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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

PULL PUBLIC REPORT

OLOA 4912A

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Director
Chemicals Notification and Assessment

FULL PUBLIC REPORT**OLOA 4912A****1. APPLICANT**

Chevron Chemical Company, a Division of Chevron Exploration Corporation, State Bank Building, Level 22, 385 Bourke St, Melbourne, Vic, 3000

2. IDENTITY OF THE CHEMICAL

Based on the nature of the chemical and the data provided, OLOA 4912A, is considered to be non-hazardous. Therefore, the chemical name, other names, CAS number, molecular formula, structural formula, molecular weight and spectral data have been exempted from publication in the Full Public Report and the Summary Report.

Trade name: OLOA 4912A

3. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20C and 101.3 kPa:	dark maroon viscous liquid
Viscosity:	320 cSt @ 40°C
Specific Gravity/Density:	962 kg/in ³
Vapour Pressure:	"low" kPa at 25°C; Reid vapour pressure at 100°C =0.0psi
Water Solubility:	<0.1 mg/L at 20°C
Hydrolysis as a function of pH:	not provided, however the ester is not expected to hydrolyse

	in water alone
Flash Point:	210°C typical
Reactivity/Stability:	stable at temperatures below 82 °C
Combustion Products:	carbon dioxide, water vapour, oxides of sulfur; incomplete combustion may form carbon monoxide

No supporting data have been provided for the water solubility figure.

Partition coefficient has not been determined. As the substance is unlikely to bioaccumulate due to its large molecular weight and size, a partition coefficient is not required. Measurement would also be difficult.

Adsorption-desorption has not been determined. The substance's low water solubility, high molecular weight and large molecular size indicates its mobility in soil is likely to be low.

Dissociation constant has not been determined. This substance should have a very low dissociation constant based on the chemical functionality. There are no active hydrogens.

Missing data on melting point/boiling point, flammability limits and autoignition temperature are acceptable as the notified chemical has a relatively high flash point and almost negligible vapour pressure. It is not known to exhibit explosive properties.

4. PURITY OF THE CHEMICAL

Degree of purity: 86%

Toxic or Hazardous Impurities: none

Non-hazardous impurities: by-products 14% w/w

Additive/Adjuvant: inhibitor 1% w/w

5. INDUSTRIAL USE

The notified polymer, OLOA 4912A, will be imported into Australia as part of the oil additive mixtures OLOA 4740 (containing 93% polymer) and OLOA 4917D (containing 31% polymer). The two additive mixtures will be added together along with additional additives to form a single finished lubricant. The notified polymer will constitute approximately 1.5% of the finished lubricating oil. The finished oils will be used as way lubricants, which lubricate the slideways of metal working machines. Approximately 3.2 tonnes of OLOA 4912A will be imported per annum.

6. OCCUPATIONAL EXPOSURE

OLOA 4912A blended with a lubricating oil additive will be shipped to Australia in drums from the United States. It will be imported in two mixtures, OLOA 4740 and OLOA 4917D.

Drums of the two additive mixtures, containing OLOA 4912A, will be transported to five blending terminals where they will be mixed together in a blending kettle to form a single finished lubricant, comprising approximately 1.5% of the notified chemical. The additive mixtures contain other constituents (approximately 6) which are irritants, therefore workers exposed to the additive mixtures will be asked to wear protective clothing including gloves, overshoes, and facial protection.

At each blending terminal approximately one or two workers, several times a week, will be involved in transferring the additive mixtures, other additives and lube oil to the blending kettle from drums. During each batch, sampling from the blending kettle will be conducted for lab analysis. This will involve 3 to 6 workers for 1/2 hour, 70 days/year. The notifier states that transfer and sampling operations are usually done by pump, therefore worker exposure should be very minimal. Worker exposure at the blending terminal will therefore be limited to lab analysis: approximately 3 to 6 workers, 1/2 hour/day, 70 days/year, and drum washing: approximately 1 or 2 workers, 8 hours/day, 4 days/year. Exposure to the notified chemical is expected to be low as the final concentration in the finished product is approximately 1.5%.

The notifier estimates approximately 300-500 machine shops will use the finished way lubricant containing OLOA 4912A. Worker exposure

will vary depending on the protective equipment worn and whether the lubricants are isolated from the workers or not. Drums containing way lubricant will be cleaned by 1 or 2 workers/shop, 8 hours/day, 4 days/year. Approximately 50 machine operators/shop will be exposed 8 hours/day, 240 days/year. Occupational exposure to the notified chemical will be low given that the way lubricant containing 1.5% OLOA 4912A is further diluted with metal working or cutting fluids and constitutes only 0.5% of the waste fluid.

7. PUBLIC EXPOSURE

The notified chemical, OLOA 4912A, will be shipped in drums from the United States to Australian blending terminals. It will be imported as two mixtures, OLOA 4740 and OLOA 4917D, which will be blended together to form a single finished lubricant (Way Lubricant), comprising approximately 1.5% of the notified chemical.

There is low potential for public exposure to the notified chemical during shipment and transport. During blending, transfer and sampling operations are by pump, minimising the risk of spillage and therefore human exposure. Cleaning of the blending kettle and transfer lines is done using lube oil. The lube oil slops will be burned and drums steam cleaned. Water soluble condensate from the cleaning is treated on site or sent to public water treatment facilities. In general, the used way lubricant is not recycled within the machine plant. It will be mixed with metalworking and cutting fluids and constitute less than 1% of waste fluid. The waste mixture is collected and separated and the "tramp" hydrocarbon phase burned. Most of the OLOA 4912A is expected to partition into the tramp oil. The water phase will be treated on site or in public water treatment facilities.

The public should not be directly exposed to the chemical as it will be used only as a lubricant for commercial machinery.

8. ENVIRONMENTAL EXPOSURE

Release

OLOA 4912A may be released to the environment in the blending operation during drum cleaning. Cleaning of the blending kettle and transfer lines is done using lube oil. The lube oil slops are

generally burned. Drums are usually steam cleaned. Oil separated from the cleaning is burned; water soluble condensate from the cleaning is treated onsite or sent to municipal water treating facilities. The notifier anticipates OLOA 4912A will not partition into the water phase, but rather will largely stay in the oil phase. This is to be expected.

The notifier expects that the potential for environmental release of the finished oil containing OLOA 4912A in the machine shops will vary from location to location. Way lubricants make up less than one half of one percent of the waste fluid. Generally, the used way lubricant is not recycled within the plant. It will be mixed with metalworking or cutting fluids. The waste mixture is settled and separated. The "tramp" hydrocarbon phase is usually burned. The notifier expects that most of the OLOA 4912A (95%) will partition into the tramp oil. The water phase may be treated onsite or in municipal waste water treatment facilities.

Fate

OLOA 4912A will enter the environment when the chemical is separated from waste mixtures resulting from drum cleaning or the machine shops operations and is disposed of by incineration. Incineration of wastes containing OLOA 4912A will produce oxides of carbon and sulfur.

Any chemical that remains in the water phase of the waste mixture and is treated onsite or in municipal waste water treatment facilities is likely to become associated with sludge during treatment.

Hydrolysis

Although the substance contains a number of hydrolysable groups, the notifier has indicated the esters in OLOA 4912A cannot be hydrolysed by water alone. CEPA agrees it is unlikely that the chemical would be readily degraded by hydrolysis under environmental conditions because of limited water solubility.

Biodegradation

Ready biodegradability was investigated using the closed bottle test (OECD Guideline 301D). The extent of biodegradation amounted to 29% in 28 days at nominal concentration of 2 mg.L The results indicate that OLOA 4912A is not readily biodegradable. Solubility

may be a limiting factor.

Bioaccumulation

OLOA 4912A has a low water solubility and is not readily biodegraded. Therefore, it may bioaccumulate. However, the high molecular weight and relatively large molecular size may preclude this (1). The potential for OLOA 4912A to bioaccumulate is further reduced as it contains a number of ester linkages that would be vulnerable to microbial cleavage. Also, the chemical is unlikely to reach aquatic systems, as the majority of the waste chemical (95%) will be incinerated and the remaining chemical is likely to bind to sludge at water treatment facilities.

9. EVALUATION OF TOXICOLOGICAL DATA

Although not required under the Act for a polymer with molecular weight < 1000, toxicological tests were carried out using OLOA 4912A and the data provided for assessment.

9.1 Acute Toxicity

Table 1 Summary of the acute toxicity of OLOA 4912A

Test	Species	Outcome	Reference
Oral	Rat	LD ₅₀ : >5000 mg/kg	2
Dermal	Rat	LD ₅₀ : >2000 mg/kg	3
Skin irritation	Rabbit	non-irritant	4
Eye irritation	Rabbit	non-irritant	5
Skin sensitisation	Guinea Pig	non-sensitising	6

9.1.1 Oral Toxicity (2)

This study was carried out in accordance with the 'OECD Guidelines for Testing of Chemicals No: 401 (6).

Undiluted OLOA 4912A was administered orally (method not specified) to Sprague-Dawley rats of both sexes (5 male, 5 female) at a dose of 5000 mg/kg. Control rats received water. Clinical observations were made over a 14 day period. No mortality or

behavioral anomalies were detected with this dose. Gain in body weight was unaffected by treatment and necropsy revealed no treatment-related organ toxicity. Under the experimental conditions used, the oral LD₅₀ was found to be greater than 5000mg/kg for OLOA 4912A.

9.1.2Dermal Toxicity (3)

This study was carried out in accordance with the OECD Guidelines for Testing of Chemicals No: 402 (7).

Undiluted OLOA 4912A was applied to the clipped backs of Sprague-Dawley rats of both sexes (5 male, 5 female) at a dose of 2000 mg/kg. OLOA 4912A was spread over the entire dorsal zone which was then covered by a gauze fastened by a tape of perforated adhesive for 24 hours. Control rats received water. Clinical observations were made over the following 15 days. No mortality or behavioral anomalies were detected with this dose. No skin lesion (erythema or oedema) was noted at the site of application. Gain in body weight was unaffected by treatment and necropsy revealed no treatment-related organ toxicity.

Under the experimental conditions used, the dermal LD₅₀ was found to be greater than 2000 mg/kg for OLOA 4912A.

9.1.3Skin Irritation (4)

This study was carried out in accordance with the OECD Guidelines for Testing of Chemicals No: 404 (8).

A single dose of 0.5 ml of undiluted OLOA 4912A was applied by semi-occlusive patch for 4 hours to the shaved backs and flanks of 6 male albino New Zealand rabbits. Skin reactions were assessed and scored using the system described in (8) at 1, 24, 48, and 78 hours. The maroon colour of the test substance made assessment of erythema difficult as it stained the skin and persisted for the first hour. Very slight erythema was exhibited by all rabbits at 1 and 24 hours, 3 rabbits at 48 hours and 2 rabbits at 72 hours. The remaining rabbits showed no erythema. The Draize Skin Primary Irritation score was 0.7 at 24 hours. No oedema was observed in any of the animals over the 14 day observation period.

The results of this study suggest that OLOA 4912A is not a skin irritant in rabbits at the dose tested.

9.1.4 Eye Irritation (4)

This study was carried out in accordance with the OECD Guidelines for Testing of Chemicals No: 405 (9).

A single dose of 0.1 ml of undiluted OLOA 4912A was instilled in the inferior conjunctival sac of the right eye of each of 6 male albino New Zealand rabbits. The left eye served as control. Both eyes were examined at 1, 24, 48, and 78 hours post-exposure. Irritation was scored according to OECD grades in (9). Obvious conjunctival chemosis was seen in all rabbits at one hour, and slight chemosis in 4 rabbits at 24 hours which had subsided by 48 and 72 hours. The Draize Eye Irritation score was 6.7 at 24 hours. Redness of the conjunctivae was observed in all animals at 1 and 24 hours, and one animal at 48 hours. Iris congestion was present in all animals at 1 hour, 4 at 24 hours and one at 48 hours. No corrosion was observed.

The results of this study suggest that OLOA 4912A is not an eye irritant in rabbits.

9.1.5 Skin Sensitisation (5)

This study was carried out in accordance with the OECD Guidelines for Testing of Chemicals No: 406 (10).

A modified Buehler Method was used. Undiluted OLOA 4912A (0.3 ml) was applied to the shaved backs of 10 male guinea pigs once per week during an induction period of 3 weeks. Two weeks after induction, treated, and an equal number of untreated animals, were challenged with a dose of 0.3 ml of neat OLOA 4912A. Skin effects were scored according to the scoring system described in OECD Guideline 404 (8), approximately 24 and 48 hours after application of the first induction dose and challenge dose. The positive control was 0.5% (w/v) 1-chloro-2,4-dinitrobenzene (DCNB) in ethanol. Ten animals were induced and challenged with 0.3 ml of positive control in the same manner as treated animals. Sham controls were challenged only.

Twenty-four hours after challenge, erythema scores of 2 were observed in 5 treated and 4 control guinea pigs, while a score of 3 was observed in one treated guinea pig. As approximately the same number of treated and control animals displayed an erythema score of 2, this indicated that the presence of test article irritation rather than true sensitisation, and for the purposes of this study a score of 3 or more was considered to be a positive response.

Positive erythema reactions (ie, scores > 2) were observed in all DCNB-treated animals compared to one sham control. No deaths occurred during the study and body weights were similar for treated and control animals.

Based on the positive erythema response (> 3) in only 1/10 of the treated animals, the results of this study suggest that OLOA 4912A is non-sensitising in guinea pigs.

9.2 Genotoxicity

Genotoxicity data were not provided for the notified chemical. The notifier states that an Ames test on OLOA 4912A is currently in progress and unaudited preliminary results indicate that the test was negative.

9.3 Overall Assessment of Toxicological Data

OLOA 4912A has low acute toxicity (oral LD₅₀ in rats: > 5000 mg/kg) and low acute dermal toxicity (dermal LD₅₀ in rats: > 2000 mg/kg). Animal tests suggest that OLOA 4912A is non-irritating to the skin or eyes and is not a skin sensitiser. No acute inhalation data were provided.

Preliminary results from genotoxicity studies indicate that OLOA 4912A is not mutagenic towards *Salmonella typhimurium*.

10. ASSESSMENT OF ENVIRONMENTAL EFFECTS

Table 2 Summary of the ecotoxicity of OLCA 4912A

Test	Species	Result
Acute toxicity mg.L ⁻¹	Rainbow trout NOEC = 130 mg.L ⁻¹	96h LC50 = 190
Acute toxicity mg.L ⁻¹	Daphnia magna NOEC = 220 mg.L ⁻¹	48 h EC50 = 540

Reports were provided and these indicate the above tests were satisfactorily conducted according to US EPA Guidelines. All exposure solutions were observed to be cloudy with a light film of undissolved test material on the solution's surface. The above

results indicate that OLOA 4912A is unlikely to produce acute effects up to the limit of solubility for the species tested.

An algal toxicity test is said to be in progress.

11. ASSESSMENT OF ENVIRONMENTAL HAZARD

OLOA 4912A environmental hazard is likely to be low because:

Way lubricants containing the OLCA 4912A will be used in machine workshops where environmental exposure will be very low;

The majority of OLOA 4912A in the waste material produced during the drum cleaning process and from machine workshop operations will be incinerated. The notified substance is unlikely to produce toxic compounds;

The notified substance that remains in the water phase of the waste mixture and is treated onsite or in municipal waste water treatment facilities is likely to become associated with sludge during treatment. This reduces the potential for OLOA 4912A to reach aquatic environments; and

Although OLOA 4912A is not readily biodegradable, the expected low concentration of OLOA 4912A in aquatic environments and its low bioavailability indicates it is unlikely to present a hazard to organisms inhabiting these environments.

12. ASSESSMENT OF PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY EFFECTS

OLOA 4912A contains no known toxic impurities. It is not a skin or eye irritant or skin sensitiser and has low acute oral and dermal toxicities in animal tests. Due to low public and occupational exposure under normal use conditions, the notified chemical is therefore not expected to pose a serious health or safety hazard. In spite of these properties all direct contact with the finished product, containing approximately 1.5% of the notified chemical, should be avoided.

OLOA 4912A has low vapour pressure, high flash point, is stable at temperatures below 82°C and is not known to exhibit explosive properties. Therefore, it should not pose any significant risk to

the safety of workers in the work environment.

Under correct handling procedures, it is unlikely that this chemical will pose a significant health or safety hazard to workers.

Due to the low potential for public exposure to the notified chemical under normal use conditions, there should be negligible risk to public safety.

13. RECOMMENDATIONS

To minimise occupational exposure to way lubricants containing OLOA 4912A the following guidelines and precautions should be observed:

- Engineering control procedures such as local exhaust ventilation should be used to meet component occupational exposure limits (11) as described in MSDS for OLOA 4917D during blending processes or filling and transfer operations.
- Suitable personal protective equipment which complies with Australian Standards should be worn such as chemical-type goggles with face shield recommended to prevent eye contact (12), chemically resistant gloves (13) and protective clothing (14) to prevent skin contact.
- Good work practices should be implemented to avoid splashing or spillages.
- Good personal hygiene practices, such as washing of hands prior to eating food, should be observed.
- A copy of the MSDS for products containing the notified chemical in base oil, such as OLOA 4917D and OLOA 4740, should be easily accessible to employees working with products containing the chemical.

14. MATERIAL SAFETY DATA SHEET

The Material Safety Data Sheet (MSDS) for OLOA 4912A (Attachment 1) was provided in Worksafe Australia format (15). This MSDS was provided by Chevron Chemical Company 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 Chevron Chemical Company.

15. REQUIREMENTS FOR SECONDARY NOTIFICATION

Under the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act), secondary notification of OLOA 4912A shall be required if any of the circumstances stipulated under subsection 64(2) of the Act arise. No other specific conditions are prescribed.

16. REFERENCES

1. Connell D W, *Bioaccumulation of Xenobiotic Compounds*. CRC Press, p56, 1990.
2. *OLCA 4912A: Assay of the acute oral toxicity test in the rat*. Hazleton-IFT Report No. 604216, 1986.
3. *OLCA 4912A: Assay of the acute dermal toxicity in the rat*. Hazleton-IFT Report No. 604217, 1986.
4. *OLOA 4912A: Local tolerance tests in the rabbit for ocular irritation and primary cutaneous irritation*. Hazleton-IFT Report No. 601387, 1986.
5. *Dermal sensitization study of OLOA 4912A in guinea pigs*. IITRI Report No. L08329, 1992.
6. OECD Guidelines for Testing of Chemicals -*Acute Oral Toxicity* No: 401, 1981.
7. OECD Guidelines for Testing of Chemicals -*Acute Dermal Toxicity* No: 402, 1987.
8. OECD Guidelines for Testing of Chemicals -*Acute Dermal Irritation/Corrosion* No: 404, 1981.
9. OECD Guidelines for Testing of Chemicals -*Acute Eye Irritation/Corrosion* No: 405, 1987.
10. OECD Guidelines for Testing of Chemicals -*Skin sensitisation* No: 406, 1981.
11. National Occupational Health and Safety Commission, *Exposure Standards for Atmospheric Contaminants in the Occupational Environment*,. 2nd Edition, Australian Government Publishing Service Publ., Canberra, 1991.

12. Australian Standard 1337-1984 *Eye Protectors for Industrial Applications*, Standards Association of Australia Publ, Sydney, 1984.
13. Australian Standard 2161-1978 *Industrial Safety Gloves and Mittens (excluding Electrical and Medical Gloves)*, Standards Association of Australia Publ, Sydney, 1978.
14. 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.
15. National Occupational Health and Safety Commission, *Guidance Note for Completion of a Material Safety Data Sheet*, 3rd Edition, Australian Government Publishing Service Publ., Canberra, 1991.