File No PLC/1450

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

DP-OMC-1047

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

This Public Report is 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

October 2017

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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/1450	BASF Australia Ltd	DP-OMC-1047	No	≤ 1,500 tonnes per annum	Industrial flocculant in mineral ore processing

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.

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

- No specific engineering controls, work practices or personal protective equipment 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, noting that the formulation may be classified because of hazardous impurities.

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

- If 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 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 of 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

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

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 an industrial flocculant for mineral ore processing, 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.

Safety Data Sheet

The SDS of the notified polymer was provided by the applicant. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
BASF Australia (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
SOUTHBANK VIC 3006

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities, use details and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
DP-OMC-1047

Molecular Weight
Number Average Molecular Weight (Mn) is > 10,000 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	White powder with faint specific odour
Melting Point/Glass Transition Temp	Decomposes
Density	Not determined
Water Solubility	Not determined
Dissociation Constant	Not determined. The notified polymer is an anionic salt and is expected to dissociate in the environmental pH range (4-9)
Particle Size	Not determined. With water/humidity, the polymer becomes slurry or gel-like, so particle size is not possible to measure.
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	500	500	1,000	1,000	1,500

Use
The notified polymer acts as a flocculant for solid-liquid separation applications in mineral ore processing.

The notified polymer will not be manufactured within Australia. It will be imported as a finished product DP-OMC-1047 in 25 kg plastic bags or 750 kg bulk containers. The product will be transported by road and stored in warehouse till distribution to the industrial customers in bulk. At the site of use, the product will be added to water to form 0.25–0.5% solution. The solution will be used for mineral ore processing. Approximately 150–350g of the notified polymer will be used for every one tonne of mineral solids.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard.

The notified polymer is a high molecular weight (> 70,000 Da) polymer. Inhalation of polymers with molecular weights > 70,000 Da has been linked with irreversible lung damage due to lung overloading and impaired clearance of particles from the lung, particularly following repeated exposure. However, the notified polymer will be introduced and used as part of slurry or solution, hence inhalation exposure is not expected.

There is potential for occupational exposure during dilution and use and in the event of a spill or accident. All processes involving the polymer will be mechanical and the flocculant will be used within a closed system which would reduce exposure.

The polymer will be available for industrial use only. No public exposure is expected. Overall, the risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data for the notified polymer were submitted. Anionic polymers are generally of low toxicity to fish and daphnia, however they can 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, which may apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions in environmental waters, which will bind to the functional groups.

The notified polymer will be imported as a component of the end use product DP-OMC-1047, a flocculant for use in mineral processing. In most cases, the product will be delivered in bulk pods, on the back of a truck. The product is transported via road to the customer site, and transferred via air pressure from the pod to the storage silo. The product is transferred from the silo into a mixing vessel

where it is mixed with water to form a 0.25 – 0.5% solution. This solution is then transferred to a bulk storage tank ready for use required in thickening or sedimentation processes.

Accidental spills of the notified polymer during import, transport or storage are expected to be collected for disposal in accordance with local regulations. The product is delivered in either 25 kg bags or 750 kg bags. These bags are estimated to contain less than 0.5% of product after being emptied and are most likely to be disposed to landfill.

Mineral processing operations are closed systems, with any site discharge generally confined to site run-off. The clean water or liquor generated via the process of flocculant treatment is recirculated, with very low levels of residual polymer. When secondary treatment of the solids from the mineral processing (tailings) with the flocculant occurs, most of the polymer is absorbed by the solids and remains with the treated solids contained in the dam facilities.

Based on its very high molecular weight and chemical structure, the notified polymer is not expected to be readily biodegradable. However, due to high molecular weight and expected water solubility the notified polymer is unlikely to cross biological membranes, and is therefore not expected to bioaccumulate. The notified polymer is expected to be ionically attracted to and associated with solid particles (mine tailings), and hence not expected to be bioavailable or mobile. Furthermore, significant scheduled release of the notified polymer to the aquatic environment is not expected. In landfill and in the tailings dams, the notified polymer is expected to eventually degrade by biotic and abiotic processes to form water and oxides of carbon and nitrogen.

Therefore, based on its assumed low hazard and reported use pattern as a flocculant in largely closed mineral processing systems, the notified polymer is not considered to pose an unreasonable risk to the environment.