

File No: PLC/7

Date:

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**KEMELIX D-303**

This Assessment has been compiled in accordance with the provisions of *the Industrial Chemicals (Notification and Assessment) Act 1989*, as amended and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by Worksafe Australia which also conducts the occupational health & safety assessment. The assessment of environmental hazard is conducted by the Commonwealth Environment Protection Agency and the assessment of public health is conducted by the Department of Health, Housing, Local Government and Community Services.

For the purposes of subsection 78(1) of the Act, copies of this full public report may be inspected by the public at the Library, Worksafe Australia, 92-94 Parramatta Road, Camperdown NSW 2050, between the hours of 10.00 a.m. and 12.00 noon and 2.00 p.m. and 4.00 p.m. each week day except on public holidays.

Under subsection 34(2) of the Act the Director of Chemicals Notification and Assessment is to publish this Report in the Chemical Gazette on .

Enquiries contact Chemicals Assessment Branch on (02) 565 9464:

*Street Address:* 92 Parramatta Rd Camperdown, NSW 2050,  
AUSTRALIA

*Postal Address:* GPO Box 58, Sydney 2001, AUSTRALIA

*Telephone:* (61) (02) 565-9466 **FAX (61) (02) 565-9465**

Director  
Chemicals Notification and Assessment

**FULL PUBLIC REPORT****KEMELIX D-303****1. APPLICANT**

ICI Australia (Operations) Pty Ltd of 1 Nicholson Street,  
Melbourne, NSW 3001.

**2. IDENTITY OF THE POLYMER**

Based on the nature of the chemical and the data provided, Kemelix D-303 is not considered to be hazardous. Therefore, the details of chemical name, molecular and structural formula, polymer constituents and impurities have been exempted from publication in the Full Public Report.

**Other name:** Kemelix D-303  
(Product, containing the notified polymer in aromatic hydrocarbon solvent blend containing trimethyl benzene.

**Means of detection  
and determination:**

The polymer can be separated by gel permeation chromatography and identified by infrared spectroscopy

**3. PHYSICAL AND CHEMICAL PROPERTIES**

All properties listed below refer to the product containing the polymer unless otherwise specified.

<b>Appearance at 20°C and 101.3 kPa:</b>	Amber liquid
<b>Melting point:</b>	Not determined
<b>Density:</b>	1020 kg/m <sup>3</sup>
<b>Water Solubility:</b>	< 0.001 g/L at 20°C
<b>Hydrolysis as a function of pH:</b>	The chemical is hydrophobic and not likely to react with water phase and readily hydrolysable groups are not present
<b>Flammability Limits:</b>	Not applicable
<b>Autoignition Temperature:</b>	Not determined
<b>Explosive Properties:</b>	Not determined

**Reactivity:** Not reactive, a possible fire risk if it comes into contact with oxidising agents

**Particle size distribution:** Not applicable

**. Comments on physico-chemical properties**

There is no actual result for water solubility, the notifier states that the low water solubility is essential for the demulsifier's function. The presence of ethoxy linkages conferring water solubility is countered by the presence of a majority of octylphenol and propylene oxide units. Using arguments based on the low concentrations used and partitioning etc, it could be concluded that the likely solubility in water is <0.1 ppm.

**4. INDUSTRIAL USE**

Kemelix D-303 containing polymer is a nonionic surfactant demulsifier used for removing water from crude oil. It is used in combination with other surfactants and solvents.

The intended import volume is estimated to be 10 to 100 tonnes per annum for the next five years.

**5. OCCUPATIONAL EXPOSURE**

Kemelix D-303 containing polymer will be imported in 210 litre mild steel drums. No more than six workers will be involved in importation, transport and storage of the notified polymer in any one delivery.

After successful laboratory trials, blending is carried out in open top stainless steel vessels fitted with stirrers and fume extraction systems at ambient temperature and pressure. The notified polymer is injected into the pipeline containing the crude oil through a small high pressure pump directly from the container.

The exposure of one chemical blender to each blending operation is approximately 4 hours per batch. Approximately 10 batches of the notified polymer containing the emulsifier are manufactured annually. The total number of workers handling the notified polymer at any one time will not be more than seven.

**7. PUBLIC EXPOSURE**

Kemelix D-303 will not be present in finished oil products. The potential for public exposure to the notified polymer is negligible.

## **8. ENVIRONMENTAL EXPOSURE**

### **. Release**

There is potential for spillage in transport to and from the blending sites where the end use product is formulated. Methods outlined in the MSDS supplied for the product are adequate for containment and disposal of spills.

At the blending sites (Sydney NSW and Sale Vic) and the end use sites the raw material and the end use product are stored and handled by trained operators in bunded areas with adequate containment and spill control equipment. Up to 50 kg of spilled material per annum from all sites is expected to be disposed of by approved incineration methods.

The mixing of the demulsifier containing the notified substance with the crude oil takes place in an instrument controlled and monitored direct injection process with no exposure to the environment.

Produced formation water is returned to the environment after the oil has been separated by mechanical and or chemical means. This usually involves injection to surface waters if an off shore field and evaporation in surface ponds or by flaring off with the waste gas in onshore establishments (1). In Australia chemical extraction use is mostly by the off-shore oil rigs. The concentration of the notified substance in this water is not expected to be above 0.5 ppm.

### **. Fate**

In the water phase released to the environment the low concentration of the notified product would be widely dispersed into the receiving waters.

A typical off-shore production platform computer modelling carried out by Esso BHP (2), the effluent plume delivered 40 meters under the sea surface follows a dilution profile of 5:1 at < 10 m 100:1 at 15 m and 2000:1 (limit of detection) at 500 m. The allowable aromatic hydrocarbon content of this water at end of pipe (set by licensing authorities) is 30 ppm of which the notified product would contribute <0.5 ppm.

The notified substance contained in the oil phase is consumed in the refining process and the concentration in the crude oil at point of entry to the refinery is not expected to be above 0.5 ppm.

## **9. ASSESSMENT OF ENVIRONMENTAL EFFECTS**

No ecotoxicological data were provided, which is acceptable for polymers of low concern and polymers of NAMW >1000. The polymer contains no linkages likely to confer aquatic toxicity.

## **10. ASSESSMENT OF ENVIRONMENTAL HAZARD**

Kemelix D-303 in use is exposed to the environment in low concentrations that are unlikely to cause environmental hazard as they are dispersed quickly in the receiving waters.

## **11. ASSESSMENT OF OCCUPATIONAL HEALTH AND SAFETY AND HEALTH EFFECTS**

The polymer in Kemelix D-303 has been notified as a synthetic polymer of low concern under section 23 for the purposes of section 24A of the *Industrial Chemicals Notification and Assessment Act 1989*.

During pipeline trials, exposure to the notified polymer is negligible but during blending the most likely route of exposure is the dermal route. The Material Safety Data Sheet (MSDS) states the product containing the polymer is an eye and a skin irritant. Therefore, eye and skin contact with the notified polymer should be avoided.

The polymer meets the criteria for a synthetic polymer of low concern specified in regulation 4A of the Act and can therefore be considered to be of low hazard to human health.

Under normal use conditions, public exposure to the notified polymer is expected to be negligible given that it will be used at a limited number of sites and will not be present in marketed products

## **12. RECOMMENDATIONS**

To minimise occupational exposure to polymer containing Kemelix D-303 the following guidelines and precautions should be observed:

- . if engineering controls and work practices are insufficient to reduce exposure to a safe level, the following personal protective equipment which complies with Australian Standards should be worn:
  - . safety glasses {AS 1336-1982 (3), AS 1337-1984 (4)};
  - . protective clothing {AS 3765.1-1990 (5), AS 3765.2-1990 (6)} and
  - . PVC gloves {AS 2161-1978 (7)}.
- . good personal hygiene should be practiced and
- . a copy of the Material Safety Data Sheet (MSDS) for polymer in Kemelix D-303 should be readily accessible to employees.

### **13. MATERIAL SAFETY DATA SHEET**

The Material Safety Data Sheet (MSDS) for polymer in Kemelix D-303 (Attachment 1) was provided in Worksafe Australia format (8). This MSDS was provided by ICI Australia (Operations) Pty Ltd as part of their notification statement. It is reproduced here as a matter of public record. The accuracy of this information remains the responsibility of ICI Australia (Operations) Pty Ltd.

### **14. REQUIREMENTS FOR SECONDARY NOTIFICATION**

Under the *Industrial Chemicals (Notification and Assessment) Act 1989*, secondary notification of polymer containing Kemelix D 303 shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

### **15. REFERENCES**

1. Sittig M., *Petroleum Transportation and Production Oil Spill and Pollution Control*, Noyes Data Corporation, New Jersey pp 39-54, 1978.
2. Esso Australia Ltd and BHP Petroleum Pty Ltd, *West Tuna Off-shore Oil and Gas Development Environment plan*, 1993.
3. Australian Standard 1336-1982, "Recommended Practice for Eye Protection in the Industrial Environment", Standards Association of Australia Publ., Sydney, 1982.
4. Australian Standard 1337-1984, "Eye Protectors for Industrial Applications", Standards Association of Australia Publ., Sydney, 1984.
5. Australian Standard 3765.1-1990, "Clothing for Protection Against Hazardous Chemicals, Part 1: Protection Against General or Specific Chemicals", Standards Association of Australia Publ., Sydney, 1990.
6. Australian Standard 3765.2-1990, "Clothing for Protection Against Hazardous Chemicals, Part 2: Limited Protection Against Specific Chemicals", Standards Association of Australia Publ., Sydney, 1990.
7. Australian Standard 2161-1978, "Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)", Standards Association of Australia Publ., Sydney, 1978.
8. National Occupational Health and Safety Commission, *Guidance Note for the Completion of a Material Safety Data Sheet*, 2nd. edition, AGPS, Canberra, 1990.