be used for both DIY (80%) and industrial (20%) applications. The fertilisers will be used in conventional broad-acre farming including foliar boom-spray applications.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by a test on a similar polymer submitted on the following toxicological endpoint.

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*
Rat, acute oral	LD50 > 2000 mg/kg bw	No	OECD TG 423

Application of paints
During the application of paints, inhalation, dermal and ocular exposure to the notified polymer at concentrations up to 0.2% may occur. Workers are expected to wear PPE during spray application. Roller and brush are expected to be the main method of application for DIY (do-it-yourself) painters; however spray application may also occur. This is likely to be infrequent and exposure would be reduced by the low concentration of the notified polymer in paints (< 0.2%). Based on low hazard and low exposure, the risk to workers and the public during paint application is not considered to be unreasonable.

Boom-spray application of fertilisers
Inhalation exposure of workers to the notified polymer at concentrations < 10% may occur during boom-spray application of fertilisers. However, the exposure is expected to be lowered by the use of appropriate personal protective equipment (PPE). If it is necessary on the basis of other ingredients in the fertilisers, the establishment of an exclusion zone may further lower the potential of exposure to workers and the public. Based on low hazard and controlled exposure, the notified polymer in fertilisers will not pose unreasonable exposure to the workers and to the public.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This may apply to the notified polymer. However using the nearest analogue approach to provide an estimate of the toxicity, this type of polymer is likely to have median lethal concentrations (LC50) greater than 100 mg/L to aquatic organisms (Boethling & Nabholz, 1997) and it is therefore unlikely to pose an over-chelation hazard to algae. Lack of toxicity to aquatic invertebrates is supported by the tests conducted on 40% solution of the notified polymer as tabulated below (Stockhausen, 2002a).

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*
Acute toxicity (*Daphnia magna*) (48 h)	EC50 > 128 mg/L	No	OECD TG 202

Use in paint products
The imported product containing the notified polymer will be reformulated into paint products containing < 0.2% of the notified polymer. Waste from reformulation and cleaning (approximately 1% of the total annual import of the notified chemical) will be either reused, sent to landfill or disposed of to sewer. A small amount of the notified polymer (< 5%) may be released to sewers when formulations containing the notified polymer are released from cleaning activities by the public. Under a worst case scenario it will be assumed that 5% of the notified polymer will be washed into sewers. Assuming 0% of the notified polymer will be removed via absorption to sludge in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 1.51 µg/L [PECriver = 6.85 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. The PEC is well below the EC50 for algae of the most toxic anionic polymers (EC50 > 1 mg/L). The notified polymer is not readily biodegradable (0% biodegradation after 28 days; OECD TG 301B; Stockhausen, 2002b). However, due to its high molecular weight it is not expected to cross biological membranes and is therefore unlikely to bioaccumulate. Most of the notified polymer will share the fate of the coated end use articles and be disposed of to landfill or recycled for metals reclamation. During metal reclamation, the notified polymer will thermally decompose to form oxides of carbon and nitrogen, and water vapour. In landfill, the notified polymer will be present as a cured solid film and is not expected to be bioavailable. The notified polymer is expected to slowly degrade in landfill and water through biotic and abiotic processes to form water, oxides of carbon and nitrogen. Therefore, based on its assumed

low hazard and assessed use, the notified polymer is not considered to pose an unreasonable risk to the environment when used as a component in paints.

Use in fertilisers

The imported product containing the notified polymer will be reformulated into liquid and granular fertilisers containing < 10% of the notified polymer. A small amount of the notified polymer (1%) may be released to sewers during reformulation and cleaning processes. When used as a component of fertiliser, the notified polymer will be applied to agricultural soil by banding where liquid fertiliser is applied directly into a seed furrow in a continuous stream at the same time the seed is applied. The notified polymer may also be used for foliar application and applied by spraying. Under a worst-case scenario for spray application, the PEC from direct overspray in surface waters using the notified application rate is calculated to be < 0.1 mg/L (EPHC, 2009, pp. 38-40). The notified polymer is not expected to cross biological membranes and unlikely to be harmful to aquatic organisms; therefore the notified polymer is unlikely to pose an unreasonable risk to aquatic organisms when applied at less than 100 g/ha assuming one application per year. The notified polymer is expected to slowly degrade in soil and water through biotic and abiotic processes to form water, oxides of carbon and nitrogen. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment when used as a component of fertiliser.

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EPHC (2009) Environmental Risk Assessment Guidance Manual for Agricultural and Veterinary Chemicals. Environment Protection and Heritage Council, Commonwealth of Australia, <http://www.ephc.gov.au/taxonomy/term/75>.

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