



ABN 46 091 697 661

20 Jensen Rd Banyo 4014

Insitu Geotech Services Pty Ltd




## JOB SAFETY ENVIRONMENT ANALYSIS (JSEA)

Working With In Situ Testing Rigs

ACTIVITY:

SITE/PROJECT:

Personnel Involved	Manager	Project Operators	Assistant	Notes re Operator/Off-Sider Training
	Allan McConnell			In situ testing is a “niche” business with very few rigs in Australia. There are no specific training courses or certificates available. IGS undertakes our own in-house training, much of this on-the-job. Off-siders may be trainee rig operators, or even well-experienced trained operators working as assistant to a newly trained operator for mentoring purposes.
Qualifications/Training:	Fellow IEAust	In-house trained by IGS	In-house trained by IGS	
Signature				
Acknowledgement:	<i>By signing above I acknowledge that I was consulted in preparing this JSEA and that I understand my responsibilities and agree to abide by them.</i>			

Equipment & Materials:	Testing Rig	Support Vehicle	PPE & Safety Gear & Environmental Gear	Hazardous Materials
		utility or support car	hard hat, gloves, safety boots, long sleeve shirt, long pants, high visibility vest (or shirt), safety glasses, sunscreen, spill kit, clean-up rags, funnels for fuel & oil filling, sleepers for jack legs	Glycerol (MSDS attached) (essentially non-hazardous)

### Relevant Codes of Practise

- Hazardous manual tasks
- How to manage work health and safety risks
- Managing noise and preventing hearing loss at work
- Preparation of safety data sheets for hazardous chemicals
- Work health and safety consultation, coordination and cooperation
- First aid in the workplace
- Managing risks of hazardous chemicals
- Managing risks of plant in the workplace
- Managing the work environment and facilities

### Potential High Risk Activities

- It is possible that work might be carried out in a traffic corridor that is in use by traffic other than pedestrians
- It is possible that work might be carried out in an area at a workplace in which there is movement of mobile plant

### Relevant Legislation

- WHS Act 2011 and the WHS Reg 2011

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## RISK ASSESSMENT GUIDE

SEVERITY			LIKELIHOOD		
5	Catastrophic	Fatality by accident or workplace acquired illness. Irreversible harm to environment.	A	Almost Certain	The event is a common occurrence on all projects.
4	Major	Severe permanent harm to personnel. Significant widespread environmental damage.	B	Likely	The event will probably occur at least once on most projects.
3	Serious	Permanent harm to personnel. Considerable environmental damage.	C	Possible	The event might occur during some projects.
2	Minor	Temporary harm to personnel. Minimal environmental damage, reportable.	D	Unlikely	The event could occur on similar work activities, globally.
1	Insignificant	No injuries/illness. Minor injury requiring first aid. Negligible environmental damage.	E	Rare	The event could occur but only in exceptional circumstances.

Consequence \ Likelihood	1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
A Almost Certain	moderate	high	extreme	extreme	extreme
B Likely	moderate	moderate	high	extreme	extreme
C Possible	low	moderate	moderate	high	extreme
D Unlikely	low	low	moderate	moderate	high
E Rare	low	low	low	moderate	moderate

Control Action Rating	Qualitative Risk Action Description
extreme	Do not start work. Identify and implement controls to reduce risk
high	Do not start work. Identify and implement controls to reduce risk
moderate	Project Operator to assess that identified controls adequately reduce risk.
low	All field operatives to adhere to identified and listed controls



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ACTIVITY:

SITE/PROJECT:

### S - RISK ASSESSMENT - SAFETY

No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
S-1	<b>Driving Rig to Site</b> This involves driving the rig to site on normal roads.	(i) traffic accidents in transit	4	D	M	Only experienced and appropriately licensed drivers may drive IGS vehicles	Administrate and Engineer	3	E	L	Driver and Project Operator
S-2	<b>Pre-Start Check-Over</b> This involves following a checklist that is part of Daily Prestart Sheet.	(i) Items missed. (ii) Injury from checking equipment (slips, trips, back injury) (iii) improper wearing of PPE. (iv) failure to sign in or induct to site.	2	C	M	Use checklist on Daily Prestart Sheet. Make sure checks are made by experienced people using correct lifting techniques. Make sure PPE is properly worn (helmets not required in cabin). Complete site induction, sign in and onto Permits.	Eliminate	1	D	L	Project Operator & Trained Assistants
S-3	<b>Working Outdoors</b>	(i) heat stroke, (ii) sunburn, (iii) hypothermia (iii) snakebite	4	C	H	Keep hydrated. Apply sunscreen and/or wear shade hat. Wear warm clothing when cold. First Aid Kit with snakebite splint/bandages in vehicle	Eliminate	4	E	L	All personnel
S-4	<b>Identify Test Location</b> Test locations are nominated by client's supervisor, not by IGS.	(i) undertaking test in wrong location, (ii) hitting underground services.	3	C	M	Test at locations advised by client's supervisor. Sight locations in a pre-test walk-over. Ask if in doubt (don't test until sure). A buried services permit is required before penetrating the ground.	Eliminate	3	E	L	Project Operator & Trained Assistants
S-5	<b>Traversing</b>	(i) Rig roll-over. (ii) Collision	3	D	M	Check terrain before traversing. Only a trained operator who is verified to be competent is permitted to traverse the rig.	Substitute	3	E	L	Project Operator & Trained Assistants
S-6	<b>Set Up To Test</b> This involves lifting the rig up on jacks and levelling it. Often timber sleepers are placed under each jack. Process is reversed after test.	(i) Back injury, splinters, cuts or bruises handling sleepers under jacks. (ii) Hands or feet caught under jacks.	3	C	M	Use appropriate lifting techniques and wear gloves when handling sleepers. Use slow rate of jack speed. Communicate closely.	Substitute and PPE	3	E	L	All personnel

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Working With In Situ Testing Rigs

ACTIVITY:

SITE/PROJECT:

S-7	<p><b>Testing &amp; Pulling Out</b> This involves pushing a probe into the ground at slow steady pace using the hydraulic pusher in the centre of the rig. The pusher moves at only 20mm per second during pushing. 7kg rods 1m long are added progressively. The process is reversed pulling out.</p>	<p>Cuts, bruises, crushed fingers.  Note that wearing gloves can add to this risk when handling the light CPT rods. This remains an operator's choice.</p>	3	C	M	<p>Use slow rate of travel when head is pushing down and hands are sometimes on pusher.  <b><u>Hands not to be located on top of the pusher or holding rods when head is travelling up.</u></b>  Inspect rods every time added or removed and file smooth any sharp edges that develop.  Optional wear gloves when handling rods.</p>	Substitute and PPE	2	D	L	Project Operator & Trained Assistants
S-8	<p><b>End of Day Pack-Up</b> Rig is locked, sleepers stored on board, computers packed up, etc.</p>	<p>Back injury, cuts, bruises. Vandalism</p>	3	C	M	<p>Equipment to be allowed to cool down. Use appropriate lifting techniques. Wear gloves when handling sleepers. Sign off Work Permit, sign out. Park equipment in secure area before leaving site. On completion of project, drive from work area to loading point on road then load rig and leave site.</p>	Eliminate and PPE	2	D	L	All personnel

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ACTIVITY:

SITE/PROJECT:

E - RISK ASSESSMENT - ENVIRONMENT											
No.	Activity	Risk/Unwanted Event	Latent Risk			Risk Control Measures	Hierarchy of Controls	Residual Risk			Person to Implement
			Severity	Likelihood	Risk Rating			Severity	Likelihood	Risk Rating	
E-1	<b>Pre-Start Check-Over</b> This involves following a checklist that is part of Daily Prestart Sheet.	(i) oil or fuel leakage from leaking pipes or (ii) oil or fuel leakage when topping up.	2	C	M	Daily Prestart includes checks for system leakage. Make sure checks are made by experienced people. Take care when topping up to avoid spillage. Use rags or spill kit if any spillage occurs. All refuelling to occur off-site.	Eliminate & Spill Kit	3	E	L	Project Operator & Trained Assistants
E-2	<b>Traversing</b>	(i) crushing important plant species. (ii) general messiness. (iii) excessive tyre tracking, (iv) making excessive noise	2	C	M	Respond to environmental briefing by client. Check terrain before traversing. Avoid soft areas where possible. Avoid unnecessary (or non-agreed) site damage. Only experienced personnel should drive rig. Rig is engineered to minimise noise – avoid revving or gear-changes	Eliminate or Substitute or engineer	3	E	L	Project Operator & Trained Assistants
E-3	<b>Set Up To Test</b> This involves lifting the rig up on jacks and levelling it. Often timber sleepers are placed under each jack. Process is reversed after test.	(i) jack legs making deep holes in ground. (ii) crushing important plant species. (iii) making excessive noise (iv) glycerol spills cause environmental harm.	2	C	M	Respond to environmental briefing by client. Check terrain before jack-up. Avoid soft areas where possible. Use sleeper stacks to minimise jacks sinking. Use slow rate of jack speed. Communicate closely. Rig is engineered to minimise noise – avoid revving or gear-changes. Glycerol volumes are tiny - less than 20cc oper test. maximum handled volume is 100cc at any time. All to be kept in rig cabin which is 'contained' re spillage.	Eliminate or Substitute and Engineer	2	D	L	All personnel
E-4	<b>Testing &amp; Pulling Out</b> This involves pushing a probe into the ground at slow steady pace using the hydraulic pusher in the centre of the rig. pusher moves at only 20mm/sec.	(i) unsightly or dangerous test hole left behind (ii) making excessive noise	2	C	M	Use max 55mm dia push-in casing size except for special cases. Rig is engineered to minimise noise – avoid revving or gear-changes	Eliminate or Substitute and Engineer	2	E	L	Project Operator & Trained Assistants
E-5	<b>End of Day Pack-Up</b> Rig is locked, sleepers stored on board, computers packed up, etc.	(i) oil or fuel leakage from leaking pipes or (ii) oil or fuel leakage when topping up.	2	C	M	Take care when topping up to avoid spillage. Use rags or spill kit if any spillage occurs. All refuelling to occur off-site.	Eliminate & Spill Kit	3	E	L	All personnel

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# JOB SAFETY ENVIRONMENT ANALYSIS (JSEA) Working With In Situ Testing Rigs

ACTIVITY:

SITE/PROJECT:

**GLYCEROL MSDS - NOTE THIS IS NOT A HAZARDOUS OR DANGEROUS MATERIAL AND IT IS ONLY USED ON VERY SMALL QUANTITIES**



MATERIAL SAFETY DATA SHEET  
GLYCEROL B.P. Page 1 of 3

**1. Identification of the Product and Company**

Product Name: GLYCEROL B.P.  
 Product Code: GLY00790F  
 Other Names: glycerin  
 Use: Topical preparations for its lubricating and moisturising properties. Also used in liquid preparations as a vehicle, solvent, sweetening agent and preservative.  
 Company Name & Contact Details: Medical Information Associate, Distributed by Perrigo Australia, Orion Laboratories Pty. Ltd., trading as Perrigo Australia, ABN 56 009 293 136, 25-29 Delawney Street, Balcatta, Western Australia 6021 AUSTRALIA. Telephone (all hours): +618 9441 7800. FREE PHONE: 1800 805 546. FREE FAX: 1800 004 1110. EMAIL: [custometricservice@perrigo.com.au](mailto:custometricservice@perrigo.com.au). WEBSITE: [www.perrigo.com.au](http://www.perrigo.com.au). ORION® is a registered trademark of Orion Laboratories Pty Ltd.

Other Information: All reasonable care has been taken to ensure information and advice contained in this data sheet is accurate at time of printing. However, Orion accepts no liability for any loss or damages suffered as a consequence of reliance on the information contained herein.

**2. Hazards Identification**

Hazard Classification: This product is not hazardous or dangerous.

**3. Composition/Information on Ingredients**

Chemical Entity	CAS No:	Proportion
Glycerol (Glycerin)	56-81-5	100% w/w

**4. First Aid Measures**

Inhalation: Remove to fresh air. Seek medical attention for any breathing difficulty.  
 Ingestion: Administer water to dilute the glycerol. For advice contact a doctor or Poisons Information Centre (Australia 13 11 26).  
 Skin: Wash with soap and plenty of water. Launder clothing and shoes before reuse. Seek medical attention if irritation develops.  
 Eye: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower lids occasionally. Seek medical attention if irritation persists.  
 Chronic Exposure: May cause kidney injury.  
 Advice to Doctor: Treat symptomatically.

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MATERIAL SAFETY DATA SHEET  
GLYCEROL B.P. Page 2 of 3

**5. Fire Fighting Measures**

Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases. Small fire: Dry chemical powder. Large fire: water spray, fog or foam.  
 Hazards from Combustion products: Carbon oxides (CO, CO2), toxic gases and vapours may be released in a fire.  
 Precautions & Equipment for Fire Fighters: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.  
 Hazchem Code: None allocated.

**6. Accidental Release Measure**

Ventilate area of leak or spill. Wear appropriate personal protective equipment (avoid inhaling mist or skin & eye contact). Contain and recover liquid when possible. Contain using an absorbent (sand, vermiculite) where appropriate. Collect and seal in properly labelled containers for disposal. Wash area down with excess water.

**7. Handling and Storage**

Safe Handling Practices: Keep containers tightly closed as glycerol is hygroscopic (absorbs water). Protect against physical damage. Isolate from incompatible substances.  
 Storage: Store below 30°C.  
 Other Information: Keep away from oxidizing agents.

**8. Exposure Controls; Personal Protection**

Exposure Limits: TWA 10 mg/m<sup>3</sup>  
 TWA The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.  
 Engineering Controls: Mechanical ventilation advised at elevated temperatures.  
 Personal Protection: If spillage or splashing is likely to occur, wear safety goggles or face shield. When handling heated solution, wear (thermal) protective clothing and gloves.

**9. Physical and Chemical Properties**

Appearance / Odour:	A clear, odourless and viscous liquid.		
pH:	Neutral to litmus	Boiling Point:	290°C
Vapour Pressure:	< 1 mm of Hg @ 25°C	Freezing/Melting Point:	19°C
Vapour Density:	3.17 (Air = 1)	Solubility:	Miscible in water @ 20°C
Specific Gravity:	1.2636 @ 20°C		

**10. Chemical Stability and Reactivity Information**

Conditions Contributing to Instability: Stable under normal conditions of use and storage.  
 Fire: Flash point: 199°C CC; Auto-ignition temperature: 370°C  
 Slight fire hazard when exposed to heat or flame.  
 Explosion: Above flash point, vapour-air mixtures may cause flash fire. Explosive glyceryl trinitrate is formed from a mixture of glycerine and nitric and sulphuric acids.  
 Incompatibilities: Strong oxidizers. Can react violently with acetic anhydride, calcium oxychloride, chromium oxides and alkali metal hydrides.

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Insitu Geotech Services Pty Ltd **IGS**

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### MATERIAL SAFETY DATA SHEET GLYCEROL B.P.

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#### 11. Toxicological Information

<b>Inhalation:</b>	Due to the low vapour pressure, inhalation of the vapours at room temperatures is unlikely. Inhalation of mist may cause irritation of respiratory tract.
<b>Ingestion:</b>	Low toxicity. May cause thirst (dehydration), nausea, vomiting, headache, and diarrhoea. May cause elevated sugar levels.
<b>Skin:</b>	May cause irritation.
<b>Eye:</b>	May cause irritation.
<b>Chronic Exposure:</b>	May cause kidney injury.
<b>Aggravation of Pre-existing Conditions:</b>	Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.
<b>Estimated Toxicity in Animals:</b>	Acute oral toxicity (LD50): 4090 mg/kg [Mouse]. Acute dermal toxicity (LD50): 10000 mg/kg [Rabbit]. Acute toxicity of mist (LC50): >570 mg/m <sup>3</sup> 1 hours [Rat].

#### 12. Ecological Information

<b>Products of Biodegradation:</b>	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.
<b>Toxicity of the Products of Biodegradation:</b>	The products of degradation are less toxic than the product itself.
<b>Ecotoxicity:</b>	Ecotoxicity in water (LC50): 58.5 ppm 96 hours [Trout].

#### 13. Disposal Considerations

<b>Disposal Methods &amp; Containers:</b>	Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility.
<b>Special Disposal for Landfill or Incineration:</b>	Waste material may be incinerated under controlled conditions where permitted. Refer to local Waste Management Authority Regulations for other approved methods.

#### 14. Transport Information

<b>Hazchem Code:</b>	Not regulated
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#### 15. Regulatory Information

<b>Other Information</b>	None allocated
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#### 16. Other Information

<b>References:</b>	MSDS Glycerol, 11/01/2010 ScienceLab.com.
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END OF MSDS

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