File No PLC/1069

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Fluid Loss Control Additive D193 and GASBLOK LT D500

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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

Director
NICNAS

January 2013

Table of Contents

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/1069	Schlumberger (Australia) Pty Ltd	Polymer in Fluid Loss Additive D193 and GASBLOK LT D500	No	≤ 300 tonnes per annum	Cement additive

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 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.

  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 *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.

Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

Disposal

- The notified polymer should be disposed of 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;
- the notified polymer is introduced as a solid.

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from a cement additive, 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 products containing the notified polymer were 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
Schlumberger Australia Pty Ltd (ABN: 74 002 459 225)
Level 5, 256 St George Terrace,
PERTH WA 6000

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, and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
Fluid loss Control Additive D193 (contains the notified polymer at < 5% concentration)
GASBLOK LT D500 (contains the notified polymer at < 5% concentration)

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	No*
Not a Hazard Substance or Dangerous Good	Yes

*The notified polymer will be imported as part of a liquid dispersion and not as respirable particles.

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

The following physico-chemical properties are for an aqueous solution containing < 5% notified polymer as the polymer is never isolated from solution.

Appearance at 20 °C and 101.3 kPa	Clear colourless viscous liquid/gel
Melting Point/Glass Transition Temp	-1°C
Density	1.01×10^3 kg/m^3 at 20°C
Water solubility	Product containing < 5% of notified polymer is fully miscible and forms a gel in water at a 1:1 ratio (OECD TG 105; NOTOX 2010). The notified polymer is water dispersible based on its use in aqueous products.
Partition Coefficient (n-octanol/water)	Log Pow ≤ 1.42. Determined in accordance with OECD TG 117, HPLC method (Chemex 1998).
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	30-100	100-300	100-300	100-300	100-300

Use
The notified polymer will not be manufactured in Australia. Products containing the notified polymer will not be reformulated in Australia. The notified polymer will be used as a fluid loss additive in cement applications at a concentration of < 5%.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted.

The notified polymer is water absorbing and so may pose a risk via inhalation. However, the notified polymer will be introduced in a liquid formulation and only dermal and ocular exposure may occur.

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. 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.

7. ENVIRONMENTAL RISK ASSESSMENT

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by ecotoxicological investigations conducted on the notified polymer as summarised in the table below.

Endpoint	*Result*[*]	*Assessment Conclusion*	*Test Guideline*
Fish Toxicity (*Cyprinodon variegatus*)	LC50 (96 h) > 1000 mg/L	Not harmful to fish	Modified OECD TG 203; AnalyCen 2003a
Daphnia Toxicity *(Acartia tonsa)*	LC50 (48 h) = 302 mg/L	Not harmful aquatic invertebrates	ISO 14669 standard method (ISO, 1999); AnalyCen 2003b
Algal Toxicity *(Skeletonema costatum)*	EC50 (72 h) = 300 mg/L NOEC = 100 mg/L	Not harmful to algae	ISO 10253 standard method (ISO, 1995); AnalyCen 2003c

[*] The results reported here are nominal concentrations for the test substance as the actual concentrations of the test substance in the test solutions were not determined.

The notified polymer will be used at oil and gas drilling sites for both land and offshore operations to produce cement mixture. Most of the notified polymer is expected to be pumped directly from the onsite mixing vessel into the well where it will cure to form a solid concrete structure that acts to seal the well. Release of the notified polymer to the environment during the cementing activities may occur due to release of left-overs of mix-water, from cleaning of the application equipment and accidental spills. It is anticipated by the notifier that mix-water and washings will be collected and where possible reused in further cementing applications, or stored in reservoirs and collected by licensed contractors for disposal. It is estimated that up to 0.1% of the annual introduction volume of notified polymer may be released to seawater due to cementing activities at offshore oil and gas drilling sites. Residual notified polymer within packaging (empty bags or drums) is expected to be disposed of to landfill.

Given the use pattern, some limited aquatic exposure can be expected as a result of cleaning operations at oil and gas drilling sites. While the notified polymer is dispersible in water and mobile in aqueous conditions, the use pattern and results of aquatic ecotoxicity testing indicate that the risk to aquatic species is low. Notified polymer incorporated into hardened cement is expected to resist degradation, and environmental exposure is not expected whilst the notified polymer is entrapped within the cement matrix. Notified polymer that is disposed of to landfill is expected to partition to surfaces where it will undergo gradual degradation. While not readily biodegradable (25% degradation over 28 days in seawater by ISO (1990) BODIS; ILAB 2000), its large molecular weight and low partition coefficient (log Pow < 1.42) indicates that it will not able to cross biological membranes and is therefore not considered to be bioavailable or bioaccumulative. In landfill and water, the notified polymer is expected to be eventually degraded via biotic or abiotic pathways to form water and oxides of carbon.

Therefore, based on the low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

AnalyCen (2003a) Fish, acute toxicity test with *Cyprinodon variegatus* for the test substance [notified polymer] (Study No. o-01803H, March 2003). Oslo, Norway, AnalyCen Ecotox, Schlumberger. (Unpublished report submitted by notifier).

AnalyCen (2003b) Toxicity test results with *Acartia tonsa* for the test substance [notified polymer] (Study No. o-01803F, March 2003). Oslo, Norway, AnalyCen Ecotox, Schlumberger. (Unpublished report submitted by notifier).

AnalyCen (2003c) Toxicity test results with *Skeletonema costatum* for the test substance [notified polymer] (Study No. o-01803E, March 2003). Oslo, Norway, AnalyCen Ecotox, Schlumberger. (Unpublished report submitted by notifier).

Chemex (1998) The bioaccumulation potential of [notified polymer] (Study No. ENV1729/039806, June 1998). Bedfordshire, England, Chemex International plc., Schlumberger Dowell Evaluation and Production Services Limited. (Unpublished report submitted by notifier).

ILAB (2000) Assessment of aerobic biodegradability in seawater of [notified polymer] (Study No. 60549.dws\1463\biodeg, November 2000). Thormøhlensgate, Bergen, Norway, ILAB Environment laboratory, Schlumberger. (Unpublished report submitted by notifier).

NOTOX (2010) Determination of physico-chemical properties of [product containing the notified polymer] (Study No. 493523, November 2010). Hertogenbosch, the Netherlands, NOTOX B.V. (Unpublished report submitted by notifier).