

File No PLC/910

April 2010

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

FULL PUBLIC REPORT

Polymer in SpectraSyn Elite 150

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (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 Ageing, 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, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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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FULL PUBLIC REPORT**Polymer in SpectraSyn Elite 150****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Mobil Oil Australia Pty Ltd (ABN 88 004 052 984)
12 Riverside Quay
Southbank VIC 3006

NOTIFICATION CATEGORY

Polymer of Low Concern

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, Polymer Constituents, Residual Monomers/Impurities and Import Volume.

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

Canada (2008)
United States of America (2009)
China (2009)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

SpectraSyn Elite 150 (contains 20-80 wt % notified polymer)

MOLECULAR WEIGHT (MW)

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

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION*Criterion*

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

Criterion met

Yes
Yes
Yes
Yes
Yes
Yes
Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Liquid
Pour point	-33°C
Density	850 kg/m ³ at 15°C
Water Solubility	The notified polymer is not expected to be water soluble based on its hydrophobic structure
Dissociation Constant	The notified polymer contains no dissociable functionalities
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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Tonnes	< 500,000	< 500,000	< 500,000	< 500,000	< 500,000

Use

The notified polymer will be used as a lubricant base stock for synthetic and semi-synthetic automotive and industrial products at concentrations of 20 – 80 wt %. It is expected to be predominantly used in industrial gear applications (~90%) with a minor component also used for engine oils (~10%). Reformulation and repackaging of the imported lubricants may occur and is expected to be conducted via semi-automated processes.

Mode of Introduction and Disposal

The notified polymer will not be manufactured within Australia.

The notified polymer will be introduced in lubricants at a 20 – 80 wt % concentration. The lubricants will be imported in IBCs and 208 L drums.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

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

Occupational Health and Safety Risk Assessment

Dermal and ocular exposure to the notified polymer from drips, spills and splashes is possible during the repackaging and end use of the finished lubricants. Appropriate Personal Protective Equipment (PPE) including impervious gloves, safety glasses and coveralls to minimise dermal and ocular exposure is also expected to be used by workers along with good hygiene practices.

Although exposure to the notified polymer could occur during repackaging and end use of the finished lubricants, the risk to workers is not considered unacceptable due to its assumed low hazard.

Public Health Risk Assessment

The finished lubricants containing the notified polymer are intended for industrial use only. However, there is potential for exposure to DIY users who change the engine oil in their vehicles. Given that the draining of engine oil by consumers is an infrequent event and the assumed low hazard of the notified polymer, the risk to public health is not considered to be unacceptable.

7. ENVIRONMENTAL IMPLICATIONS

Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer will be manufactured overseas. It will either be blended locally into end-use products or imported as finished lubricants. These products may be repackaged into smaller containers for distribution to customers. Local blending or repackaging will be performed in an automated or semi-automated enclosed system, with residual material in blending tanks and from cleaning of the equipment being recycled to the next batch to the extent practicable. Any spills are likewise expected to be re-used to the extent practicable, or disposed of safely. Minimal environmental release is expected from this blending or repackaging.

RELEASE OF CHEMICAL FROM USE

The notified polymer is to be used in automotive engine oils (~10%) and industrial gear (e.g. automotive transmission) oils (~90%).

For engine oil applications, around 86% of oil changes take place in specialised automotive service centres, where release of the notified polymer from professional activities is expected to be limited by the requirement for appropriate disposal of waste oil according to State/Territory regulations. The remaining 14% will be removed by 'do-it-yourself' (DIY) enthusiasts.

The industrial gear oil containing the notified polymer will be used in sealed units, which will be topped up or emptied and refilled at intervals depending on the application. In the case of automotive transmissions, gear oil will be used predominately in commercial garages. Gear oils are changed infrequently and it is assumed that skilled tradesmen will be undertaking almost all maintenance of equipment at mechanical workshops etc. Oils changed in such workshops are expected to be collected and stored for subsequent safe disposal. A very small proportion of gear oil is expected to be used in DIY applications. No significant release of gear oil containing the notified polymer is expected from the filling of new oil or the removal of used oil from gear boxes. During the use of the finished gear oil the product will be contained within enclosed gear boxes and the release of the polymer is expected to be very low.

RELEASE OF CHEMICAL FROM DISPOSAL

When the lubricants containing the notified polymer are disposed of in accordance with State/Territory regulations the notified polymer is expected to be recycled, re-refined or used as low grade burner fuel. It is likely that the polymer will be degraded into simpler compounds during re-refining with any residue partitioning to the heavy fractions such as lubricating oils or asphalt. If combusted, the notified polymer is likely to form oxides of carbon and water vapour. Similarly during metal recycling of automotive components the polymer will be completely combusted.

Although some transmissions require the fluid to be replaced during servicing, the trend for automatic transmissions is for sealed units which are filled for the life of the transmission. These are expected to be serviced only by professional mechanics and often do not require replacement of the automatic transmission fluid. The lubricants are expected to be collected either at the end of the useful life of the transmissions, or if required, during servicing. Since this will involve professionals, very little if any is likely to be changed and disposed of improperly.

Approximately 98.6% of the total import volume of notified polymer is expected to be disposed of by professionals according to State/Territory regulations. Of the 1.4% of total imported notified polymer estimated to be disposed of by DIY practitioners, approximately 20% will be collected for recycling, 25% will be buried or disposed of in landfill, 5% (i.e. 0.07% of the total import volume) may be disposed of inappropriately into storm water drains and the remaining 50% will be used in treating fence posts, killing grass and weeds or disposed of in other ways.

Environmental Fate

No environmental fate data were submitted. The notified polymer is not expected to be bioaccumulative or bio-available to aquatic organisms due to its high molecular weight, low water solubility and expected limited release to the aquatic environment. Most of the notified polymer will be either thermally decomposed during use or recycled or re-refined. A small amount of the notified polymer is expected to be sent to landfill as residues in containers or as a component of waste oil. The notified polymer is expected to be degraded into

water and oxides of carbon by thermal decomposition in industrial facilities or by natural processes in landfill.

Predicted Environmental Concentration (PEC)

The percentage of the imported quantity of notified polymer inappropriately disposed to stormwater drains is estimated to be 0.07%. This was calculated as follows: 10% (fraction used for engine oil) × 14% (fraction collected by DIY enthusiasts) × 5% (fraction disposed to stormwater). A worst case PEC can be calculated if it is assumed that 0.07% of the notified polymer (maximum 350 tonnes) is released into stormwater drains in a single metropolitan area with a geographical footprint of 500 km² and an average annual rainfall of 500 mm, all of which drains to stormwater. With a maximum annual release into this localised stormwater system of 350 tonnes and the annual volume of water drained from this region estimated to be approximately 250 × 10⁶ m³, the resultant PEC is approximately 1.4 mg/L. This result reflects a worst case scenario, as in reality releases of the notified polymer would be more diffuse and at lower levels. For example, if the city contains one million people they would use approximately 1/22 of the total import volume of notified polymer and the PEC would be on the order of 0.06 mg/L.

Environmental Effects Assessment

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

Environmental Risk Assessment

The notified polymer is to be imported in large quantities, but the potential for environmental exposure is limited by the specific use of the polymer in lubricants. The overwhelming proportion of the imported quantity of the notified polymer is expected to be consumed in use or eventually combusted to recover its intrinsic calorific value. The main route of aquatic exposure is likely to be through inappropriate disposal of waste lubricants in stormwater drains. However, even for a worst case scenario the concentration of notified polymer in run-off water from a major metropolitan centre is low. The notified polymer is unlikely to have ecological effects at the low concentrations that can be expected for this exposure scenario. Therefore, the notified polymer is not expected to pose an unacceptable risk to the environment based on its proposed use pattern.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment

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

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

Environmental risk assessment

Based on the reported use pattern, the notified polymer is not expected to pose a risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- 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 *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)],

workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

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.

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 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 a lubricant, 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 chemical 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 a product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.