Harriet Alpha, Bravo and Charlie Slickline and Temporary Well Suspension Activities Bridging Document Summary

Doc Number: EA-00-RI-10030.01

REV	DATE	DESCRIPTION	BY	CHK	EM/PM
0	25/2/14	Summary of Bridging Document	GG	LM/JK	

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CONTENTS

LIST OF APPENDICES

ABBREVIATIONS

AEL	Apache Energy Limited
EP	Environment Plan
GPSA	General Petroleum Support Activities
SOP	String of Pearls (flowlines and infrastructure)
VI	Varanus Island

1. INTRODUCTION

Apache Energy Ltd (Apache) proposes to carry out a temporary well suspension and pumping program (slick lining) in permit area TL/1 on three adjoining facilities – Harriet Alpha, Bravo and Charlie – in Western Australian (WA) State waters as part of the planned phased mothballing operations of the HA and HC platforms.

The Harriet Alpha, Bravo and Charlie platforms are located within the Varanus Island hub. The Hub is operated by Apache Northwest Pty Ltd (Apache), on behalf of the Joint Venture partners. Production wells associated with the Harriet Alpha, Bravo and Charlie platforms have been used since 1989.

The objective of the activity is to perform temporary well suspensions using well kill (pumping) and slickline set tubing plug installation work on Harriet Alpha and Charlie production wells. In addition, slickline will be used on the Bambra-08 production well at Harriet Bravo platform for gas optimisation work.

Each platform activity is expected to take between 1 and 4 weeks to complete; activities will likely be staggered and therefore are unlikely to run back-to-back. Activities are currently scheduled to commence in March 2014, pending suitable weather windows, and will be completed by end December 2014.

1.1 Compliance

The Harriet Alpha, Bravo and Charlie Slickline and Temporary Well Suspension Bridging Document (BD) was prepared for the proposed activity and the DMP determined on the 21 February 2014 (E0001/201401, APACHE, EARS 45652) that the BD meets the requirements of Regulation 11(1) of the *Petroleum (Submerged Lands) (Environment) Regulations 2012* (P(SL)(E) Regulations). The activity will be conducted in accordance with all applicable legislation and regulations and specifically to meet the requirements of the Petroleum (Submerged Lands) Act 1982 (WA) and its regulations.

This summary has been prepared in accordance with Regulation 11(7) of the (P(SL)(E) Regulations and section 2.4 of the DMP *Guidelines for the Preparation and Submission of an EP*.

The proposed suspension campaign will also be conducted in accordance with accepted environment plans and the Harriet Alpha, Bravo and Charlie Slickline and Temporary Well Suspension Bridging Document (Document Number SP-14-RG-048). The General Petroleum Support Activities Environment Plan (EA-00-RI-158) will be used to manage the well kill and slicklining activities as it covers the expected environmental risks and control measures to be undertaken. All vessel and helicopter travel will be managed under the Varanus Island Hub Operations EP (EA-60-RI-186).

2. LOCATION OF THE ACTIVITY

The surface location of the Harriet Alpha, Bravo and Charlie platforms are shown in **Figure 1** and the location coordinates (GDA94 Zone 50) are provided in **Table 1** below.

Table 2-1: Location of the Harriet Alpha, Bravo and Charlie Platforms

Platform	Longitude	Latitude
Harriet Alpha	115° 36’ 51.07” East	20° 36’ 07.78” South
Harriet Bravo	115° 38’ 15.28” East	20° 34’ 30.71” South
Harriet Charlie	115° 37’ 38.03” East	20° 35’ 20.52” South

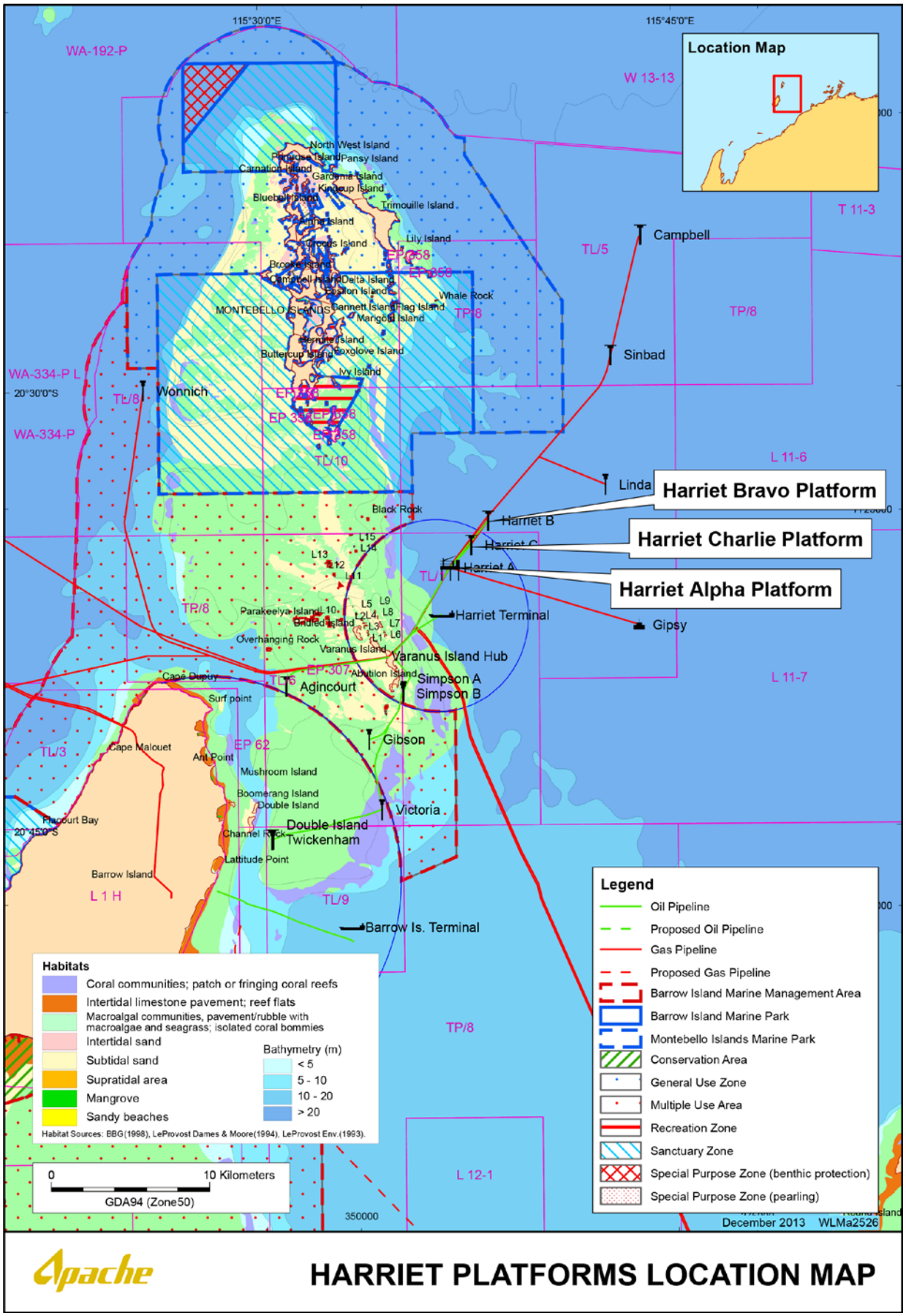


Figure 1: Location of Harriet Alpha, Bravo and Charlie platforms and surrounding sensitive habitats

3. DESCRIPTION OF THE RECEIVING ENVIRONMENT

3.1 Physical and biological environment

A full description of the existing environment is provided in the Varanus Island Hub Operations Environment Plan. A summary of the key features and sensitivities is provided below.

The Harriet Alpha, Bravo and Charlie platforms are located in the North-West Marine Region, within the Northwest Shelf Province (DEWHA, 2008a) which lies primarily on the continental shelf between North West Cape and Cape Bougainville. The area has a dynamic oceanographic environment, influenced by strong tides, cyclonic storms, long-period swells and internal tides.

Regional surveys on the NWS indicate the seafloor composition is uniform throughout the area, but with spatial variation in the grain size and origin of the surface sediments. The seabed immediately around the Harriet Alpha, Bravo and Charlie platforms is similarly flat and featureless with medium to coarse sand with some gravel. Error! Reference source not found. illustrates environmentally sensitive habitats around the Harriet Alpha, Bravo and Charlie platforms.

The slickline work activities may overlap with a number of key ecological events including dugong breeding, turtle nesting and humpback whale migration. As the proposed activities will be carried out during daylight only and on the platforms, it is not expected that the marine environment or their sensitive features will be impacted from these activities.

3.2 Socio-economic environment

The standard 500 m exclusion zone to non-Apache vessels will be maintained around the Harriet Alpha, Bravo and Charlie platforms during the activities. Therefore the proposed activities are not expected to interfere with other users of the sea.

4. ACTIVITY DESCRIPTION

Suspension of 8 wells at Harriet Alpha and 4 wells at Harriet Charlie platforms will be achieved by isolating the reservoir by setting a single deep set slick line plug within the tubing. Once the tubing plug has been tested the tubing, production and intermediate annuli will be topped up with inhibited sea water leaving the wells hydrocarbon free. The wells will remain suspended until a future date of full abandonment.

Gas lift optimisation on Bambra-8 well on Harriet Bravo will be achieved by verifying the condition of the existing gas lift mandrels/valves utilising slickline and replacing where necessary.

During slickline activities, a transfer submersible pump will pump seawater to the platform into a water circulating tank. All seawater pumped into the wells will be dosed with the Baker Petrolite product XC24380 at a level of 0.3 litres per 1,000 litres (i.e. 300 ppm). The biocide chemical is injected into the seawater lines downstream of the circulation tank arrangement, therefore only raw seawater will be overflowed during the operation.

Estimated seawater and biocide volumes are based on displacing up to three tubing and open hole volumes into each well's reservoir. The chemical will be shipped to location in a 1,000 L ISO and stored within the platforms' chemical bund area.

5. CHEMICAL DISCLOSURE AND MANAGEMENT

The biocide will be stored within the chemical bund area of the platforms. Apache's Refuelling and Chemical Management procedure (AE-91-IQ-098) will be followed during mixing with seawater to prevent spills. Full chemical disclosure of XC24380 is provided in **Appendix A** of this document.

In the unlikely event that a chemical spill (or hydrocarbons) occurs during activities, Apache's emergency response procedures are in place to cover such an occurrence. These include:

- NWS Operations Consolidated Oil Spill Contingency Plan (OSCP; AE-00-EF-008);
- Incident Command and Management Manual (AE-00-ZF-025);

- NWS Operations Consolidated Cyclone Response Plan (AE-91-IF-010); and
- Hazard Reporting Incident Notification and Investigation Procedure (AE-91-IF-002).

In the event of a chemical or hydrocarbon spill on the platforms, the spill will be contained, reported, cleaned up and all wastes correctly disposed of according to Apache's Waste Management Plan.

In the extremely unlikely event of an oil spill to the ocean, Apache's OSCP will be activated. An Apache Oil Spill Response Vessel, the *Monte Belle*, and spill containment and recovery equipment are maintained on Varanus Island and in Dampier as documented in Apache's OSCP.

6. ENVIRONMENTAL HAZARDS AND CONTROLS

Apache has assessed the environmental risks associated with this activity and concluded that the proposed works are a normal well intervention activity with minor environmental risks.

Besides the disposal of sewage, grey water (e.g. hand basins, kitchen sink) and raw seawater (from holding tank overflow) no discharges to the marine environment are expected to occur during the activities. The treatment chemicals will be stored in bunded areas and spill clean-up material is available to manage any small spills.

7. MANAGEMENT APPROACH

The activities will be managed in compliance with the *General Petroleum Support Activities Environment Plan* (Document Number EA-00-RI-158), the *Varanus Island Hub Environment Plan* (Document Number EA-60-RI-186), and the Harriet Alpha, Bravo and Charlie Slickline and Temporary Well Suspension Bridging Document (Document number EA-00-RI-186).

The primary goal of the environmental guidelines and commitments outlined in the GPSA EP, VI Hub EP and the BD are to direct, review and manage activities so that environmental impacts and risks are continually being reduced to ALARP. The identified potential hazards and environmental management controls are summarised in **Table 2**.

Table 1: Apache Environmental Guidelines and Commitments

Activity	Requirement
Chemical storage and management	• Maintain good housekeeping practices. • Chemicals are to be stored in bunded areas away from open drains and chemical containers are to be intact. • In the event of a spill, all actions are to be taken to control the spill. • Ensure absorbent material is available to use in soaking up chemical or oil spills. • SDS's are available on site for all chemicals used during the activity. • **All treated seawater spills >80L and all biocide spills to the ocean must be reported to DMP within 2 hours either directly by contacting the DMP Environment Division Duty Inspector on 0419 960 621 and via email to petroleum.environment@dmp.wa.gov.au or via the Apache Perth office**
Incident Reporting	• Use of the Apache incident reporting system to report • Reportable incidents to DMP (Environment Division Duty Officer on 0419 960 621) within 2 hours and emailed to petroleum.environment@dmp.wa.gov.au. (*Petroleum (Submerged Lands) (Environment) Regulations 2012*). • Recordable incidents to be reported to DMP by email petroleum.environment@dmp.wa.gov.au no later than 15 days after the end of each calendar month (*Petroleum (Submerged Lands) (Environment) Regulations 2012*). •
Spillage of diesel fuel or	• Follow Apache refuelling procedures (AE-91-IQ-098).

oil	• Refuelling to be carried out during daylight hours only, weather permitting. • In event of a spill take all actions to control the spill. • No dispersant use without DMP approval. • **All spills >80L must be reported to DMP within 2 hours either directly by contacting the DMP Environment Division Duty Inspector on 0419 960 621 and via email to petroleum.environment@dmp.wa.gov.au.** • All spills <80L must be reported to DMP by email petroleum.environment@dmp.wa.gov.au no later than 15 days after the end of each calendar month. • Report all spills through Apache incident reporting system. • Implement Apache's Oil Spill Contingency Plan if required
Discharge of combustion products from engines	• Inspections and tuning of engines and equipment are included on a regular maintenance schedule.
Solid waste management • Food scraps • Garbage • Litter • Scrap metal and wood etc	• Food scraps are bagged and taken back with crew to Varanus Island, where it will then be transported to shore for disposal. • No disposal of debris, garbage or litter into the sea. • Segregate industrial waste (scrap metals / drums etc.) wherever possible for appropriate disposal onshore. • Reduce, reuse and recycle waste wherever practicable.
Sewage discharge	• There is a functional sewage treatment plant on the Harriet Alpha platform. • Harriet Bravo and Charlie platforms have drop toilets. • Grey water will be discharged directly from the platforms.
Light Overspill	• No night time operations will be required
Noise	• Activities will be carried out on the platform, therefore no impact from noise is expected
Fishing	• No fishing is permitted from the platforms.
Anchoring & Disturbance to the seabed	• No anchoring will take place.
Operational Environmental Awareness	• Through on-line inductions, site inductions and JSA's, all personnel are familiar with the environmental requirements of the EP and Bridging Document to ensure these guidelines and procedures are being followed.

8. CONSULTATION

Apache has committed to consult with stakeholders where and when necessary on an ongoing basis. No non-government stakeholders of relevance to the slickline activities have been identified as the operations take place from existing platforms around which exclusion zones are already in place and no potentially significant impacts to stakeholders have been identified from the proposed activity.

Updates on activities around all Apaches facilities are also provided to stakeholders on a quarterly basis, with the last one being provided in December 2013.

9. CONTACT DETAILS

Further information about the well suspension activities can be obtained from:

Helen Astill

Environmental Approvals

Apache Energy Limited

100 St Georges Terrace, Perth, Western Australia, 6000

Phone: 08 6218 7181

Email: helen.astill@apachecorp.com

Appendix A – Chemical Disclosure

A. SYSTEM DETAILS:

OPERATOR:	APACHE
PROJECT / WELL:	Harriet Alpha, Bravo, Charlie
SYSTEM:	Well suspension
TOTAL VOLUME OF SYSTEM:	

B. PRODUCT LIST

Trade name	Supplier	Purpose	Product in system fluid	Toxicity & Ecotoxicity Info	MSDS attached
Seawater	N/A	Carrier fluid		N/A	No
XC24380	Baker Petrolite	Biocide - preservation		Acute Mammalian Toxicity *Tetrakis (hydroxymethyl) phosphonium sulphate(2:1)* *LC_{50} (4 hours) Inhalation dusts and mists Rat 0.591 mg/l* LD_{50} Oral Rat 248 mg/kg Aquatic Toxicity XC24380 LC_{50} (96 hours) 72.5 mg/L *Scophthalmus maximus* NOEC (96 hours) 41.0 mg/L *Scophthalmus maximus* EC_{50} (72 hours) 0.16 mg/L *Skeletonema costatum* LC_{50} (48 hours) 0.60 mg/L *Acartia tonsa* LC_{50} (48 hours) 0.85 mg/L *Acartia tonsa* NOEC (48 hours) 0.20 mg/L *Acartia tonsa* LC_{50} (10 days) 2174 mg/kg *Corophium volutator* Chronic Toxicity No known carcinogenic (R40, R45, R49), chronic (R33, R39, R48, R68), mutagenic (R46) or reproductive (R60, R62, R63, R64) effects, for this product. R61 (Reproductive category) – may cause harm to the unborn child Biodegradation / bioaccumulation Ready Biodegradability (Method OPPTS 835.4300) Biodegradability, 7 days 60% Octanol/Water Partition Coefficient (Log $_{Pow}$) Method: OECD 117 (HPLC) Log $_{Pow}$ < 0 (100%)	Yes

C. CHEMICAL LIST

Chemicals within products in Part B	CAS number	Mass fraction (%)
H_2O	7732-18-5	99.97
NaCl	7647-14-5	
Trace minerals (Mg, S, Ca,	-	
Tetrakis (hydroxymethyl) phosphonium sulphate (2:1)	55566-30-8	0.03
Total		~100%

Appendix B - Chemical SDS

Material Safety Data Sheet

XC24380

1 . Identification of the material and supplier

Names

Product name : XC24380

Product code : XC24380

ADG : Toxic liquid, organic, n.o.s. (tetrakishydroxymethylphosphonium sulphate)

Supplier : Baker Hughes, Australia
5 Walker Street,
Braeside,
Victoria 3195,
Australia

Tel: +613 9580 9004
Fax: +613 9580 6004

Emergency telephone number : CHEMTREC Emergency Telephone Numbers (Australasia Geomarket):
- Australia: (02) 9037 2994
- New Zealand: 9801 0034
- PNG: +(61) 2 9037 2994

- UK: +(44) 870-820-0418
- USA: +(1) 703-527-3887 (CHEMTREC International 24 hour)

Uses

Material uses : Biocide

2 . Hazards identification

Classification : Repr. Cat. 2; R61
T; R23
Xn; R22
Xi; R41
R43
N; R50

Risk phrases : R61- May cause harm to the unborn child.
R23- Also toxic by inhalation.
R22- Also harmful if swallowed.
R41- Risk of serious damage to eyes.
R43- May cause sensitisation by skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases : S53- Avoid exposure - obtain special instructions before use.
S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Statement of hazardous/dangerous nature : HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

3 . Composition/information on ingredients

Ingredient name	CAS number	Concentration
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	55566-30-8	60 - 100

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

3 . Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First-aid measures

Inhalation : Get medical attention immediately. Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Ingestion : Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Skin contact : Obtain immediate medical attention after the following First Aid measures have been administered. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 15 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Eye contact : Obtain immediate medical attention after the following First Aid measures have been administered. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Advice to doctor : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
phosphorus oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Hazchem code : 2X

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

6 . Accidental release measures

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Small spill : Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor. Absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill : Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7 . Handling and storage

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Exposure limits
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	**ACGIH TLV (United States, 1/2011). Skin sensitiser.** TWA: 2 mg/m³ 8 hour(s).

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Liquid.
Colour : Colourless.
Odour : Pungent.
Melting point : -43°C (-45.4°F)
Relative density : 1.39 (20°C)
pH : 3 to 6
Viscosity : Kinematic: 0.3 cm^2/s (30 cSt)
Solubility : Soluble in water

10 . Stability and reactivity

Chemical stability : The product is stable.
Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid : Avoid exposure - obtain special instructions before use. Avoid release to the environment. Refer to special instructions/safety data sheet.
Materials to avoid : No specific data.
Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Potential acute health effects

Inhalation : Toxic by inhalation.
Ingestion : Harmful if swallowed.
Skin contact : May cause sensitisation by skin contact.
Eye contact : Severely irritating to eyes. Risk of serious damage to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	LC50 Inhalation Dusts and mists	Rat	0.591 mg/l	4 hours
	LD50 Oral	Rat	248 mg/kg	-

Conclusion/Summary : Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Product name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	-	Repr. Cat. 2; R61	-

11 . Toxicological information

Chronic effects : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : May cause birth defects.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Inhalation : No specific data.

Ingestion : No specific data.

Skin : Adverse symptoms may include the following:
irritation
redness

Eyes : Adverse symptoms may include the following:
pain or irritation
watering
redness

Target organs : Contains material which may cause damage to the following organs: skin.

12 . Ecological information

Ecotoxicity : Very toxic to aquatic organisms.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	Acute EC50 0.2 mg/l	Algae	96 hours
	Acute EC50 19.4 mg/l	Daphnia	48 hours
	Acute LC50 93 mg/l	Fish	96 hours

Conclusion/Summary : Not available.

Other ecological information

Persistence/degradability

Product/ingredient name	Test	Result	Dose	Inoculum
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	70 % - Readily - 21 days	-	-

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
tetrakis(hydroxymethyl)phosphonium sulphate(2:1)	-	-	Readily

Other adverse effects : No known significant effects or critical hazards.

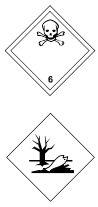
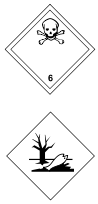
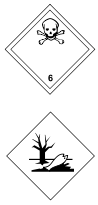
13 . Disposal considerations

Methods of disposal : This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Label	Additional information
ADG	UN2810	Toxic liquid, organic, n.o.s. (tetrakishydroxymethylphosphonium sulphate)	6.1	III		**Hazchem code** 2X

14 . Transport information

ADR	UN2810	Toxic liquid, organic, n.o.s. (tetrakishydroxymethylphosphonium sulphate)	6.1	III		**UK Hazchem:** 2X
IMDG	UN2810	Toxic liquid, organic, n.o.s. (tetrakishydroxymethylphosphonium sulphate)	6.1	III		-
IATA	UN2810	Toxic liquid, organic, n.o.s. (tetrakishydroxymethylphosphonium sulphate)	6.1	III		-

PG* : Packing group

15 . Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name	Schedule
No listed substance	

Australia inventory (AICS) : All components are listed or exempted.

EU Classification :
Repr. Cat. 2; R61
T; R23
Xn; R22
Xi; R41
R43
N; R50

Risk phrases :
R61- May cause harm to the unborn child.
R23- Also toxic by inhalation.
R22- Also harmful if swallowed.
R41- Risk of serious damage to eyes.
R43- May cause sensitisation by skin contact.
R50- Very toxic to aquatic organisms.

Safety phrases :
S53- Avoid exposure - obtain special instructions before use.
S24- Avoid contact with skin.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37/39- Wear suitable gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

National regulations : **National Code of Practice for the Control of Workplace Hazardous Substances. National Code of Practice for the Labelling of Workplace Substances. National Code of Practice for the Preparation of Material Safety Data Sheets. Approved Criteria for Classifying Hazardous Substances.**

16 . Other information

Date of printing	:	25 February 2013.
Date of issue/ Date of revision	:	25 February 2013
Date of previous issue	:	12 April 2012
Version	:	2

Indicates information that has changed from previously issued version.

Disclaimer

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