

# Procedure

# Hazardous Chemicals

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# Contents



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Appendix A – Australian Standards	29
Appendix B – Examples of chemical labels	30
Appendix C – Placard load limits for transportation	31
Appendix D – Placard and manifest quantities	32
Appendix E – Examples of Placards	34
Appendix F: Hazardous area verification dossier	35
Appendix G: Bulk chemical safety – Aqueous Ammonia Solution (25%)	37
Appendix H: Bulk chemical safety – Chlorine Gas	40
Appendix I: Bulk chemical safety – Fluoride	47
Appendix I: Bulk chemical safety – Hydrochloric Acid Solution	53
Appendix K: Bulk chemical safety – Potassium Permangante	57
Appendix L: Bulk chemicals safety – Sodium Hydroxide Solution (Caustic Soda)	61
Appendix M: Bulk chemicals safety – Bulk chemicals safety – Sodium Hypochlorite Solution 10% (Hy 10)	/po 64
Appendix N: Bulk chemicals safety – Sulphuric Acid Solution	67

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# 1 Purpose

The purpose of this procedure is to define systems and processes to effectively manage any risk exposure to staff, contractors and visitors engaged in the use, storage and handling of hazardous chemicals at Seqwater workplaces along with risks to the receiving environment.

The procedure also outlines the requirement of managing the risks associated with hazardous areas at Seqwater workplaces. This procedure adopts and is consistent with the requirements outlined in:

- Managing Hazardous Chemicals in the Workplace Code of Practice 2013 (Qld)
- Work Health and Safety Act 2011 (Qld)
- Work Health and Safety Regulation 2011 (Qld)
- Environmental Protection (Waste Management) Regulation 2000 (Qld)

# 2 Scope

This procedure applies to all employees, contractors and consultants working for or on behalf of Seqwater, unless otherwise stated.

# 3 Definitions

Term	Definitions	
ADG Code	Australian Code for the Transport of Dangerous goods by Road and Rail.	
Bulk	In relation to a hazardous chemical, bulk means any quantity of a hazardous chemical that is:	
	<ul> <li>in a container with a capacity exceeding 500L or net mass of more than 500kg; or</li> </ul>	
	<ul> <li>if the hazardous chemical is a solid - an undivided quantity exceeding 500kg.</li> </ul>	
Competent person	A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to perform a specified task correctly.	
Consumer product	A product that is packed or repacked primarily for use by a household consumer or for use in an office.	
	If the product is packed or repacked primarily for use by a household or office consumer it is packed in the way and quantity in which it is intended to be used by a household or office consumer.	
Dangerous goods	Substances, mixtures or articles that, because of their physical, chemical (physicochemical) or acute toxicity properties, present an immediate hazard to people, property or the environment.	

Rev. no. 10 **Doc Owner** 



Term	Definitions	
Dangerous incident	An incident in relation to a workplace that exposes a worker or any other person to a serious risk to a person's health or safety emanating from an immediate or imminent exposure to:	
	an uncontrolled escape, spillage or leakage of a substance	
	an uncontrolled implosion, explosion or fire	
	<ul> <li>an uncontrolled escape of gas or steam</li> </ul>	
	<ul> <li>an uncontrolled escape of a pressurised substance</li> </ul>	
	electric shock	
	the fall or release from a height of any plant, substance or thing	
	<ul> <li>the collapse, overturning, failure or malfunction of, or damage to, any plant that is required to be authorised for use in accordance with the regulations</li> </ul>	
	the collapse or partial collapse of a structure	
	<ul> <li>the collapse or failure of an excavation or of any shoring supporting an excavation</li> </ul>	
	<ul> <li>the inrush of water, mud or gas in workings, in an underground excavation or tunnel</li> </ul>	
	<ul> <li>the interruption of the main system of ventilation in an underground excavation or tunnel</li> </ul>	
	any other event prescribed under a regulation, but does not include an incident of a prescribed kind.	
Incident and Emergency Response Plan (IERP)	The written document of the emergency arrangements for a workplace or identified activity. It consists of the preparedness, prevention and response activities and includes the agreed emergency roles, responsibilities, strategies, systems and arrangements. Where possible, it will also include fire and evacuation plans for any buildings occupied by Seqwater and covered by an Emergency Response Plan.	
Exposure	The contact between a person and a chemical. The chemical may be in the form of a gas, vapour, fume, liquid or solid.	
Exposure standard	An acceptable exposure level of an airborne concentration for a particular substance in a workers' breathing zone, which should not cause adverse health effects.	
	Details of exposure standards are available in the Workplace Exposure Standard for Airborne Contaminants.	
First person aware	The first person aware is the person that witnesses an incident, or the first person on the scene after an incident occurs. This may be a Seqwater employee, or any other person.	
Hazard	A situation that has the potential to harm a person and/or the environment and/or damage property.	
Hazardous area	Means an area in which:	
	(a) an explosive gas is present in the atmosphere in a quantity that requires special precautions to be taken for the construction, installation and use of plant; or	
	(b) a combustible dust is present, or could reasonably be expected to be present, in the atmosphere in a quantity that requires special precautions to be taken for the construction and use of plant.	

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Term	Definitions
Hazardous chemicals	Means a substance, mixture or article that satisfies the criteria for a hazard class in the Globally Harmonised System (GHS) (including a classification mentioned in schedule 6 of the <i>Work Health and Safety Regulation 2011</i> (Qld)), but does not include a substance, mixture or article that satisfies the criteria solely for one of the following hazard classes:
	(a) Acute toxicity – oral – category 5
	(b) Acute toxicity – dermal – category 5
	(c) Acute toxicity – inhalation – category 5
	(d) Skin corrosion/irritation – category 3
	(e) Serious eye damage/eye irritation – category 2B
	(f) Aspiration hazard – category 2
	(g) Flammable gas – category 2
	(h) Acute hazard to the aquatic environment – category 1, 2 or 3
	(i) Chronic hazard to the aquatic environment – category 1,
	2, 3 01 4, 01 (i) Hazardous to the ozone layer
Health monitoring	Health monitoring systematically detects and assesses any adverse effects of work on the health status of workers as it relates to their duties. It is delivered through real time monitoring of exposure levels, medical assessment and biological monitoring of workers (e.g. blood/urine tests for checking chemical exposure).
Intermediate bulk container (IBC)	Means a rigid or flexible portable packaging for the transport of dangerous goods that complies with the requirements of chapter 6.5 of the ADG Code and that—
	(a) has a capacity of not more than—
	(i) for solids of packing group I packed in a composite, fibreboard, flexible, wooden, or rigid plastics container 1500L; or
	(ii) for solids of packing group I packed in a metal container—3000L; or
	(iii) for solids or liquids of packing groups II and III—3000L; and
	(b) is designed for mechanical handling.
Job Safety and Environment Analysis (JSEA)	A step-by-step method of identifying hazards, evaluating the risk, implementing control measures and providing a safe system of work.
Major Hazard Facility	A workplace:
	• at which chemicals identified in schedule 15 of the <i>Work Health and</i> <i>Safety Regulation 2011</i> (Qld) are present or likely to be present in a quantity that exceeds their threshold quantity that is determined by Workplace Health and Safety Queensland under part 9.2 of the <i>Work</i> <i>Health and Safety Regulation 2011</i> (Qld) to be a major hazard facility.
Manifest quantity exceeded workplace	Any workplace where the quantity of hazardous chemicals used, handled or stored exceeds the manifest quantity for that hazardous chemical.
Notifiable incident	An incident which involves:
	• the death of a person; or
	<ul> <li>a serious injury or illness of a person; or</li> </ul>
	a dangerous incident.

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Term	Definitions
Placard	A sign or notice:
	<ul> <li>displayed or intended for display in a prominent place, or next to a container or storage area for hazardous chemicals at a workplace</li> </ul>
	that contains information about the hazardous chemical stored in the container or storage area.
Risk	Risk is the likelihood and consequence of injury or harm occurring when exposed to a hazard.
Risk control	Means taking action to eliminate health and safety risks so far as is reasonably practicable, and if that is not possible, minimising the risks so far as is reasonably practicable. Eliminating a hazard will also eliminate any risks associated with that hazard.
Reasonably practicable	The following criteria must be applied in determining what is reasonably practicable:
	The likelihood of the hazard or risk concerned occurring.
	• The degree of harm that might result from the hazard or risk.
	<ul> <li>What the person knows or ought to reasonably know about the hazard and ways of eliminating or minimising the hazard.</li> </ul>
	• Availability and suitability of ways of eliminating or minimising the hazard. The cost associated with the availability and suitability of ways of eliminating or minimising the hazard, taking into account the cost if it is grossly
Safe Work Method Statement (SWMS)	A SWMS sets out steps to enable supervisors, workers and any other persons at the workplace to understand the requirements that have been established to carry out the high-risk construction work in a safe and healthy manner. It sets out the work activities in a logical sequence and identifies hazards and describes control measures.
Safety data sheet (SDS)	A document that describes the identity, chemical and physical properties, health and environmental hazard information, uses, precautions for use, safe handling procedures and safe disposal procedures of a hazardous chemical.
Physicochemical hazards	Hazards that result from the physical or chemical properties of the substance, mixture or article, like flammable, corrosive, oxidizing or explosive substances.
Worker	Worker means a person who carries out work in any capacity for Seqwater, including work as:
	an employee
	a contractor or subcontractor
	<ul> <li>an employee of a contractor or subcontractor</li> </ul>
	<ul> <li>an employee of a labour hire company who has been assigned to work at Seqwater</li> </ul>
	an outworker
	an apprentice or trainee
	a student gaining work experience
	a volunteer
	a worker of a prescribed class.
Workplace	A place where work is carried out by Seqwater and includes any place where a worker goes, or is likely to be, while at work. This includes a vehicle, vessel or other mobile structure.

Rev. no. 10



### **Roles and Responsibilities** 4

Role	Responsibility
Managers	<ul> <li>Ensure, so far as is reasonably practicable, the implementation of the requirements of this procedure within their area of responsibility.</li> <li>Facilitate the development, testing and review of site Incident and Emergency Response Plans (IERPS) for workplaces they are</li> </ul>
	responsible for.
	<ul> <li>Facilitate the assessment and classification of existing hazardous areas within their responsible area.</li> </ul>
	<ul> <li>Manage hazardous areas in accordance with the requirements of this procedure.</li> </ul>
Line Supervisors	<ul> <li>Establish a process within their team so that risks associated with purchasing, using, mixing, handling and storage of hazardous chemicals are identified, assessed, controlled and evaluated.</li> </ul>
	• Facilitate the provision of training, instruction and supervision to workers who purchase, handle or store hazardous chemicals.
	<ul> <li>Establish a process within their team to maintain and review hazardous chemical registers using ChemAlert.</li> </ul>
	<ul> <li>Ensure, so far as is reasonably practicable, that Safety Data Sheets (SDS), labelling, placarding and manifest requirements are implemented and maintained.</li> </ul>
Project Manager	<ul> <li>Make sure that any contractor using hazardous chemicals at a Seqwater site has a relevant and appropriate Safe Work Method Statement (SWMS) and that the risks associated with hazardous chemicals is covered in the contractor's safety and environmental management plans.</li> </ul>
	<ul> <li>Follow the Seqwater Engineering Design Review and Approval Procedure (<u>PRO-01617</u>) to make sure that the relevant Seqwater engineering standards are complied with during the projects delivery.</li> </ul>
	<ul> <li>Notify Workplace Health and Safety Queensland (WHSQ) of the abandonment of an underground storage system used to store flammable gases or flammable liquids as soon as practicable after the storage system is abandoned as part of a project.</li> </ul>
	<ul> <li>Facilitate the assessment and classification of any new hazardous areas that is created as part of the project works.</li> </ul>
	<ul> <li>Provide a hazardous area verification dossier for any new hazardous areas created as part of the project handover.</li> </ul>
	<ul> <li>Update the relevant hazardous area verification dossier following the completion of any work on an existing hazardous area.</li> </ul>

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Role	Responsibility
Work Health and Safety (WHS) Team	• Provide support and advice on the management of the risks associated with hazardous chemicals.
	Facilitate the completion of hazardous chemical risk assessments.
	<ul> <li>Identify the manifest quantity exceeded workplaces (MQWs) and notify Workplace Health and Safety Queensland (WHSQ) of these workplaces on the approved form, within the required timeframe.</li> </ul>
	<ul> <li>Provide support and advice in developing and testing site IERPs for the manifest quantity exceeded workplaces and provide a copy to Queensland Fire and Emergency Services (QFES).</li> </ul>
	Facilitate health monitoring and air monitoring where required.
	<ul> <li>Participate in the assessment and classification of hazardous areas in Seqwater.</li> </ul>
	<ul> <li>Develop and maintain a hazardous area register.</li> </ul>
	<ul> <li>Business owner of ChemAlert, a database that supports the management of hazardous chemicals.</li> </ul>
Water Quality and Environment Team	<ul> <li>Provide support and advice on managing the risks of hazardous chemicals.</li> </ul>
	<ul> <li>Monitor compliance with Environmental Relevant Activity (ERA) approval requirements (where required).</li> </ul>
Engineering and Technical Support (ETS) Team	• Maintain engineering technical standards that are relevant to hazardous chemicals and hazardous area applications.
	<ul> <li>Provide subject matter expertise (SME) during hazardous area classification and design.</li> </ul>
	• Review hazardous area design, associated electrical installations and the supporting verification dossier.
	<ul> <li>Provide technical advice to Project Managers to resolve requests for information and variation claims related to hazardous area design and installation during project execution.</li> </ul>
Workers	• Participate in the development of hazardous chemical risk assessments.
	• Comply with the requirements of the SDS and hazardous chemical risk assessment associated with the chemical being used.
	Check that all SDS onsite are current and within date.

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## 5 Procedure

## 5.1 What are hazardous chemicals?

Hazardous chemicals include substances, mixtures or articles used in the workplace that can be classified according to their chemical hazards.

A chemical hazard is a set of inherent properties of the substance, mixture or article that may cause adverse effects to organisms or the environment. There are two broad types of hazards associated with chemicals that may present an immediate or long-term injury or illness to people. These are:

- Health hazards These are properties of a chemical that have the potential to cause adverse health effects. Exposure usually occurs through inhalation, skin contact or ingestion. Adverse health effects can be acute (short term) or chronic (long term). Typical acute health effects include headaches, nausea or vomiting and skin corrosion, while chronic health effects include asthma, dermatitis, nerve damage or cancer.
- Physicochemical hazards These are physical or chemical properties of the substance, mixture or article that pose risks to workers other than health risks, as they do not occur as a consequence of the biological interaction of the chemical with people. They arise through inappropriate handling or use and can often result in injury to people and/or damage to property as a result of the intrinsic physical hazard. Examples of physicochemical hazards include flammable, corrosive, explosive, chemically reactive and oxidising chemicals.

Many chemicals have both health and physicochemical hazards.

## 5.2 Hazardous chemical management

The following process must be implemented to manage hazardous chemicals at Seqwater workplaces:

- STEP 1 Identification of hazardous chemicals used, handled, stored or generated at Seqwater workplaces.
- STEP 2 Assess the risks associated with the identified hazardous chemical (inherent risk).
- STEP 3 Identify and implement risk control measures to eliminate or minimise the risks associated with the hazardous chemical (select using the hierarchy of controls).
- STEP 4 Assess the effectiveness of the risk controls (residual risk).
- STEP 5 Monitor and review control measures.

Any risk assessments of hazardous chemicals must be undertaken in accordance with the Hazard Identification and Risk Management Procedure (<u>PRO00657</u>).

## 5.3 **Step 1 – Identification of hazardous chemicals in the workplace**

The first step in managing risks associated with hazardous chemicals involves assessing all substances, mixtures or articles that are used, handled, stored or generated at Seqwater workplaces to confirm if they contain hazardous chemicals.

The identity of hazardous chemicals in the workplace can usually be determined by reviewing the label and the SDS for the product and assessing if any of the ingredients are hazardous.

An assessment of processes that generate hazardous chemicals in the workplace (e.g. welding and the generation of welding fumes) must also be undertaken to assess the risks to the heath of workers exposed to the process.

The hazardous chemical identification process must be undertaken in consultation with workers in accordance with the Communication, Consultation and Issue Management Procedure (<u>PRO00870</u>).

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All hazardous chemicals (excluding consumer products) that are handled, stored, used or generated at a Seqwater workplace must be recorded in a hazardous chemical register.

## 5.3.1 Consumer products

A consumer product is a product that is packed or repacked primarily for use by a household consumer or for use in an office. In addition, the product is packed in the way and quantity in which it is intended to be used by a household or office consumer.

In accordance with the *Work Health and Safety Regulation 2011* (Qld) an SDS does not need to be obtained for a consumer product if it is reasonably foreseeable that the chemical will be used at the workplace only:

- in quantities that are consistent with household use
- in a way that is consistent with household use and incidental to the nature of work carried out by a worker.

If an SDS is not obtained for a consumer product, Seqwater must still make sure that sufficient information about the safe use, handling and storage of the hazardous chemical is readily accessible to a worker at the workplace, an emergency service worker, or anyone else who is likely to be exposed to the hazardous chemical. This requirement will be met by ensuring this information is contained in the labelling of the consumer product.

If an SDS is not required for a consumer product, the product also does not need to be included in a hazardous chemical register.

## 5.3.2 Hazardous chemical registers

A hazardous chemical register must be developed for each Seqwater workplace where hazardous chemicals are located. Hazardous chemical registers for Seqwater workplaces are stored within ChemAlert.

Hazardous chemical registers must include:

- a list of all hazardous chemicals handled, stored, used or generated at the workplace regardless of their sizes and quantities, excluding consumer products
- the unit and quantity of the hazardous chemical
- the current SDS for each hazardous chemical listed, excluding consumer products

ChemAlert generates a generic risk rating for each chemical listed in a hazardous chemical register. This generic risk rating is based on the properties of the chemical and its potential affects to health. The generic risk ratings are low (green), medium (orange) and high (red).

Hazardous chemical registers must be readily accessible to workers involved in handling, storing, using or generating hazardous chemicals and anyone who is likely to be affected by a hazardous chemical at the workplace.

Hazardous chemical registers must be updated:

- as new hazardous chemicals are introduced to the workplace
- when there are changes to the quantities of chemicals held
- when the use of a particular hazardous chemical is discontinued.

## 5.4 **Step 2 – Risk assessment of the hazardous chemical**

A risk assessment must be completed for the storage and use of all hazardous chemicals that are handled, stored, used or generated at a Seqwater workplace.

When undertaking a risk assessment, the following must be considered:

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 the hazardous properties of the hazardous chemical, including both health and physicochemical hazards of the chemical



- any potential hazardous chemical or physical reaction between the hazardous chemical and another • substance or mixture, including a substance that may be generated by the reaction
- the nature of the work to be carried out with the hazardous chemical
- any structure, plant, work environment or system of work:
  - that is used in the use, handling, generation or storage of the hazardous chemical •
  - that could interact with the hazardous chemical at the workplace •
- the workers and visitors at the workplace, including those who are directly or indirectly involved in using, handling, storing or generating a hazardous chemical
- the impact to the health and safety of other persons in the vicinity of chemical storage and handling e.g. persons who live in a neighbouring property to a WTP
- the route or extent of exposure and how often this exposure can occur
- any potential emergencies e.g. spills / leaks, fire or explosion etc.
- any control measures that are currently in place and their effectiveness.

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#### Types of hazardous chemical risk assessments 5.4.1

The following types of risk assessments of hazardous chemicals are undertaken at Seqwater workplaces:

Types of risk assessment	Description of risk assessment	Format	Assessed by
Basic risk assessment	The risks associated with hazardous chemicals, or groups of chemicals with similar properties and applications, that are handled, stored, used or generated at a Seqwater workplace must be captured on the workplace's risk register.	WHS Risk Register Template ( <u>TEM-00023</u> )	WHS Team
	A JSEA/SWMS must be developed and used for the transporting, handling or any other work undertaken with hazardous chemicals, or groups of chemicals with similar properties and applications.	JSEA/SWMS Template ( <u>TEM-00013</u> )	Workers and supervisors with support from WHS Team where required.
Generic risk assessment	<ul> <li>The following must have a Hazardous Chemical Risk Assessment completed:</li> <li>all bulk storage hazardous chemicals that have a ChemAlert risk rating of medium (orange) or high (red)</li> <li>all other hazardous chemicals that have a ChemAlert risk rating of high (red).</li> </ul>	Hazardous Chemical Risk Assessment Form (FRM-00611)	WHS Team
Detailed risk assessment	A detailed assessment undertaken by a subject matter expert e.g. chemical engineer or hygienist for any chemicals where there is a significant risk to health, such as chemicals that are known carcinogens, mutagens, reproductive toxicants or sensitisation agents.	External report	WHS Team

All the risk assessment must be conducted in consultation with workers and supervisors who are directly or indirectly involved in using, handling, storing or generating a hazardous chemical. All completed risk assessments must be saved in TRIM.

#### Step 3 – Hazardous chemical risk controls 5.5

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Control measures must be identified and implemented to prevent exposure to hazardous chemicals. If the prevention of exposure is not practicable, the risk must be controlled to minimise any danger to workers.

The Work Health and Safety Regulation 2011 (Qld) requires the hierarchy of controls to be utilised to choose measures that most effectively eliminate or minimise the risk. In order to adequately control the risk, a combination of controls may be required.



Order of Preference	Action
Elimination	The most effective method of risk control is eliminating the hazard. Not using a hazardous chemical or eliminating exposure can achieve this.
Substitution	Substitution is the replacement of a hazardous chemical with a chemical that is less hazardous and presents lower risks.
Isolation	Isolation involves separating people from the chemicals or hazards by distance or barriers to prevent or minimise exposure.
Engineering controls	Engineering controls are physical in nature, including a mechanical device or process that eliminates or minimises the generation of chemicals, suppresses or contains chemicals, or limits the area of contamination in the event of spills and leaks.
Administrative controls	Administrative controls include systems of work or safe work practices that help to minimise worker's exposure to hazardous chemicals and other potential hazards generated by their use.
Personal protective equipment	Personal protective equipment (PPE) includes overalls, aprons, footwear, gloves, chemical resistant glasses, face shields and respirators.
	Refer to the PPE Procedure (PRO-00881) for further information.

#### 5.5.1 Specific hazardous chemical risk control measures

In accordance with the Managing Hazardous Chemicals in the Workplace Code of Practice 2013 (Qld), the following specific risk control measures must be implemented to manage risks associated with hazardous chemicals:

- fire and explosion protection •
- keeping hazardous chemicals stable
- impact protection containers, structures and plant
- containing spills
- safe transfer of hazardous chemicals systems and practice
- controlling risks from compressed gases
- regular inspections of control measures
- controlling asphyxiation hazards.

#### 5.5.2 Seqwater bulk chemicals safety requirement

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Specific safety requirements for bulk chemicals are outlined in the relevant appendix of this procedure or work instructions as follows:

Bulk chemicals	WHS requirement
Aqueous Ammonia Solution (25%)	Appendix G
Chlorine gas	Appendix H
Fluoride (sodium fluoride and sodium fluorosilicate)	Appendix I
Hydrochloric acid	Appendix J
Potassium Permanganate	Appendix K
Sodium hydroxide (caustic soda)	Appendix L
Sodium hypochlorite solution (Hypo 10)	Appendix M
Sulphuric acid	Appendix N



Bulk chemicals	WHS requirement
Other bulk storage chemicals e.g. Aluminium Sulphate, Lime and Oxygen (refrigerated liguid)	Refer to relevant site work instructions

Any new proposed new bulk chemical installations and all existing assets undergoing refurbishment or expansion must comply with the relevant Seqwater engineering standards.

## 5.6 **Step 4 – Maintaining hazardous chemical risk control measures**

Maintenance of hazardous chemical risk control measures involves:

- supervision to check that workers are using the control measures properly
- preventative maintenance and testing programs for chemical storage and handling systems
- periodic air monitoring to check that engineering and administrative controls remain effective.

## 5.7 **Step 5 – Reviewing hazardous chemical risk control measures**

Hazardous chemical risk controls must be reviewed (and if necessary revised):

- when the control measure is not effective in controlling the risk i.e. an incident occurs
- before a change at the workplace that is likely to give rise to a new or different health, safety and/or environmental risk that the control measure may not effectively control
- if a new hazard or risk is identified
- if the results of consultation indicate that a review is necessary
- if a Health and Safety Representative (HSR) requests a review
- if the SDS of hazardous chemicals is changed
- if a health monitoring report for a worker identifies adverse health effects
- if atmospheric monitoring indicates that the airborne concentration of a hazardous chemical at the workplace exceeds the relevant exposure standard.

## 5.8 **Purchasing hazardous chemicals**

The purchase of hazardous chemicals must be undertaken in accordance with the Seqwater Procurement Procedure (<u>FRM-00025</u>).

## 5.8.1 Bulk chemicals

To order or receive a bulk chemical for an operational site, the relevant work instruction or procedure for receiving the chemical must be followed.

## 5.8.2 Hazardous chemicals stocked by stores

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The Seqwater Regional Stores purchase and maintain a stock of chemicals that have been permitted or approved by relevant subject matter of experts in Seqwater e.g. Regional WHS Advisor, Environment Coordinator, Water Quality specialist, Laboratory Specialist and/or Biosecurity Officer etc.

A list of stock chemicals that can be directly ordered from the Regional Stores can be found on the Seqwater intranet.



#### 5.8.3 Hazardous chemicals NOT stocked by stores BUT currently listed in the workplace hazardous chemical register

The following steps must be followed to purchase a hazardous chemical that is not stocked by stores but is listed in the current hazardous chemical register:

- Check the hazardous chemical register (the hard copy register or ChemAlert) to confirm it is listed in the chemical register.
- Check if the SDS is still valid. If not, request a valid SDS from the chemical supplier prior to the purchase. •
- If it has a high (red) risk rating according to ChemAlert, check if a hazardous chemical risk assessment has been completed and is still valid.
- Complete the Checklist for Purchasing and Receiving Hazardous Chemicals (FRM-00025).
- Raise a purchase order in accordance with the Segwater Procurement Procedure (PRO-01514).
- Finalise the Checklist for Purchasing and Receiving Hazardous (FRM-00025) once the chemical is received.

The above requirements do not apply to the purchase of chemicals for Seqwater laboratories. However the relevant supervisor must ensure the correct product and quantity is purchased and risks associated with the purchase are managed.

Where required, a manager or line supervisor may request a regularly purchased hazardous chemical to be added to the stores' inventory.

#### Hazardous chemicals NOT previously used by Seqwater 5.8.4

To obtain approval to purchase a hazardous chemical that has not been used by Segwater and has not had a risk assessment approved, the follow steps must be followed:

- Identify the preferred chemical for the work, including its manufacturers or suppliers. •
- Search the chemical in ChemAlert to confirm its risk rating.
- If it has a low (green) risk rating according to ChemAlert, the chemical can be purchased directly without any approval.
- If it has a high (red) or medium (orange) risk rating according to ChemAlert, a product request must be sent to relevant subject matter experts in Segwater for review and approval e.g. WHS Advisor, Environment Coordinator, Water Quality specialist, Laboratory specialist and/or Biosecurity Officer etc.
- The nominated subject matter expert will review the SDS of the chemical, assess the risks associated with chemical and advise if they:
  - approve the purchase of the chemical •
  - recommend alternative lower risk products for the work •
  - do not approve the purchase of the chemical.

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Once required approvals have been obtained, the Checklist for Purchasing Hazardous Chemicals (FRM-00025) must be used to manage the purchase of the hazardous chemical. The use of the checklist is intended to assist in ensuring that the correct product and quantity is purchased and risks associated with the purchase are controlled.

Where there are multiple chemicals available the least hazardous chemical must be purchased, provided other considerations (i.e. availability, cost, environmental impact, etc.) do not impact on the intended purpose of the chemical.



## 5.9 Hazardous chemical storage and handling

Hazardous chemicals must be stored and handled in accordance with the requirements of the SDS and the hazardous chemical risk assessment. When identifying how to store and handle a hazardous chemical, the following must be considered:

- Hazardous chemicals that are not compatible with other substances, goods or liquids must be stored separately. Please refer to the WHSQ Segregation Tool for Dangerous Goods to confirm specific storage requirements:
- <u>https://www.worksafe.qld.gov.au/injury-prevention-safety/hazardous-chemicals/managing-incompatible-goods/segregation-tool</u>
- Flammable or combustible chemicals must only be purchased and stored at the lowest practicable quantity. Storage must comply with AS 1940: The storage and handling of flammable and combustible liquids.
- Ignition sources must not be introduced into a hazardous chemical storage area if there is a possibility of fire or explosion.
- Corrosive chemicals (dangerous goods class 8) must be stored in compliance with AS 3780: The storage and handling of corrosive substances.
- Correct signage and placarding is clearly displayed where hazardous chemicals are stored.
- Storage systems and storage containers used for hazardous chemicals must only be used for the storage of hazardous chemicals.
- Storage and handling systems must only be used for their intended purpose and must be operated, tested, maintained, installed, repaired and decommissioned with regard to the health and safety of workers and others.
- Hazardous chemicals must be stored and handled in a manner that makes sure that the chemical does not become unstable, decompose or change to create new hazards or increase the risks associated with the chemical.
- Spill containment systems must be appropriate for the type and volume of chemical being stored or handled.
- Appropriate spill kits must be provided and maintained where spills and leaks are reasonably foreseeable.
- A safety shower and eye wash station must be installed in accordance with the AS 4775: Emergency eyewash and shower equipment where required by the Seqwater engineering standards or recommended by a risk assessment.
- Containers in which bulk quantities of hazardous chemicals are stored and any associated pipe work or attachments:
  - must have stable foundations and supports
  - must be secured to the foundations and supports to prevent any movement between the container and the associated pipe work or attachments
  - must be free of damage.

## 5.9.1 Safety data sheets

Any Seqwater worker who purchases hazardous chemicals must obtain the current safety data sheet (SDS) from the manufacturer, importer or supplier of the chemical either before it is first supplied, or as soon as practicable after supplied (but before use).

A current hard copy SDS must be kept as close as possible to where the substance is being used and/or stored i.e. in the vehicle that the chemical is transported, in the workshop next to the cabinet where the chemical is stored, attached to a dosing skid for a water treatment chemical. The SDS must be readily accessible to

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workers involved in using, handling or storing the hazardous chemical, emergency service workers or anyone else who is likely to be exposed to the hazardous chemical.

Workers are not permitted to amend or otherwise make changes to an SDS.

An SDS remains current for a maximum period of five years from the date of issue of the SDS, unless modified prior to this date by the manufacturer.

SDS must be regularly inspected for currency by the WHS Team, line supervisors and any workers who use the chemical.

SDS do not need to be obtained or stored for consumer products.

## 5.9.2 Safety equipment

Any Seqwater worker required to handle and use a hazardous chemical must be provided with safety equipment as required by the relevant SDS and associated risk assessment. Hazardous chemical safety equipment must be maintained in accordance with the Safe Work with Plant Procedure (<u>PRO-00867</u>).

## 5.9.3 Safety signs

Hazardous chemical warning signs must be installed so that workers are aware of the presence and location of hazardous chemicals in the workplace.

Hazardous chemical signage must:

- warn of a particular hazard associated with the hazardous chemicals
- state the responsibilities of a particular person in relation to the hazardous chemicals
- be located next to the hazard
- be clearly visible to a person approaching the hazard.

All hazardous chemical signs must comply with AS 1319: Safety signs for the occupational environment.

Hazardous chemical signs must be inspected and maintained so that they are adequately warning workers of the presence of hazardous chemicals.

## 5.9.4 Labelling

Hazardous chemicals must be correctly labelled in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals. Labelling must also comply with Schedule 9 Part 3 of the *Work Health* and Safety Regulation 2011 (Qld).

When decanting hazardous chemicals into a smaller container, a label must be affixed to the container to identify the contents. ChemAlert labels are to be used and can be obtained from ChemAlert or by request from the WHS team. An example of a hazardous chemical label is included as Appendix B of this procedure.

Containers with a hazardous chemical label are to be used only for the use, handing or storage of the hazardous chemical detailed on the label.

If an unlabelled container is found, the container must be stored away from other substances or goods. The Seqwater Regulated and Trackable Waste Management Procedure (<u>PRO-01496</u>) must be followed to dispose of the container and substance within the container.

## 5.9.5 Decanting hazardous chemicals

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Where possible, chemicals should be kept in their original container with the original labelling from the manufacturer/supplier.

Where chemicals must be decanted, the method defined in the relevant SDS and hazardous chemical risk assessment or documented JSEA/SWMS must be followed. New containers must be appropriate for the chemical they will hold and must be correctly labelled.

Rev.	no
10	



Hazardous chemicals MUST NOT be decanted into food or drink containers.

Specific control measures must be identified and implemented when decanting chemicals in explosive atmospheres or chemicals that may produce explosive atmospheres (e.g. earthing equipment, non-synthetic protective garments).

## 5.10 **Transporting hazardous chemicals**

Under no circumstance should Seqwater workers transport dangerous goods in a receptacle with a capacity of more than 500L or more than 500kg on Queensland Main Roads.

The transportation of dangerous goods over these limits must only be performed by licensed drivers and in vehicles in accordance with *Transport Operations (Road Use Management—Dangerous Goods) Regulation 2008* (Qld) and the *Australian Code for the Transport of Dangerous goods by Road and Rail (ADG Code).* Placard load limits for dangerous goods are defined in Appendix C of this procedure.

Where small quantities of hazardous chemicals (i.e. <50 litres) are transported at Seqwater workplaces, the worker who performs the tasks must check that:

- the chemicals are in appropriate containers with correct labels
- the chemical containers are secured to prevent rotating, crashing or falling off the vehicle
- extreme heat to the chemicals is mitigated
- current SDSs are carried with the chemicals in the vehicle
- an appropriate form of bunding to contain any leaks in vehicles, e.g. a tray or container, is considered when carrying chemicals in vehicles
- appropriate personal protective equipment (PPE), spill kits and first aid kits are available.

### 5.10.1 Pipe Work used to transfer hazardous chemicals

All pipe work used for transferring hazardous chemicals must be appropriately designed and manufactured.

All pipe work used for transferring hazardous chemicals must be labelled in accordance with AS1345: *Identification of the contents of pipes, conduits and ducts*. The systems for pipe work content identification comprise the following:

- base identification which is a single colour and which may cover all or part of the pipe as set out in AS1345 (e.g. pipe base colour for flammable and combustible liquid is brown, flammable and combustible liquid gas is yellow, acid and alkali is violet)
- pipe marker which comprises one or more words on a label identifying either the contents or the hazardous nature of the contents, or both.
- supplementary identifications which comprise a band or panel of a different colour used to indicate an additional attribute of the contents of the pipe.

## 5.11 Mixing, handling and using hazardous chemicals

When mixing, handling and using hazardous chemicals, the requirements defined in the SDS and identified through the hazardous chemical risk assessment or a JESA/SWMS must be implemented.

Prior to commencing the task that involves mixing, handling and using hazardous chemicals, the relevant safety equipment, i.e. ventilation and safety shower, must be checked.

A copy of the SDS is to be kept as close as possible to the hazardous chemicals being mixed, handled and used to allow the worker to refer to it easily.

PPE must be used in accordance with the SDS and the relevant risk assessment. Additional risk control measures such as mechanical ventilation, isolations or gas monitoring may be implemented and maintained as required.



All reasonably practicable methods must be implemented so that hazardous chemicals do not contaminate the water supply, food, food packaging or personal use products.

#### Spraying of specific hazardous chemicals 5.11.1

At least one worker on a spray team must hold an Agricultural Chemical Distribution Control (ACDC) License before any of the spray team can commence spraying. All workers on a spray team must be trained in spraying operations. Health monitoring may be required in accordance with the Health Monitoring & Immunisations Procedure (PRO-00020).

## 5.11.2 Construction Work

A Safe Work Method Statement (SWMS) must be prepared if hazardous chemicals are used at a construction workplace. Any contractor using hazardous chemicals at a Segwater construction site must ensure that the risk associated with hazardous chemicals is considered in the contractor's safety and environmental management plans relevant to the construction work.

#### Review and disposal of hazardous chemicals 5.12

An annual chemical survey/inspection must be conducted at all Segwater workplaces to identify chemicals that are out of date or no longer used and can be disposed of. The annual survey / inspection of chemicals at Seqwater workplaces will be facilitated by the WHS Team.

The relevant SDS for each hazardous chemical identified for disposal must be reviewed to establish the appropriate method of disposal. In addition, the Seqwater Water Quality and Environment Team must be consulted to confirm if the disposal activity triggers any reporting requirements in relation to trackable waste management.

Where required, a competent service provider may be engaged to dispose of hazardous chemicals.

Where a hazardous chemical is removed from a site, the hazardous chemical register must be amended.

Containers of hazardous chemicals must not be washed out in areas where there is a possibility of waste solution entering a storm water drain, natural watercourse or contamination of the environment.

#### Decommissioning of hazardous chemical storage and handling systems 5.12.1

Hazardous chemical storage and dosing systems must be free of hazardous chemicals when the system is decommissioned. If it is not reasonably practicable to remove the hazardous chemicals from the system, it must be correctly labelled.

Where an underground handling or storage system is no longer required or is to be disposed of, so far as reasonably practicable, the system must be removed. If removal of the underground system is not reasonably practicable, the system must be made safe so that it poses no risks to health, safety or the environment.

Workplace Health and Safety Queensland (WHSQ) must be notified of the abandonment of an underground storage system used to store flammable gases or flammable liquids as soon as practicable after the storage system is abandoned. It is the responsibility of the responsible project manager to make sure this notification is made.

#### 5.13 Health monitoring

Health monitoring of a person means monitoring the person to identify changes in the person's health status because of exposure to certain substances. Health monitoring involves the collection of data in order to evaluate the effects of exposure and to confirm that the absorbed dose is within safe levels.

Health monitoring allows Seqwater to make decisions about ways to eliminate or minimise a worker's risk of exposure, for example, by reassigning a worker to other duties that involve less exposure or improving control measures associated with the activities being undertaken.

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Workers must be provided with information relating to the requirements for health monitoring where they are at risk of exposure to hazardous substances.

Health monitoring is not an alternative to implementing risk control measures. If health monitoring results indicate that a worker is experiencing adverse health effects or signs of exposure to a hazardous chemical, the risk control measure must be reviewed and if necessary revised.

The Segwater Injury Management and Health Program Coordinator must arrange for health monitoring if a worker is regularly handling, storing or using hazardous chemicals, or there is a significant exposure risk determined by a risk assessment. For details refer to the Health Monitoring and Immunisations Procedure (PRO-00020).

#### 5.14 Hazardous chemical manifests

#### Classification of hazardous chemicals 5.14.1

Under the Work Health and Safety Regulation 2011 (Qld), a hazardous chemical is any substance, mixture or article that satisfies the criteria for one or more Globally Harmonised System of Classification and Labelling of Chemicals (GHS) hazard classes, including a classification scheme in Schedule 6 of the Work Health and Safety Regulation 2011 (Qld).

## 5.14.2 Manifest requirements

A hazardous chemical manifest must be developed where the quantities of hazardous chemicals stored at a Sequater workplace exceed quantities identified in Schedule 11 – Placard and manifest quantities of the Work Health and Safety Regulation 2011 (Qld). Threshold quantities for hazardous chemicals stored at Seqwater workplaces are defined in Appendix D of this procedure.

The hazardous chemical manifest must comply with the requirements of Schedule 12 – Manifest requirements of the Work Health and Safety Regulation 2011 (Qld).

Manifests must be reviewed and updated:

- as soon as practicable after any change to the amount or types of hazardous chemicals being used, stored, handled or generated at the workplace
- every two years.

The hazardous chemical manifest must be kept in a locked red weatherproof container as close as practicable to the main entrance of all Segwater workplaces that store manifest quantities of hazardous chemicals. The location of the hazardous chemical manifest container must be agreed with QFES and the container must be adequately signed for easy location and identification.

A copy of all hazardous chemical manifests must be stored in TRIM.

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#### Notifications to Workplace Health and Safety Queensland (WHSQ) 5.14.3

### **Placard and manifest quantities**

The WHS Team must notify WHSQ:

- immediately when a hazardous chemical or group of hazardous chemicals identified in Schedule 11 -• Placard and manifest quantities of the Work Health and Safety Regulation 2011 (Qld) is first used, handled or stored at a Seqwater workplace
- when there will be a significant change in the risk of using, handling or storing of the hazardous chemicals, or at least 14 days before their first use (whichever is earlier)
- as soon as practicable after the hazardous chemical is no longer used, handled or stored at a Segwater workplace, and it is not likely to be used, handled or stored there in the future.



69

### Major hazard facility

The WHS Team must notify WHSQ of any workplaces where chemicals identified in Schedule 15 – Hazardous chemicals at major hazard facilities (and their threshold quantities) of the *Work Health and Safety Regulation 2011 (Qld)* are present or likely to be present in a quantity that exceeds 10% of their threshold quantity.

Should a site be determined as a Major Hazard Facility by WHSQ, Seqwater must comply with the requirements of Chapter 9 – Major hazard facility of the *Work Health and Safety Regulation 2011* (Qld).

## 5.14.4 Placards

The WHS Team, in consultation with workers, are to identify all placard quantity locations where the total quantity of a hazardous chemical or group of hazardous chemicals identified in Schedule 11 – Placard and manifest quantities of the *Work Health and Safety Regulation 2011* (Qld) is used, handled or stored at the workplace exceeds the placard quantity. Information relating to the classification of a placard quantity location is included in Appendix D of this procedure.

An outer warning placard and information placard must be prominently displayed and properly maintained where a placard quantity of hazardous chemicals is used, handled or stored. The placard must comply with Schedule 13 – Placard requirements of the *Work Health and Safety Regulation 2011 (Qld)*.

An example of a placard is included in Appendix E of this procedure.

## 5.15 **Emergency preparedness**

A site Incident and Emergency Response Plan (IERP) must be developed for all workplaces, including each manifest quantity exceeded workplace, in accordance with the Emergency Preparedness and Response Procedure (<u>ERP-00079</u>). IERPs must include details around how to respond to any emergencies involving hazardous chemicals.

## 5.15.1 Fire protection and firefighting equipment

Seqwater workplaces where hazardous chemicals are used, handled, generated or stored must have:

- fire protection and firefighting equipment that is designed and built for the types of hazardous chemicals used, handled, generated or stored at the site
- fire protection and firefighting equipment that is readily accessible at the workplace
- fire protection and firefighting equipment that is compatible with firefighting equipment used by Queensland Fire and Emergency Services (QFES)
- firefighting equipment that is properly installed, tested and maintained
- dated records kept for the results of fire protection and firefighting equipment testing.

# 6 Hazardous Areas

A hazardous area, for the purposes of this procedure, is any area where an explosive gas is present or a combustible dust is present, or could reasonably be expected to be present, in a quantity that requires special precautions to be taken for the construction, installation and use of the item of plant.

Hazardous areas must:

- be assessed by a competent person
- have appropriate signage
- be supported by a dossier that is saved in TRIM
- be listed on Seqwater's Hazardous Area Register (REG-01043)

Rev. no.	Doc No.	Doc Owner	Version Date	Doc Approver	Page 22 of	
10	PRO-00008	Scott Lynch	20/12/2019	GM, People, Culture and Safety		
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have an appropriate inspection program established for any explosion-protected ignition sources or • electrical equipment located within the hazardous area.

#### 61 Identification and classification of hazardous areas

All hazardous areas in Segwater workplace must be identified and classified into specific zones in accordance with AS/NZS 60079.10.1 Explosive atmospheres - Classification of areas - Explosive gas atmospheres and AS/NZS 60079.10.2 Explosive atmospheres – Classification of areas – Combustible dust atmosphere. The classification of hazardous areas is to allow the proper selection of equipment, particularly electrical equipment, to be installed or used in the areas.

The following within Segwater workplaces must be assessed to determine if they are classified as hazardous areas:

- Powder Activated Carbon (PAC) installations and storage areas
- ammonia tank and building
- methanol installations and storage areas
- fuel storage areas and associated installations (including petrol tanks, diesel tanks etc)
- laboratory and fume cupboard where flammable liquid is handled
- any other areas where recommended by a risk assessment.

For an existing area that has a potential to be classified as a hazardous area but has not been assessed by a competent person, the Regional Manager responsible for the area must facilitate an assessment and classification of the hazardous area in consultation with WHS Team and Engineering Support and Service Team (ETS).

For a new area that has a potential to be classified as a hazardous area, the Project Manager must facilitate the assessment and classification of the area once the initial process and instrumentation line diagrams and initial layout plans are available. The classification must be confirmed before plant start-up.

The assessment must be undertaken by a competent person who has also received appropriate training in accordance with Joint Series of Competency Standards - AS/NZS 4761: Competencies for working with electrical equipment for hazardous areas (EEHA).

The type and extent of the zone is assessed after taking into consideration the following factors:

- the likelihood and amount of vapour / dust produced
- the class / group of the vapour / dust
- the lower explosive limit of the generated vapour / dust
- the level of ventilation under all conditions
- the temperature class of the zone.

The outcome of the hazardous area assessment and classification must be reviewed by the Seqwater Operations, ETS and WHS Teams.

Once a hazardous area is confirmed, the WHS Team is to update the relevant workplace WHS risk register and the Hazardous Area Register (REG-01043).

#### Signage for the hazardous areas 6.2

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All hazardous areas are to be clearly defined and marked / signed in accordance with AS 1319: Safety Signs for the Occupational Environment. Appropriate warning signs, diagrams and line markings must be clearly displayed around the hazardous area so that everyone in the vicinity of the installation or hazardous area is aware of the hazard.



#### 6.3 Hazardous area verification dossier

The Regional Manager is responsible for making sure that a verification dossier is compiled and maintained for every hazardous area within their responsible areas. The dossier should contain the information detailed in the relevant Australian Standard.

As a minimum for the following information should be included in the dossier:

- area classification and zone diagrams
- installation and maintenance instructions
- record of maintenance and safety inspections.

Detailed verification dossier requirements are outlined in the Appendix F of this procedure.

The Regional Manager must coordinate the development or update of a hazardous area verification dossier following:

- the building or installation of a new hazardous area •
- any changes to the layout or original design to the hazardous area
- repairing, replacement or installation of any items of equipment in the hazardous area •
- maintenance and inspection undertaken in the hazardous area
- changes to the ownership or management of the hazardous area
- any other situations that impact the accuracy of the hazardous area dossier.

The updated verification dossier must be provided to the Asset Management Team in each region and an electronic copy must be kept in TRIM. It must be readily available to all workers required to enter and / or work in the hazardous area. A hard copy of the dossier must be available for examination by any inspection authority.

#### 6.4 Design, install, construct and modify the structure, plant and installations in a hazardous areas

Any Segwater worker who develops a business case for a project that may involve the design, construction, installation or modification to a structure, plant or installation within a hazardous area must, so far as is reasonably practicable:

- identify the presence of an explosive atmosphere and the required actions to manage the risks or deliverables
- identify and state all the relevant Australian Standards and Seqwater engineering standards that are applicable for the type of work.

The Project Manager must ensure, so far as is reasonably practicable during the concept design, detailed design, construction, installation, commissioning of a plant or structure that:

- the presence of explosive atmosphere in quantities is eliminated during the design or modification of the structure, plant and installations in which flammable and / or combustible materials are generated, stored and/or handled
- where the elimination of explosive atmosphere is not reasonably practicable, containment and other engineering controls are considered to minimise the risks of flammable gasses or dusts
- the Seqwater Engineering Design Review and Approval Procedure (PRO-01617) is followed
- AS/NZS 60079 and AS/NZS 61241 is followed during the design, selection and installation of electrical equipment within a hazardous area
- the design, selection and installation of electrical equipment within a hazardous area is carried out by a competent person

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- the electrical installations in hazardous areas are inspected by an accredited auditor in accordance with the Electrical Safety Regulation 2013 (Qld) prior to connection or reconnection to a source of electricity if:
  - the installation is being connected for the first time •
  - the electrical installation work has been performed on an electrical installation within a hazardous area.

The Regional Manager, the ETS Team and WHS Team and other stakeholders must be notified of any new hazardous areas or modifications to or within existing hazardous areas.

#### Managing the risks of hazardous areas 6.5

#### 6.5.1 Ignition source

- Any materials with the potential to be an ignition source must not be taken within 3m of a hazardous area. This includes electrical equipment (such as mobile phones and pagers) and sources of naked flames (such as matches and cigarette lighters).
- All equipment to be taken into a hazardous area is to be rated as Explosion Protected.
- Non-explosion protected portable equipment is only to be taken / used in a hazardous area if a risk assessment indicates that it is safe to do so, and appropriate controls are implemented and monitored.
- Care should be taken using alloy tools, scaffolding, ladders and rusty metal as striking these together could • produce a thermite reaction and hence the possibility of an explosion in a hazardous area.
- Battery operated vehicles (e.g. forklifts) to be used in a hazardous area are to comply with AS 1915: Electrical apparatus for explosive atmospheres - Battery operated vehicles.

#### 6.5.2 Avoidance of static electricity

To guard against static electricity discharge:

- all tanks, pipe work, transfer systems and process plant associated with the storage and handling system should be earthed, or otherwise protected, in accordance with AS 1020
- antistatic additives should be used in nonconductive liquids and conductive clothing, especially footwear, should be worn
- ignition sources outside hazardous areas must be controlled
- all other ignition sources on premises where dangerous goods are stored and handled should be identified and the sources eliminated or controls put in place where there is any likelihood that those ignition sources could ignite a hazardous area.
- Hot Work Permit

The Management of Hot Work Procedure (PRO-00009) must be followed if any hot work is to be carried out within or in the vicinity of a hazardous area. A JSEA/SWMS (TEM-00013) and Hot Work Permit (FRM-00040) must be completed and appropriate controls must be implemented.

#### 6.5.3 Workers performing electrical work

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Wherever practicable, electrical apparatus is to be installed outside a hazardous area. If this is not reasonably practicable, the electrical apparatus is to be placed in the least hazardous location inside the hazardous area.

Workers performing electrical work e.g. installing and maintaining electrical equipment within a hazardous area must be trained in Electrical Equipment in Hazardous Area (EEHA).

Only authorised electrical workers who are hazardous area qualified (UEE 42611 Certificate IV in Hazardous Areas) are to perform fault finding tasks in hazardous area.



When electrical installation work is performed in a hazardous area, it must not be connected to a source of electricity unless it has been inspected by an accredited auditor in accordance with the Electrical Safety Regulation 2013 (QId) to confirm that it is electrically safe and complies with relevant standards.

#### 6.6 Inspection and maintenance

All explosion protected ignition sources located in hazardous areas are to be regularly inspected and maintained by a competent person.

All electrical equipment in a hazardous area must be inspected and maintained in accordance with the AS/NZE 60079. 17 Part 17: Electrical installations inspection and maintenance. The periodic inspection should be carried out at least once every four years by a competent person. Copies of inspection reports must be included in the hazardous area verification dossier.

A hazardous area inspection must be conducted following any installations in a hazardous area are altered. The completed inspection report must be added to the site hazardous area verification dossier.

### Training requirements 7

Training will be provided in accordance with the Training and Competency Management Procedure (PRO01574).

All workers who may be potentially exposed to hazardous chemicals in the workplace must be provided with appropriate information, supervision, instruction and training in accordance with their approved training needs analysis.

The following information, awareness and training must be considered in the development of the WHS Training Needs Analysis (TNA) of workers who may be exposed to hazardous chemicals:

- chlorine gas induction (Orica)
- fluoride awareness
- Agricultural Chemical Distribution Control (ACDC)
- appropriate training associated with working in a hazardous area
- hazardous area classification and design for Process Controls and Electrical Engineers
- hazardous chemical awareness through toolbox or other methods
- use of ChemAlert, in particular how to search and access relevant chemical information
- other training identified from a risk assessment or incident investigation that relates to hazardous chemicals.

#### References 8

#### 8.1 Legislation

Description	Status	Location
AS/NZS 2022: Anhydrous ammonia – Storage and handling	Active	www.saiglobal/online
AS/NZS 60079.10.1 Explosive atmospheres – Classification of areas – Explosive gas atmospheres	Active	www.saiglobal/online
AS/NZS 60079.10.2 Explosive atmospheres – Classification of areas – Combustible dust atmospheres	Active	www.saiglobal/online

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Description	Status	Location
Australian Dangerous Good Guide	Active	http://www.ntc.gov.au/viewpa ge.aspx?Areald=35&Docum entId=1147
Environmental Protection (Waste Management) Regulation 2000 (Qld)	Active	www.legislation.qld.gov.au
AS1345: Identification of the contents of pipes, conduits and ducts	Active	www.saiglobal/online
Managing Hazardous Chemicals in the Workplace Code of Practice 2013 (Qld)	Active	https://www.worksafe.qld.gov .au/laws-and- compliance/codes-of- practice
Queensland State Archives General Retention and Disposal Schedule for Administrative Records	Active	www.archives.qld.gov.au/Re cordkeeping/RetentionDispo sal/Pages/GRDS.aspx
AS 1319: Safety signs for the occupational environment	Active	www.saiglobal/online
AS/NZS 1596: Storage and handling of LP gas	Active	www.saiglobal/online
AS4332: The storage and handling of gases in cylinders	Active	www.saiglobal/online
AS/NZS 2927: The storage and handling of liquefied chlorine gas.	Active	www.saiglobal/online
AS 1940: The storage and handling of flammable and combustible liquid	Active	www.saiglobal/online
AS 3780: The storage and handling of corrosive substances	Active	www.saiglobal/online
AS/NZS 60079: Electrical apparatus for explosive gas atmospheres Set.	Active	www.saiglobal/online
Transport Operations (Road Use Management—Dangerous Goods) Regulation 2008 (Qld)	Active	www.legislation.qld.gov.au
Work Health and Safety Act 2011 (Qld)	Active	www.legislation.qld.gov.au
Work Health and Safety Regulation 2011 (Qld)	Active	www.legislation.qld.gov.au
Electrical Safety Act 2002 (Qld)	Active	www.legislation.qld.gov.au
Electrical Safety Regulation 2013 (Qld)	Active	www.legislation.qld.gov.au
Workplace Exposure Standard for Airborne Contaminants	Active	http://www.safeworkaustralia .gov.au/sites/swa/whs

#### **Procedures, Documents, Forms and Templates** 8.2

Description	Status	Location
ERP-00079 Emergency Preparedness and Response Procedure	Active	Q-Pulse & Waternet
PRO-00657 Hazard Identification and Risk Management Procedure	Active	Q-Pulse & Waternet
PRO-00020 Health Monitoring and Immunisations Procedure	Active	Q-Pulse & Waternet
PRO-00793 Incident Investigation procedure	Active	Q-Pulse & Waternet
PRO-00002 Integrated Management System Internal Audit Procedure	Active	Q-Pulse & Waternet

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Description	Status	Location
PRO-00881 Personal Protective Equipment Procedure	Active	Q-Pulse & Waternet
PRO-01514 Procurement Procedure	Active	Q-Pulse & Waternet
PRO-01496 Regulated and Trackable Waste Management Procedure	Active	Q-Pulse & Waternet
PRO-01574 Training and Competency Management Procedure	Active	Q-Pulse & Waternet
Checklist for Purchasing Hazardous Chemicals / Dangerous Goods (FRM-00025)	Active	Q-Pulse & Waternet
Hazardous Area Register ( <u>REG-01043</u> )	Active	Q-Pulse & Waternet
Hazardous Chemicals Risk Assessment Form (FRM-00611)	Active	Q-Pulse & Waternet
Hot Work Permit (FRM-00040)	Active	Q-Pulse & Waternet
JSEA/SWMS Template (TEM-00013)	Active	Q-Pulse & Waternet
WHS Risk Register Template (TEM-00023)	Active	Q-Pulse & Waternet
Hazardous Chemical Risk Assessment – Aqueous Ammonia	Active	TRIM Ref: D15/186680
Site specific work instructions developed for any works that relate to Aqueous Ammonia at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse



# Appendix A – Australian Standards

No.	Title
AS 1345	Identification of the contents of pipes, conduits and ducts
AS 1596	The storage and handling of LP Gas
AS 1940	The storage and handling of flammable and combustible liquid
AS 1894	The storage and handling of non-flammable cryogenic and refrigerated liquids
AS 2022	Anhydrous ammonia – storage and handling
AS 2057	The storage and handling of pesticides
AS 2507	The storage and handling of agricultural and veterinary chemicals
AS 2714	The storage and handling of hazardous chemical materials – class 5.2 substances (organic peroxides)
AS 2927	The storage and handling of liquefied chlorine gas
AS 3780	The storage and handling of corrosive substances
AS 4326	The storage and handling of oxidizing agents
AS 4332	The storage and handling of gases in cylinders
AS/NZS 3833	The storage and handling of mixed classes of dangerous goods on packages and intermediate bulk containers
AS/NZS 4452	The storage and handling of toxic substances
AS/NZS 4681	The storage and handling of class 9 (miscellaneous dangerous goods and articles)

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# Appendix B – Examples of chemical labels

	POOL PR	O HYDRO	CHLORIC A	ACID 33%
Supplier	THE POPS GROUP PT	Y LTD AS TRUSTEE	FOR THE POOL SHO	PS TRUST, 10-12 Cairns St, Loganholme,
_	QLD, Australia, 4129. (0	7) 3209 7884		
Emergency	1800 033 111	(00%) - New based		4-2
Contains	HTDROCHLORIC ACID	(33%) • Non-nazaro	ous ingrecients (remain	der)
HAZARDS IDEN	TIFICATION			
CLASSIFIED AS H	AZARDOUS ACCORDIN	G TO SAFE WORK	AUSTRALIA CRITERI	A
DANGER				
Causes severe sk	in burns and eye damag	е.		COMPEGNE
Fatal if inhaled.				
Do not breathe dus	t/fume/gas/mist/vapours/s	pray. • Wash thoroug	hly after handling. • Us	e only outdoors or in a well-ventilated area.
<ul> <li>wear protective g</li> <li>IE SWALLOWED: E</li> </ul>	ioves/protective ciothing/e Rinse mouth. Do NOT indu	ve protection/tace pro	SKIN (or bair): Remov	tory protection. e/Take off immediately all contaminated
clothing. Rinse skin	with water/shower. • IF IN	HALED: Remove to	fresh air and keep at re	est in a position comfortable for breathing.
IF IN EYES: Rinse	cautiously with water for s	everal minutes. Rem	ove contact lenses, if p	resent and easy to do. Continue rinsing.
Immediately call a	POISON CENTER or doct	or/physician. • Specif	ic treatment is urgent -	see first aid instructions. • Wash
	DANGEROUS COOD R		THE ADG CODE	
Shinning name	HYDROCHLORIC ACID	T THE ORTERIA OF	THE ADG CODE	
UN number	1789	DG Class	8	
Packing group	Ш	Subsidiary Risk	None allocated	
FIRST AID MEAS	SURES			
Eye	If in eyes, hold eyelids a	part and flush continu	ously with running wat	er. Continue flushing until advised to stop
Inhelation	by a Poisons Information	n Centre, a doctor, or	for at least 15 minutes.	Full face Type P (Increasic and acid gas)
innalation	respirator or an Air-line r	espirator (in poorly w	entilated areas). Apply :	artificial respiration if not breathing.
Skin	If skin or hair contact oc	curs, remove contami	nated clothing and flus	h skin and hair with running water.
Ingestion	For advice, contact a Po	ison Information Cen	tre on 13 11 26 (Austra	lia Wide) or a doctor (at once). If
	swallowed, do not induce	e vomiting.		
FLAMMABILITY				
Flammability	NON FLAMMABLE		Flash Point	NOT RELEVANT
LEL	NOT AVAILABLE		UEL	NOT AVAILABLE
Autoignition Temp	NOT AVAILABLE		Hazchem Code	2R
PERSONAL PRO	TECTIVE EQUIPMEN	Т		
Refer to ChemAlert	Full Report or Safety Dat	a Sheet for details.		
	)Q(			

#### Figure 1 - Label printable from ChemAlert

#### CHLORELL (SODIUM HYPOCHLORITE 10%)

Supplier: BARRELL CHEMICALS, 12 Dennis Little Drive Glanmire Industrial Estate, Gympie, QLD, Australia, 4570, Ph: (07) 5482 4477, Emergency: (07) 5482 4477

Classified as hazardous DANGER Causes severe skin burns and eye damage. • Causes serious eye damage. • Very toxic to aquatic life. • Contact with acids liberates toxic gas. Do not breathe dust/fume/gas/mist/vapours/spray. • Wash thoroughly after handling.

 Avoid release to the environment. • Wear protective gloves/protective clothing/eye protection/face protection. Hazchem Code 2X

First Aid: For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.

#### Figure 2 - Label for small containers

Rev.	no
10	



# Appendix C – Placard load limits for transportation

Chemical	Load limit
FLUORIDE (Class 6.1)	<1000kg (in receptacles holding <500kg)
CHLORINE (GAS) (Class 2.3)	<250kg (3X70kg cylinders)
AMMONIA ANHYDROUS (GAS) (Class 2.3)	<250kg
AMMONIA AQUEOUS (25%) (Class 8)	<1000L (in receptacles holding <500L)
SODIUM HYPOCHLORITE (10%) (Class 8)	<1000L (in receptacles holding <500L)
SODIUM HYDROXIDE SOLUTION (33–50%) (Class 8)	<1000L (in receptacles holding <500L)
SODIUM HYDROXIDE SOLID (Class 8)	<1000kg (in receptacles holding <500kg)
OZONE (Class 2.2)	N/A (not transported by Seqwater)
HYDROCHLORIC ACID (33%) (Class 8)	<1000L (in receptacles holding <500L)
HYDRATED LIME	N/A (non–dangerous good)
ULTRION 8588 (Class 8)	<1000L (in receptacles holding <500L)
POTASSIUM PERMANGANATE (Class 5.1)	<1000kg (in receptacles holding <500kg)
ACTIVATED CARBON (Class 4.2)	<1000kg (in receptacles holding <500kg)
ALUMINIUM SULFATE (50%)	N/A (non–dangerous good)
SODA ASH	N/A (non-dangerous good)

NB: The vehicle must be licensed and the driver must hold a dangerous goods driver license If a vehicle is used to transport -

(a) dangerous goods that are in a receptacle with a capacity of more than 500L; or

(b) more than 500kg of dangerous goods in a receptacle. EXEMPTION: No DG license required for IBC's up to 3000L, not filled or emptied on vehicle, however this would be a placard load.

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# Appendix D – Placard and manifest quantities

ltem No.	Chemical Name	DG Class	GHS Classification	Packing Group	Manifest Quantity	Placard Quantity
1	Sodium Hydroxide Solution (33–50%; Caustic soda)	8	Skin corrosion/irritation, Category 1A	П	500 kg or L	50 kg or L
2	Hydrochloric Acid (33%)	8	Skin corrosion/irritation, Category 1A	II	500 kg or L	50 kg or L
3	Ammonia Aqueous (25%)	8	Skin corrosion/irritation, Category 1B Acute toxicity (inhalation), Category 3	111	2500 kg or L	250 kg or L
4	Ammonia Anhydrous (gas)	2.3 Sub R 8	Gases under pressure with skin corrosion/irritation, Category 1B	None	500L	50L
5	Sodium Hypochlorite (10%)	8	Skin corrosion/irritation, Category 1B	III	2500 kg or L	250 kg or L
6	Sodium Fluorosilicate	6.1	Acute toxicity (inhalation), Category 3	III	10 000 kg or L	1000 kg or L
7	Sodium Fluoride	6.1	Acute toxicity (inhalation), Category 3	Ш	10 000 kg or L	1000 kg or L
8	Potassium Permanganate	5.1	Oxidising solids, Category 2 Acute toxicity (oral), Category 4	11	2500 kg or L	250 kg or L
9	Chlorine	2.3	Gases under pressure with acute toxicity (inhalation), Category 3 skin corrosion/irritation, Category 2	None	500L	50L
10	Petroleum Fuel	3	Flammable Liquids Category 2	II	2500 kg or L	250 kg or L
11	Diesel fuel	3	Flammable Liquids Category 3	III	10 000 kg or L	1000 kg or L
12	Ozone	2.2 Sub R 5.1	Oxidising Gas , Category 1	None	500 kg or L	50 kg or L
13	Carbon Dioxide	2.2	Gases under pressure	None	10 000 kg or L	1000 kg or L
14	Oxygen (refrigerated liquid)	2.2 Sub R 5.1	Oxidising liquid Category 1	None	10 000 kg or L	1000 kg or L
15	Acetylene	2.1	Flammable gases Category 1	None	5000 L	200 L

Rev. no. 10

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# Corporate Safety – Procedure Hazardous Chemicals



ltem No.	Chemical Name	DG Class	GHS Classification	Packing Group	Manifest Quantity	Placard Quantity
16	Aluminium Sulphate	8	Skin Irritation – Category 2 Eye Damage – Category 1	None	N/A	N/A
17	Sulfuric acid solution	8	Corrosive to Metals – Category 1 Skin Corrosion – Sub– category 1A Eye Damage – Category 1 Specific target organ toxicity (single exposure) – Category 3	11	500L	50L



# Appendix E – Examples of Placards

#### **Outer Warning Placard**

To be displayed at each entrance to the workplace where emergency services may enter the workplace. The dimension and form of the Outer Warning Placard must comply with Schedule 13 of Work Health and Safety Regulation 2011 (Qld).

100mm Lettering



200mm

#### **Information Placard**

To be displayed on or next to each container or storage area in which the hazardous chemicals are stored. The dimension and form of the Placard must comply with Schedule 13 of Work Health and Safety Regulation 2011 (Qld).





Rev. no. 10

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# Appendix F: Hazardous area verification dossier

A hazardous area verification dossier shall include the following documentation and records as appropriate.

### Hazardous area documentation

- A schematic diagram of the zonal area classification. The diagram must identify the areas as follows:
- Zone 0, Zone 1, Zone 2 and Non-hazardous for flammable Gas/Vapour Atmospheres
- Zone 20, Zone 21, Zone 22 and Non-hazardous for Combustible Dust Atmospheres.
- The classification of the hazardous areas, and the standards used for the classification. •
- Equipment Group and Temperature Class of equipment. •
- LEL (Lower Explosive Limit), UEL (Upper Explosive Limit), flashpoint and auto ignition temperature of flammable gas/vapour or combustible dust
- Explosion protection techniques
- A SDS for the product causing the hazardous area environment must be included in the Verification Dossier.

This information is used to ascertain the appropriate equipment grouping and the temperature class.

### Equipment identification

- A legend that identifies the specific item of equipment and the Australian Standard Approval Number (e.g. Aus Ex 1234X).
- Documentation certifying that the equipment is rated for the voltage and frequency applied during normal operation.
- Detailed reference to any item of uncertified equipment including type, number, manufacturer, and justification for its use.
- Documentation relating to the suitability of the equipment for the area and environment to which it is exposed, e.g. T rating, Ex rating, IP rating and corrosion resistance (see AS/NZS 60079.14 for further details).
- Complete Certificates of Conformity for every item of ex-rated electrical equipment, electrical accessories, and ancillary equipment installed in the defined hazardous location.
- Documentation confirming the selection criteria for cable within the specific requirements of AS/NZS 60079.14.
- Documentation confirming the selection criteria for Cable Glands (see AS/NZS 60079.14 for further information).
- The Certificates of Conformity obtained from the provider of the equipment at the time of purchase.

### Installation documentation

- Installation instructions and technical drawings for the ex-rated equipment as provided by the manufacturer. Descriptive system document for Intrinsically Safe Systems (if applicable these documents must contain all appropriate requirements for compliance with AS 60079.14).
- The intrinsically safe documentation must provide all necessary calculations and confirm the intrinsically safe rating of equipment (e.g. Ex ib 11C T4).

Maintenance documentation

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- Records sufficient to enable the explosion protected equipment to be maintained in accordance with its • type of protection.
- Records of maintenance, overhaul, and repair of the equipment. Overhaul of ex-rated equipment shall comply with the relevant requirements of AS/NZS 3800-2005.

### Inspection checklist

Inspection schedule as per the appropriate Australian Standard for the type of protection in use.

Records of equipment selection criteria

The records must demonstrate that the selected equipment satisfies the requirements for the explosion technique being used.

### Management documentation

- A statement of identity of the person(s) having legal ownership of the installation or parts thereof and where the verification dossier is located
- A declaration of conformity signed by the person responsible stating that the documents contained in the dossier are a true and accurate description of the equipment installed in the defined hazardous location

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# Appendix G: Bulk chemical safety – Aqueous Ammonia Solution (25%)

Chemical name	Aqueous Ammonia		
Dangerous Goods (DG) / Hazardous Substance (HS)			
Hazardous classification	Metal Corrosion – Category 1 Skin Corrosion – Sub–category 1B Eye Damage – Category 1 Specific target organ toxicity (single exposure) – Category 3		
Hazard statement(s)	H290 May be corrosive to metals H314 Causes severe skin burns and eye damage H335 May cause respiratory irritation.		
ChemAlert risk color rating	Red		
Placard	AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia UN No. 2672 HAZCHEM 2R NI EMERGENCY DIAL SPECIALIST ADVICE RMT +61 8 93221711		
Training	All WTP operators and maintenance staff required to work with Aqueous Ammonia will be provided with online Aqueous Ammonia awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPEs must be used:</li> <li>chemical protective gloves e.g. rubber or PVC</li> <li>chemical protective apron</li> <li>rubber boots</li> <li>when handling liquids, wear overalls outside of boots</li> <li>chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure</li> <li>Type K (Ammonia) respirator must be used if there is a risk of inhaling the vapour. Where a higher level of inhalation risk exists, wear Self Contained Breathing Apparatus (SCBA) or an Air-line respirator.</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	Nil		

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Chemical name	Aqueous Ammonia	
Bulk storage locations	<ul><li>Caloundra St WQMF</li><li>Chambers Flat WQMF</li></ul>	<ul> <li>Gramzow Rd WQMF</li> <li>Mt Crosby - Holts Hill</li> <li>North Pine WTP</li> </ul>

### Safe storage requirement

Bulk storage asset requirements

- Any new bulk storage installations or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Segwater's Liquid Chemical System Specification (B-TMP-STD-007) and AS 3780. The storage and handling of corrosive substances.
- Where the existing assets are identified as not being compliant with Seqwater's engineering standards or • AS 3780: The storage and handling of corrosive substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

If the storage area is classified as a hazardous area, AS/NZS 60079 must be followed during the selection and installation of electrical equipment.

#### Bulk storage operational requirements

The WTP operator must make sure that:

- Only authorised person can access the bulk storage area.
- Access to the bulk storage area must be kept clear at all times.
- Good housekeeping is maintained so that no extraneous matters are kept within 3m from the storage area.
- Good ventilation is maintained.
- Alarms must be installed to detect any leaks / spillages. The detector alarm should be set at no less than • 35 ppm (STEL).
- An up-to-date SDS is readily accessible in the storage area.
- Spill kits and appropriate fire-fighting equipment is readily available.
- Storage areas are inspected as part of the operator's routine inspection.

A placard must be displayed in the vicinities of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Other chemicals:

Chemicals used by Segwater:

		<u> </u>	
•	organic acids (e.g. acetic acid)	•	may form explosive compounds with mercury,
•	inorganic acids (e.g. hydrochloric acid)		halogens, and hypochlorites.
•	metals (e.g. aluminum).	•	peroxides , metal salts , acids

Managing the risks of exposure during operational and maintenance works

Role	Responsibility
WTP operator	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (<u>PRO-02383</u>) to make sure the chemical is delivered and filled safely at Seqwater workplace.</li> </ul>
	<ul> <li>Any routine works that do not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>
	Follow the SDS to clean up any small spills.
	<ul> <li>Follow the site IERP and SDS to respond any large spills.</li> </ul>

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Role	Responsibility		
Maintenance worker	• A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance works to be carried out in the bulk storage area.		
	• The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.		
	<ul> <li>Appropriate PPE must be used and worn properly.</li> </ul>		
All workers	Chemical splash goggles must be worn at all times while inside a bund.		

### Safe manufacturing requirement

#### Manufacture

Should Seqwater decide to manufacture Aqueous Ammonia from Anhydrous Ammonia the following must be complied with

- A work instruction must be developed and followed for manufacturing Aqueous Ammonia from Anhydrous Ammonia.
- Appropriate PPE specified in the work instruction must be used and worn properly as pipes may be cold • or frozen.
- If leaks or spills are detected follow the site IERP. •

## Warning: Decanting Aqueous Ammonia from a bulk storage tank is prohibited at Seqwater.

## **Disposal requirement**

#### Instruction

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Contaminated containers and equipment must only be washed down the in the designated area.
- Contact the licenced waste transporter to arrange the disposal. •
- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496) •
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy to • waste@seqwater.com.au

#### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – Aqueous Ammonia	Active	TRIM Ref: D15/186680
Operating Procedure – Receiving Bulk Chemicals	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Aqueous Ammonia at a WTP	Active	Q-Pulse & Waternet
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse & Waternet
AS 3780 The storage and handling of corrosive substances.	Active	www.saiglobal.com/online

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# Appendix H: Bulk chemical safety – Chlorine Gas

Chemical name	Aqueous Ammonia		
Dangerous Goods (DG) / Hazardous Substance (HS)			
Hazardous classification	Oxidising Gases - Category 1 Gases under pressure - Liquefied Gas Skin Irritation - Category 2 Eye Irritation - Category 2A Acute Inhalation Toxicity - Category 3 Specific target organ toxicity (single exposure) - Category 3 Acute Aquatic Toxicity - Category 1		
Hazard statement(s)	<ul> <li>H270 May cause or intensify fire; oxidizer</li> <li>H280 Contains gas under pressure; may explode if heated</li> <li>H315 Causes skin irritation</li> <li>H319 Causes serious eye irritation</li> <li>H331 Toxic if inhaled</li> <li>H335 May cause respiratory irritation</li> <li>H400 Very toxic to aquatic life.</li> </ul>		
ChemAlert risk color rating	Red		
Placard (50 liter or above)	CHLORINE UN NO. 1017 HAZCHEM 2XE		
Training	<ul> <li>The following chlorine gas related training must be completed prior to commencing work.</li> <li>For any WTP Operator and any other worker who is involved in connecting or disconnecting chlorine storage and dossing systems, NWP277A - Work safely with liquefied chlorine gas or NWPTRT013 - Operate and control liquefied chlorine gas disinfection.</li> <li>For any worker who works directly on chlorine gas storage and dosing systems, NWP277A or NWPTRT013 or other training that is equivalent.</li> <li>For any workers who work in an area that has chlorine gas, but they do not need to work directly on chlorine storage and dosing systems, chlorine awareness training.</li> <li>For any other workers or visitors who access a workplace that has chlorine gas on-site, the relevant workplace induction.</li> <li>In addition, any worker who is required to wear a self-contained breathing apparentum (SCRA)</li> </ul>		



Chemical name	Aqueous Ammonia		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>chemical protective gloves (long) e.g. rubber or PVC</li> <li>coveralls</li> <li>safety boots</li> <li>chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure. Note - a face shield and goggles are not required if a reticulated airline respirator or SCBA is worn.</li> <li>a reticulated airline respirator or breathing apparatus (BA) must be used if there is a risk of inhaling the vapour or mists.</li> <li>during an emergency e.g. gas leak, wear a SCBA. Note: SCBA must conform to AS/NZS 1716 and be of the positive-pressure, air-supplied type and have a nominal effective life of at least 25 minutes. Face masks shall be fitted with speech diaphragms or other means of verbal communication.</li> </ul>		
Medical requirements	Any person engaged or about to be engaged to undertake work in an area where chlorine gas is stored, handled or used must undergo a pre-employment medical assessment in accordance with the Seqwater Health Monitoring and Immunisations Procedure ( <u>PRO-00020</u> ). Any person who has a history of asthma or respiratory disease must not be required to perform work in any area where exposure to chlorine gas could occur.		
Other requirement e.g. air monitoring, plume modeling	8hr TWA: 0.5 ppm (part per million) or 1.5 mg/m3 STEL (15 minutes): 1 ppm or 3 mg/m3 A plume modelling study may be conducted where recommended by a risk assessment.		
Bulk storage locations - 920 Kg drum	<ul> <li>Alexandra Hill Reservoir</li> <li>Image Flat WTP</li> <li>Kilcoy WTP</li> </ul>	<ul> <li>Capalaba WTP</li> <li>Landers Shute WTP</li> <li>North Stradbroke Island WTP</li> </ul>	<ul> <li>Ewen Maddock WTP</li> <li>Lowood WTP</li> <li>Banksia Beach WTP (currently offline)</li> </ul>
Minor storage locations – 70 Kg cylinder	<ul><li>Amity Point WTP</li><li>Dunwich WTP</li><li>Kooralbyn WTP</li></ul>	<ul><li>Beaudesert WTP</li><li>Esk WTP</li><li>Rathdowney WTP</li></ul>	<ul> <li>Canungra WTP</li> <li>Heinemann Road Res 1, 2 and 3</li> <li>Point Lookout WTP</li> </ul>

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## Chlorination system and installations safety requirements

Chlorination facility and installations requirements

- Any new chlorination systems, or existing assets undergoing refurbishment or expansion, must be designed and constructed in accordance with the requirements of Segwater's Chlorine Gas System Specification (B-TMP-STD-009) and AS 2927: The storage and handling of liguefied chlorine gas.
- Appropriate locations of the chlorine gas storage and installations must be selected and adequate separation and segregation must be maintained in accordance with AS 2927: The storage and handling of liquefied chlorine gas.
- As a minimum the following safety systems and equipment must be considered as part of the installation:
  - chlorine gas leak detector and alarm system. Alarms shall be visible and audible (to the local area).automatic shut-off equipment
  - ventilation system
  - a wind direction indicator (yellow wind sock)
  - emergency response equipment e.g safety shower and eyewash station and spill kit etc.

Where existing assets are identified as not being compliant with Segwater's engineering standards or AS 2927: The storage and handling of liquefied chlorine gas, a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

Chlorination system operational requirements

The operator must make sure that:

- The chlorination facility is kept secure at all times (locked). Only authorised persons can access the • storage area.
- Access to the storage area must be kept clear at all times.
- Good housekeeping is maintained to ensure no extraneous matters are kept within 3m from the storage • area.
- An up-to-date SDS is readily accessible in the storage area.
- The storage area is kept clear of any sources of ignition, heat or incompatible materials. All manifolded containers shall be maintained at the same temperature.
- Leak alarms must be continuously monitored in the control room or through telemetry e.g. SCADA to offsite manned control centres.
- Sufficient lighting is provided to a level that enables a person to easily read the markings on • the containers, signs, instruments and other necessary items.
- A placard must be displayed in the vicinities of the storage area.
- A minimum of two SCBAs are available. One of the SCBAs must be kept at least 10m away from the chlorine installation, upwind of the most prevalent wind direction, while the other is kept in the control room or carried by an on call Operator or Maintenance Officer. Whenever an SCBA that is kept for emergency purposes is used, the cylinder must be refilled.
- All safety and emergency equipment, such as spill kits and fire-fighting equipment, must be stored in a • readily accessible location adjacent to, but not inside, any room where chlorine cylinders or drums are stored or connected to.
- Portable chlorine gas detector must be readily available to the Operator or Maintenance Officer.

Drum sites:

A hazardous chemical manifest must be installed and maintained. A copy must be located at the front gate for emergency services.

Cylinder sites:

- Cylinders must be stored below 45°C.
- Cylinders must be stored in an upright position and restrained to prevent cylinders from falling.
- Scales must be provided to identify the weight of chlorine left in the cylinders.
- The empty chlorine gas cylinder must be taken off-line and an empty sign displayed.

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#### Chlorination system inspection requirements

The following inspections in relation to the chlorine installations shall be regularly conducted by the Operators to ensure they are safe and operating as required:

- a daily inspection for leaks
- a weekly leak detector and alarm system and shut-off system check by holding a weak source of chlorine • near the air sample inlet
- a monthly inspection of both general and safety equipment.

Records of all inspections, including the inspectors name and the date of inspection must be maintained in the log book. Inspection records must be kept for at least 2 years.

Note: the leak detector and alarm system of chlorination system at Alexandra Hill Reservoir and Heinemann Road Res 1, 2 and 3 are inspected weekly by maintenance officers.

#### Chlorination system maintenance requirements

The chlorination system, including its safety equipment and systems, must be regularly tested, calibrated and maintained to ensure they are in an operational state. These include, but are not limited to:

- Gas detector and alarms- the chlorine gas leak detector should be calibrated to alarm at the chlorine gas • concentration of 1 ppm or 3 mg/m3 at the detector head.
- Automatic shut-off equipment (known as "Chlorguard")
- Ventilation system shall be maintained in accordance with AS 1668.2. •
- Safety shower and eye wash station •
- SCBA Whenever a SCBA is used, the cylinder must be refilled, even if it was only used for a short time. •
- Personal gas detector.

Maintenance must be undertaken by competent persons in accordance with manufacturer or supplier requirements.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:		Other chemicals:		
•	Ammonia	Corrosive to some metals in the presence of		
•	Combustible materials e.g. petrol and oil	moisture e.g. brass, copper, lead, nickel, steel		
•	Reducing agents e.g. ascorbic acid			

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Managing the risks of exposure during operational and maintenance works			
Role	Responsibility		
Engaging officer	• Only engage workers to perform work activities on Seqwater chlorination facility that are appropriately trained and competent in performing the work activities and have completed all required inductions e.g. Seqwater contractor induction and workplace induction.		
	• Review all work planning and risk management documentation for the work activity being performed by workers they have engaged.		
	<ul> <li>Identify and coordinate the site access and isolation requirement in consultation with the relevant site access officer and workers.</li> </ul>		
	• Complete workplace monitoring activities to verify workers they have engaged are complying with work planning and risk management documentation.		
Operators	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (PRO-02383)</li> </ul>		
	Follow the Connecting and Disconnecting Chlorine Gas Container Work Instruction ( <u>PRO-01012</u> ).		
	• Any routine and non-hazardous work that does not involve exposure to the chlorine gas must be conducted as per the relevant work instruction and/or pre-approved JSEA/SWMS.		
	• Follow the safe entry rule outlined below when entering a chlorine gas storage area.		
	• Appropriate PPE as required by the work instructions and JSEA/SWMS must be worn.		
	• Effective communication must be maintained between the operator who enters and works in the chlorine gas storage and the Duty Operator or the trained standby person.		
	Follow the site IERP to respond any chlorine incidents e.g. leaks or fire.		
Workers directly involved in maintenance work or construction work	• A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the chlorination area.		
	• Requirements identified in the SDS, chemical risk assessment and the safety precautions outlined in AS 2927: The storage and handling of liquefied chlorine gas (S 5.10) must be considered in the JSEA/SWMS.		
	• A minimum of two workers is required where there is a risk of exposure to chlorine.		
	• Follow Seqwater's Permit Access and Safety System (PASS) to identify and implement site access and isolation requirements.		
	• Safe entry rules outlined below must be followed to enter a chlorine gas storage area.		
	• Before commencing work at a chlorine installation, PPE, safety showers, eye wash stations, first aid kits and fire-fighting equipment must be checked to make sure they are in a serviceable condition.		
	Appropriate PPE must be used and worn properly.		
	• Only use materials that are suitable for use with chlorine. A list of these materials is provided in the Appendix F in AS 2927: The storage and handling of liquefied chlorine gas.		

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Role	Responsibility	
Workers involving in routine non-hazardous work e.g. inspection or engineering assessment etc.	<ul> <li>A JSEA/SWMS must be developed and appropriate controls implemented.</li> <li>PASS requirements must be followed.</li> <li>Safe entry rules outlined below must be followed to enter a chlorine gas storage area.</li> <li>Appropriate supervision is provided where required.</li> </ul>	
	• Follow any instructions from the Duty Operator and the Engaging Officer.	
All other workers	<ul> <li>A JSEA/SWMS must be developed and appropriate controls implemented.</li> <li>PASS requirements must be followed.</li> <li>Safe entry rules outlined below must be followed to enter a chlorine gas storage area.</li> </ul>	

## Warning: Decanting Chlorine Gas from a bulk storage tank is prohibited in Seqwater.

### Safety Entry Requirements

Entry

- No person shall enter a chlorination facility without the Duty Operator or an Operator first making sure that a safe working environment exists within the chlorination facility.
- Prior to entry into a chlorine facility, mechanical ventilation must be operated for several minutes. If mechanical ventilation is not installed, the door to the chlorine gas facility must be left open for several minutes prior to entry.
- At all times during occupancy the ventilation system (mechanical or natural) must be in operation and the door into the facility must be latched open.

#### Safe transporting and handling requirement

Transportation in a vehicle

- Seqwater do not transport any chlorine gas drums and cylinders in Seqwater vehicles regardless of whether the drums or cylinders are full or empty. All transportation must be carried out by the relevant chemical suppliers.
- The route the chlorine gas delivery truck is able to take on an Seqwater workplace and any associated Seqwater traffic requirement must be communicated with the truck driver.

#### Handling

Cylinders must be:

- moved using a suitable trolley that have been designed to hold cylinders securely in place by a chain or clamp
- hoisted using a properly constructed cradle (note: a rope, wire or webbing sling is not a suitable substitute for a cradle)
- lifted at the correct point (not by the valve or valve-protection cap)

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- moved or handled in a manner that will not cause any damage to the cylinder
- moved or handled in a manner that eliminates or controls any manual handling risks.

Drums must:

- only be moved by a crane, hoist or fork lift truck that is fitted with a lifting beam specifically designed for the task, having a lifting capacity greater than the load to be lifted. Such a device must have sufficient clearance to lift the drum over the top of another drum onto the tray of the delivery vehicle.
- be moved by using the lifting equipment that have the current service / testing tags on and the lifting equipment must be checked by a competent person before use.

Rev. no. 10



Corporate Safety – Procedure Hazardous Chemicals		Sequater For Life	
only be moved by competent person under the supervision from a secondary observer.			
Safe connecting and disconnecting requirement			
Connecting and disconnecting			
Follow the Connecting and Disconnecting Chlorine Gas Containe	er Work Ins	struction ( <u>PRO-01012</u> ).	
• Inspect the state of the external container at the time of delivery, vehicle, for signs of damage and corrosion.	before it is	transferred from the delivery	
Containers having different capacities must not be connected to	the same r	nanifold for simultaneous use.	
All manifolded containers must be put into service and changed	over simult	aneously.	
• Inspect the valve face when connecting the new cylinder, check	that it is fla	t, even and clean.	
<ul> <li>If any concerns are identified during receipt or connection of the process, photograph the points of concern, and contact the Supe immediately then report the potential hazard to Seqwater's incide</li> </ul>	chlorine ga ervisor and ent hotline	is drum, discontinue the chlorine gas supplier on 3270 4040.	
Disposal requirement			
Chemicals being disposed of (including any contaminations colle labelled properly.	ected in spi	ll kits) must be stored and	
Contaminated equipment and PPE must only be washed down in	n the desig	nated area.	
Contact the relevant chemical suppliers to arrange the disposal of	of any dam	aged drums and cylinders.	
Contact the licenced waste transporter to arrange the disposal or equipment.	f contamina	ated materials e.g. soil and	
Follow the Regulated and Trackable Waste Management Process	dure ( <u>PRO-</u>	<u>01496</u> ),	
Obtain the Waste Transport Certificate from the waste transporte waste@seqwater.com.au	er and prov	ide an electronic copy to	
Supporting documents and references		1	
Description	Status	Location	
Hazardous Chemical Risk Assessment – Chlorine Gas	Active	TRIM - D15/186666	
Connecting and Disconnecting Chlorine Gas Container Work Active Q-Pulse & Waternet Instruction (PRO-01012).		Q-Pulse & Waternet	
Chlorine Gas System Specification (B-TMP-STD-009) Active Q-Pulse			
Operational Sites – Receiving Bulk Chemicals Procedure         Active         Q-Pulse & Waternet           PRO-02383         PRO-02383			
Site specific work instructions developed for any works that relate to Chlorine Gas at a WTPActiveQ-Pulse			
Site specific Incident and Emergency Response Plans (IERPs) Active Q-Pulse			
AS 2927: The storage and handling of liquefied chlorine gas. Active www.saiglobal.com/online			

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# Appendix I: Bulk chemical safety – Fluoride

Chemical name	Fluoride		
Chemical name	Fluoride – Sodium Fluorosilicate and Sodium Fluoride		
Dangerous Goods (DG) / Hazardous Substance (HS)	DG 🛛 HS 🖂		
Hazardous classification	Acute Oral Toxicity – Category 3 Acute Dermal Toxicity – Category 3 Acute Inhalation Toxicity – Category 3		
Hazard statement(s)	H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.		
ChemAlert risk color rating	Amber		
Placard	SODIUM FLUOROSILICATE UN NO. 2674 HAZCHEM 2Z SODIUM FLUORIDE UN NO. 1690 HAZCHEM 2Z		
Training	All WTP operators must complete the unit of competency of NWPTRT012 - Operate and Control Fluoride Addition Process or equivalent. All other workers and visitors who need to access and work in the Fluoride buildings and areas must complete the Fluoride Awareness Training prior to the entry.		
Other requirements e.g. health monitoring and air monitoring	<ul> <li>Each employee required to work in the fluoride area is entitled to undergo health monitoring. This will include:</li> <li>baseline fluoride monitoring before beginning work within the fluoride area</li> <li>a follow up fluoride health monitoring after the first six months; and then</li> <li>ongoing health monitoring once every twelve months.</li> <li>Seqwater will arrange for air monitoring of the fluoride work environment for the first six months of operation of a fluoride facility to monitor dust concentration in the environment. Where the dust levels are within the requirements of the <i>Code of Practice for Fluoridation of Public Water Supplies (Qld)</i> monitoring will be continue once every 3 years.</li> </ul>		

Rev. no. 10

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Chemical name	Fluoride		
	<ul> <li>Forklift operations in fluoride work area</li> </ul>	<ul> <li>Half mask respirator with P2 cartridge filter or P2 disposable respirator.</li> <li>Dust-proof goggles for all forklift operations othe than spill clean-up.</li> <li>Safety Boots.</li> </ul>	
PPE requirement	All tasks involving loading, unloading and handling of fluoride products	<ul> <li>Dust-proof goggles</li> <li>Impervious rubber gloves</li> <li>Full suite disposable overalls</li> <li>Impervious rubber boots</li> <li>Full face hood and air filter unit with type P3/P2 respiratory filters as per AS/NZS 1715:1994.</li> <li>At high dust levels, a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter.</li> </ul>	
	Entering the fluoride work area	<ul> <li>Safety boots</li> <li>Other PPE identified in the JSEA/SWMS for the task.</li> </ul>	
Bulk bag storage locations (Sodium Fluorosilicate)	<ul> <li>Capalaba WTP</li> <li>Image Flat WTP</li> <li>Landers Shute WTP</li> <li>Lowood WTP</li> </ul>	<ul> <li>Mt Crosby - Holts Hill</li> <li>Molendinar WTP</li> <li>Mudgeeraba WTP</li> </ul>	<ul> <li>NSI WTP</li> <li>Noosa WTP</li> <li>North Pine WTP</li> <li>Petrie WTP</li> </ul>
Saturator fluoridation locations (Sodium Fluoride)	<ul> <li>Beaudesert WTP</li> <li>Amity Point WTP</li> <li>Dunwich WTP</li> <li>Point Lookout</li> </ul>	<ul> <li>Dayboro WTP</li> <li>Lowood WTP</li> <li>Esk WTP</li> <li>Banksia Beach WTP</li> </ul>	<ul><li>Kalbar WTP</li><li>Kooralbyn WTP</li><li>Canungra WTP</li></ul>

#### Safe storage requirement

Fluoridation room and dosing facility (the fluoride building, hopper and batch tank) asset requirements

Any new fluoridation room and dosing facility or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Segwater's Fluoride System Specification (B-TMP-STD-010), Code of Practice for Fluoridation of Public Water Supplies (Qld) and AS 4452: The storage and handling of toxic substances.

Where existing assets are identified as not being compliant with Seqwater's engineering standards, Code of Practice for Fluoridation of Public Water Supplies (Qld) or AS 4452: The storage and handling of toxic substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

Package or minor storage asset requirements

- Stores shall be located on a floor that has immediate access from outside the building. At least two means • of access shall be provided to stores which have a floor area exceeding 25 m<sup>2</sup>.
- Stores shall be constructed of non-combustible materials that are resistant to attack by the chemical being • kept.
- Stores shall be adequately ventilated by either natural or mechanical means, so as to prevent accumulation of any harmful dusts or vapours.
- The storage must be in an operational bund area.
- Appropriate lighting shall be provided.



- Spill retention and collection measures shall be provided at places where packages are to be opened and their contents transferred or used.
- A supply of water shall be available nearby, for emergency use.
- A safety shower and eye wash station must be installed in accordance with the AS 4775: Emergency eyewash and shower equipment.

A placard must be displayed in the vicinities of the storage area.

#### **Operational requirements**

The WTP operator must make sure that:

- Only authorised person can access the storage area.
- The fluoridation room and dosing facilities and storage area must be secured or locked.
- Access to the storage area must be kept clear at all times. ٠
- Good housekeeping is maintained so that no extraneous matters are kept within 3m from the storage • area.
- The storage of fluoride must:
  - be in the area allocated for fluoride storage this may be pallet racks or marked out areas within the fluoride work area
  - be at ambient room temperature conditions, namely 15 25 degrees, away from direct sunlight and secured to prevent from exposure to moisture.
  - not be double stacked on the pallet unless on appropriate pallet racks designed for this purpose.
  - be securely stored or suitably restrained from falling
  - be opened only in appropriately ventilated areas
  - be kept securely closed or shrink wrapped when not in use.
- Empty fluoride product bags must be stored in a lidded container in a designated place within the fluoride • work area until removed by the supplier.
- Any spills or leaks shall be cleaned up immediately, and disposed of in accordance with the SDS.
- An up-to-date SDS is readily accessible in the storage area. •
- Spill kits, appropriate clean up tools and fire-fighting equipment are readily available. •
- Storage areas are inspected as part of the operator's routine inspection.

A placard must be displayed in the vicinity of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:	Other chemicals:
Acids	Aluminium
Oxidising agents	Magnesium
	Cyanides



Role	Responsibility		
WTP operator	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (<u>PRO-02383</u>) so that the chemical is delivered and received safely at Seqwater workplace.</li> </ul>		
	<ul> <li>Operate the forklifts within the safety parameters and follow the relevant safety requirement.</li> </ul>		
	<ul> <li>Follow the WTPs – Loading Sodium Fluorosilicate Bulk Bag Unit and Filling Storage Hopper Work Instruction (PRO-00911).</li> </ul>		
	<ul> <li>Follow the WTPs – Fluoride Equipment Clean Down Work Instruction (PRO- 00912).</li> </ul>		
	<ul> <li>Any routine works that do not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>		
	Follow the SDS to clean up any small spills.		
	<ul> <li>Follow the site IERP and SDS to respond any large spills.</li> </ul>		
Maintenance worker	• A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance works to be carried out in the storage area.		
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>		
	Appropriate PPE must be used and worn properly.		
	<ul> <li>Place signage and barriers to limit access to the area during the maintenance process.</li> </ul>		
Contractor	<ul> <li>Follow the WTPs – Contractors Working on Fluoridation Plant Procedure (PRO-00922).</li> </ul>		

#### Managing the risks of exposure during operational and maintenance works

#### Safe Transport

Transporting

- When transporting the fluoride to another workplace, the quantity of the fluoride carried must be no more • than 1000 kg.
- Transporting the fluoride bulk bag (1000 kg) between worksites by a Seqwater vehicle is prohibited. •
- WTPs Saturator Fluoridation Plant Transporting 25kg Sodium Fluoride bags from Distribution Centre • to WTP Work Instruction (PRO-00979) must be followed when transport 25kg fluoride bags.
- Appropriate PPE specified in the work instruction must be used and worn properly. •
- A suitable trolley that has been designed for these tasks is to be used. •
- The chemical containers must be appropriately secured when transporting. •
- Incompatible chemicals must not be transported in the same vehicle. •
- A SDS must be carried within the vehicle transporting the chemical. •

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### Safe handling

#### Handling the chemical

- A JSEA/SWMS must be developed and followed for moving and handling fluoride.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly.
- A suitable trolley must be used that has been designed to hold the container securely in place without rupturing the container.
- Avoid generating and breathing dust or vapour; perform the work in a well-ventilated area.
- Avoid physical damage to containers to prevent contact and spills.
- Handle and open containers with care.
- When handling, **DO NOT** eat, drink or smoke.
- Means of access to the areas where Fluoride is moved or handled shall be kept clear at all times.

### Safely exiting the work area and removing PPE

Moving and handling the chemical

- Wash hands with gloves on.
- Clean down boots in unloading area bund
- Remove PPE as operators remove their disposable overalls they should turn the arms and legs and then finally the whole suite inside out so that further contact with overalls will only occur with an uncontaminated surface.
- Dispose of disposable overalls in bin provided lid must be on bin when not in use.
- Wet wipe down air filter unit and hood to remove any product residue.
- Dispose of wet wipes in bin provided.
- Wash gloves.
- Place filter pack battery onto charge (where required).
- Store cleaned PPE in area provided.

#### **Disposal requirement**

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Empty fluoride bags / containers and removed PPE must be kept in the designated bins provided.
- Empty fluoride bags / containers will be collected by the fluoride suppliers.
- Contaminated containers and equipment must only be washed down the in the designated area.
- Contact the licenced waste transporter to arrange the disposal.
- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496)
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy to waste@seqwater.com.au

### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – Fluoride	Active	TRIM – D15/186673
Operating Procedure – Receiving Bulk Chemicals	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Fluoride at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse
PRO-00911 WTPs – Loading Sodium Fluorosilicate Bulk Bag Unit and Filling Storage Hopper Work Instruction	Active	Q-Pulse & Waternet

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Description	Status	Location
PRO-00912 WTPs – Fluoride Equipment Clean Down Work Instruction	Active	Q-Pulse & Waternet
PRO-00914 WTPs – Handling and Disposal of Empty Fluoride Bags Work Instruction	Active	Q-Pulse & Waternet
PRO-00920 WTPs - Dry Fluoride Spill Cleanup Work Instruction	Active	Q-Pulse & Waternet
PRO-00921 WTPs - Wet Fluoride Spill Cleanup	Active	Q-Pulse & Waternet
PRO-00922 WTPs - Contractors Working on Fluoridation Plant Procedure	Active	Q-Pulse & Waternet
PRO-00979 WTPs – Saturator Fluoridation Plant – Transporting 25kg Sodium Fluoride bags from Distribution Centre to WTP Work Instruction	Active	Q-Pulse & Waternet
Code of Practice for Fluoridation of Public Water Supplies (Qld	Active	Q-Pulse
AS 4452 The storage and handling of toxic substance	Active	www.saiglobal.com/online

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# Appendix I: Bulk chemical safety – Hydrochloric Acid Solution

Chemical name	Hydrochloric Acid Solution		
Dangerous Goods (DG) / Hazardous Substance (HS)	DG 🖂 HS 🖂		
Hazardous classification	Corrosive to Metals – Category 1 Skin Corrosion – Sub–category 1B Eye Damage – Category 1 Specific target organ toxicity (single exposure) – Category 3		
Hazard statement(s)	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage. H335 May cause respiratory irritation.		
ChemAlert risk color rating	Red		
Placard	HYDROCHLORIC ACID UN NO. 1789 HAZCHEM 2R		
Training	All WTP operators and maintenance staff required to work with Hydrochloric Acid will be provided with online Hydrochloric Acid awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>Chemical protective gloves e.g. rubber or PVC.</li> <li>Chemical protective apron.</li> <li>Safety footwear or gumboots.</li> <li>Chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure.</li> <li>A full-face Type B (Inorganic and Acid gas) respirator must be used if there is a risk of inhaling the vapour or dust mists.</li> <li>At high vapour levels, an air-line respirator.</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	8hr TWA: 5PPM / 7.5mg/m3 <ul> <li>STEL: Not Available</li> </ul>		
Bulk storage locations	<ul> <li>Capalaba WTP</li> <li>Image Flat WTP</li> <li>Kilcoy WTP</li> <li>Landers Shute WTP</li> <li>Lowood WTP</li> <li>Mudgeeraba WTP</li> <li>North Stradbroke Island WTP</li> <li>Noosa WTP</li> <li>North Pine WTP</li> </ul>		
Safe storage requiremen	t		



Any new bulk storage installations or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Seqwater's Liquid Chemical System Specification (B-TMP-STD-007) and AS 3780: The storage and handling of corrosive substances.

Where the existing assets are identified as not being compliant with Segwater's engineering standards or AS 3780: The storage and handling of corrosive substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

Package or minor storage asset requirements

- The storage areas must be covered or coated with acid resistant material.
- The containers must be stored in a bund, with containers secured and not able to fall over or out of the bund.
- Adequate ventilation must be provided and maintained.

A safety shower and eye wash station must be installed in accordance with the AS 4775: Emergency eyewash and shower equipment.

Storage operational requirements

The WTP operator must make sure that that:

- Only authorised person can access the storage area.
- Access to the storage area must be kept clear at all times.
- Good housekeeping is maintained so that no extraneous matters is kept within 3m from the storage area. •
- Hydrochloric Acid must be stored in the original containers and the containers securely sealed. •
- An up-to-date SDS is readily accessible in the storage area. •
- Spill kits and appropriate fire-fighting equipment are readily available. •
- Storage areas are inspected as part of the operator's routine inspection.

A placard must be displayed in the vicinities of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:

Other chemicals:

- Metals e.g. zinc, iron, cooper etc.
- Oxidising agents e.g. potassium permanganate •
- Sodium Hypochlorite
- Cyanides

Alkalis

Vanaging the risks of exposure during operational and maintenance works		
Role	Responsibility	
WTP operator	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (<u>PRO-02383</u>) to make sure the chemical is delivered and filled safely at Seqwater workplace.</li> </ul>	
	<ul> <li>Any routine works that does not involve exposure to the chemical must be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>	
	Follow the SDS to clean up any small spills.	
	Follow the site IERP and SDS to respond to any large spills.	

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Role	Responsibility
Maintenance worker	<ul> <li>A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the bulk storage area.</li> </ul>
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>
	Appropriate PPE must be used and worn properly.
All workers	• Chemical splash goggles must be worn at all times while inside a bund.

### Safe decanting

## Warning: Decanting Hydrochloric Acid from a bulk storage tank is prohibited in Seqwater.

#### Prior to decanting

- A JSEA/SWMS must be developed and followed for decanting Hydrochloric Acid from the storage • container.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly. •
- Decanting must be carried out in a well-ventilated area. •
- Only decant into suitable, cleaned containers that are devoid of materials or liquids (must be washed at • least 3 times with clean water).
- DO NOT use mild steel or galvanised containers.

### Decanting

- Position container to prevent it from moving.
- Where required, use a suitable medium as a funnel for pouring to prevent spills. •
- The decanted containers must be properly labelled and stored in a cool, dry, well-ventilated area.

### Safe Transport

#### Transporting

- When transporting the decanted chemical containers to another workplace, the quantity of the chemical carried must be no more than 500 litres.
- The chemical containers must be appropriately secured when transporting.
- Incompatible chemicals must not be transported in the same vehicle. •
- A SDS must be carried within the vehicle transporting the chemical.



### Safe handling and pouring

#### Moving and handling the chemical containers

- A JSEA/SWMS must be developed and followed for moving and handling Hydrochloric Acid.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly. •
- Use a suitable trolley that been designed to hold the container securely in place without rupturing the container.
- When using a crane or hoist, a properly constructed cradle shall be used. •
- Avoid generating and breathing mist and vapour; perform the work in a well-ventilated area. •
- Avoid physical damage to containers to prevent contact and spills. •
- Handle and open any containers with care.
- WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material. •
- When handling **DO NOT** eat, drink or smoke. •
- Means of access to the areas where Hydrochloric Acid is moved or handled shall be kept clear at all times.

#### Pouring

- A JSEA/SWMS must be developed and followed for pouring Hydrochloric Acid.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly. •
- Only authorised personnel are allowed in the area used for pours.
- When pouring, appropriate manual handling techniques as documented in the JSEA/SWMS must be • followed.
- The operator must be able to maintain a safe position and secure their footing.
- Always wash hands with soap and water after handling. Work clothes should be laundered separately. •

#### Disposal requirement

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Contaminated containers and equipment must only be washed down in the designated area.
- Contact the licenced waste transporter to arrange disposal. •

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- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496)
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy towaste@seqwater.com.au

#### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – Hydrochloric Acid	Active	TRIM – D15/186666
Operational Sites – Receiving Bulk Chemicals Procedure (PRO-02383)	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Hydrochloric Acid at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse



# Appendix K: Bulk chemical safety – Potassium Permangante

Chemical name	Potassium Permangante		
Dangerous Goods (DG) / Hazardous Substance (HS)			
Hazardous classification	Oxidising solids – Category 2 Acute Oral Toxicity – Category 4 Acute Aquatic Toxicity – Category 1 Chronic Aquatic Toxicity – Category 1		
Hazard statement(s)	H272 May intensify fire; oxi H302 Harmful if swallowed	dizer. J.	
ChemAlert risk color rating	Amber		
Placard	POTASSIUM PERMANGANATE UN NO. 1490 HAZCHEM 1Y	E OXIDIZING AGENT 5.1	
Training	All WTP operators and maintenance staff required to work with Potassium Permanganate will be provided with online Potassium Permanganate awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>Impervious gloves.</li> <li>Chemical protective apron.</li> <li>Safety footwear or gumboots.</li> <li>Chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure.</li> <li>Dust mask (dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716).</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	• N/A		
Bulk storage locations	<ul><li>Landers Shute WTP</li><li>Lowood WTP</li></ul>	<ul> <li>Mt Crosby – Westbank WTP</li> <li>Molendinar WTP</li> </ul>	<ul> <li>Mudgeeraba WTP</li> <li>Noosa WTP</li> <li>North Pine WTP</li> <li>Petrie WTP</li> </ul>

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### Safe storage requirement

Bulk storage asset requirements

- Any new bulk and package storage installations, or existing assets undergoing refurbishment or expansion, must be designed and constructed in accordance with the requirements of Segwater's Powders (Polymer, Potassium, Permanganate, and Soda Ash) Specification (B-TMP-STD-008) and AS 4326: The storage and handling of oxidizing agents.
- Where the existing assets are identified as not being compliant with Segwater's engineering standards or AS 4326: The storage and handling of oxidizing agents a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

#### Storage operational requirements

The WTP operator must make sure that:

- Only authorised person can access the storage area.
- Access to the storage area must be kept clear at all times. •
- Good housekeeping is maintained so that no extraneous matters are kept within 3m from the storage • area.
- Sufficient luminance / lighting shall be available in areas where people are working. This shall be to a level so as to enable a person to easily read all markings on packages, signs, instruments and other necessary items.
- The storage of Potassium Permanganate containers must:
  - be kept on non-combustible surfaces that are not liable to attack or damage by the contents if spilt
  - be securely stacked or suitably restrained from falling
  - be kept at least 3 m away from sources of heat
  - be opened only in appropriately ventilated areas
  - be kept securely closed when not in use.
- All potential sources of heat and fire shall be excluded from within 3m of any opening to an oxidizing agent store.
- An up-to-date SDS is readily accessible in the storage area.
- Spill kits and appropriate fire-fighting equipment are readily available. •
- Storage areas are inspected as part of the operator's routine inspection. •
- A placard must be displayed in the vicinities of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:	Other chemicals:	
Combustible materials	<ul> <li>Strong reducing agents, organic compounds and metals.</li> </ul>	

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### Managing the risks of exposure during operational and maintenance works

Role	Responsibility	
WTP operator	Follow the Operational Sites – Receiving Bulk Chemicals Procedure ( <u>PRO-02383</u> ) to make sure the chemical is delivered and filled safely at Seqwater workplace.	
	<ul> <li>Any routine work that does not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>	
	Follow the SDS to clean up any small spills.	
	Follow the site IERP to respond any large spills.	
Maintenance worker	<ul> <li>A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the bulk storage area.</li> </ul>	
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>	
	Appropriate PPE must be used and worn properly.	
All workers	• Chemical splash goggles must be worn at all times while inside a bund.	

### Safe handling and pouring

Moving and handling the chemical containers

- A JSEA/SWMS must be developed and followed for moving and handling Potassium Permanganate.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly. •
- A suitable trolley that been designed to hold the container securely in place without rupturing the • container.
- Avoid generating and breathing dust and vapour, perform work in a well-ventilated area. •
- Avoid physical damage to containers to prevent contact and spills. •
- Handle and open any containers with care.
- When handling, **DO NOT** eat, drink or smoke. •
- Means of access to the areas where Potassium Permanganate is moved or handled shall be kept clear at • all times.

#### Pouring

- A JSEA/SWMS or work instruction must be developed and followed for pouring Potassium Permanganate.
- Appropriate PPE specified in the JSEA/SWMS or work instruction must be used and worn properly.
- Only authorised personnel are allowed in the area used for pours. •

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- Appropriate manual handling techniques must be followed when pouring. •
- The operator must be able to maintain a safe position and have secure footing. •
- Always wash hands with soap and water after handling. Work clothes should be laundered separately.



#### **Disposal requirement**

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Contaminated containers and equipment must only be washed down in the designated area. •
- Contact the licenced waste transporter to arrange disposal. •
- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496) •
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy • towaste@seqwater.com.au

### Supporting documents and references

Status	Location
Status	Location
Active	TRIM – D15/186668
Active	Q-Pulse & Waternet
Active	Q-Pulse
Active	Q-Pulse
Active	www.saiglobal.com/online
	Status Status Active Active Active Active Active Active

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# Appendix L: Bulk chemicals safety – Sodium Hydroxide Solution (Caustic Soda)

Chemical name	Sodium Hydroxide Solutio	n (Caustic Soda)	
Dangerous Goods (DG) / Hazardous Substance (HS)	DG 🖂 HS 🖂		
Hazardous classification	Metal Corrosion – Category 1 Skin Corrosion – Sub–category 1A Eye Damage – Category 1		
Hazard statement(s)	H290 May be corrosive to H314 Causes severe skin	metals burns and eye damage.	
ChemAlert risk color rating	Red		
Placard	SODIUM HYDROXIDE SOLUTION	CORROSIVE 8	
	UN NO. 1824		
	HAZCHEM 2R		
Training	All WTP operators and maintenance staff required to work with Sodium Hydroxide will be provided with online Sodium Hydroxide awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>Chemical protective gloves e.g. rubber or PVC.</li> <li>Chemical protective apron.</li> <li>Rubber boots.</li> <li>When handling liquids, wear overalls outside of boots.</li> <li>Chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure.</li> <li>Respirators must be used if there is a risk of inhaling the vapour or dust mists.</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	• Nil		
Bulk storage locations	<ul> <li>Caloundra St WQMF</li> <li>Chambers Flat WQMF</li> <li>Gramzow Rd WQMF</li> </ul>	Bulk storage locations	<ul> <li>Caloundra St WQMF</li> <li>Chambers Flat WQMF</li> <li>Gramzow Rd WQMF</li> </ul>

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### Safe storage requirement

#### Bulk storage asset requirements

- Any new bulk storage installations or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Segwater's Liquid Chemical System Specification (B-TMP-STD-007) and AS 3780: The storage and handling of corrosive substances.
- Where the existing assets are identified as not being compliant with Segwater's engineering standards or • AS 3780: The storage and handling of corrosive substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

#### Storage operational requirements

The WTP operator must make sure that:

- Only authorised person can access the bulk storage area. ٠
- Access to the bulk storage area must be kept clear at all times. •
- Good housekeeping is maintained so that no extraneous matters are kept within 3m of the storage area. •
- An up-to-date SDS is readily accessible in the storage area. •
- Spill kits and appropriate fire-fighting equipment are readily available. •
- Storage areas are inspected as part of the operator's routine inspection. •
- A placard must be displayed in the vicinity of the storage area. •

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:

- organic acids (e.g. acetic acid),
  - inorganic acids (e.g. hydrochloric acid),
- Other chemicals:
- Hydrogen Peroxide
- Ammonium salts •

metals (e.g. aluminum).

•

Managing the risks of exposure during operational and maintenance works			
Role	Responsibility		
WTP operator	<ul> <li>Operational Sites – Receiving Bulk Chemicals Procedure (<u>PRO-02383</u>) to make sure that the chemical is delivered and filled safely at Seqwater workplaces.</li> </ul>		
	<ul> <li>Any routine works that do not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>		
	<ul> <li>Follow the SDS to clean up any small spills.</li> </ul>		
	• Follow the site IERP and SDS to respond to any large spills.		
Maintenance worker	<ul> <li>A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the bulk storage area.</li> </ul>		
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>		
	Appropriate PPEs must be used and worn properly.		
All workers	Chemical splash goggles must be worn at all times while inside a bund.		

Rev. no. 10

**Doc Owner** 



## Warning: Decanting Sodium Hydroxide from a bulk storage tank is prohibited in Seqwater

### Safe handling Disposal requirement

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and • labelled properly.
- Contaminated containers and equipment must only be washed down in the designated area.
- Contact the licenced waste transporter to arrange disposal. •
- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496) •
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy • towaste@seqwater.com.au

#### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – Sodium Hydroxide Solution	Active	TRIM – D15/186684
Operating Procedure – Receiving Bulk Chemicals	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Sodium Hydroxide at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse
AS 3780: The storage and handling of corrosive substances.	Active	www.saiglobal.com/online

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# Appendix M: Bulk chemicals safety – Bulk chemicals safety – Sodium Hypochlorite Solution 10% (Hypo 10)

Chemical name	Sulphuric Acid Solution		
Dangerous Goods (DG) / Hazardous Substance (HS)	DG 🖂 HS 🖂		
Hazardous classification	Corrosive to Metals - Category 1 Skin Corrosion - Sub-category 1A Eye Damage - Category 1 Specific target organ toxicity (single exposure) - Category 3		
Hazard statement(s)	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage. H335 May cause respiratory irritation.		
ChemAlert risk color rating	Red		
Placard	SULPHURIC ACID IN MA 1830 AZEMEM 2P		
Training	All WTP operators and maintenance staff required to work with Sulphuric Acid will be provided with online Sulphuric Acid awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>Chemical protective gloves e.g. rubber or PVC.</li> <li>Coveralls and chemical protective apron.</li> <li>Rubber footwear or gumboots.</li> <li>Chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure.</li> <li>A full-face Type B (Inorganic and Acid gas) respirator must be used if there is a risk of inhaling the vapour or dust mists.</li> <li>At high vapour levels, wear an Air-line respirator.</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	8hr TWA: 1 mg/m3 <ul> <li>STEL (15 minutes): 3 mg/m3</li> </ul>		
Bulk storage locations	<ul> <li>Chambers Flat WQMF</li> <li>Gramzow Road WQMF</li> <li>Caloundra St WQMF</li> <li>Noosa Pump Station</li> <li>Ferntree BT</li> </ul>		

### Safe storage requirement

Bulk storage asset requirements

Rev. no. 10 Doc Owner



- Any new bulk storage installations or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Seqwater's Liquid Chemical System Specification (B-TMP-STD-007) and AS 3780: The storage and handling of corrosive substances.
- Where the existing assets are identified as not being compliant with Seqwater's engineering standards or AS 3780: The storage and handling of corrosive substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

#### Storage operational requirements

The WTP operator must make sure that:

- Only authorised person can access the bulk storage area.
- Access to the bulk storage area must be kept clear at all times.
- Good housekeeping is maintained so that no extraneous matters are kept within 3m of the storage area.
- An up-to-date SDS is readily accessible in the storage area.
- Spill kits and appropriate fire-fighting equipment are readily available.
- Storage areas are inspected as part of the operator's routine inspection.
- A placard must be displayed in the vicinity of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:

- Acids and acidic Compounds
- Chemicals / products containing ammonia
- Sodium Sulfite

Other chemicals:

- Hydrogen Peroxide
- Sodium Bisulfite
- Sodium Hydrosulfite
- Sodium Thiosulfate
- Sodium Chlorite

Managing the risks of exposure during operational and maintenance works		
Role	Responsibility	
WTP operator	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (<u>PRO-02383</u>) to make sure the chemical is delivered and filled safely at Seqwater workplace.</li> </ul>	
	<ul> <li>Any routine work that does not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>	
	Follow the SDS to clean up any small spills.	
	Follow the site IERP to respond any large spills.	
Maintenance worker	• A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the bulk storage area.	
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>	
	Appropriate PPEs must be used and worn properly.	
All workers	Chemical splash goggles must be worn at all times while inside a bund.	

# Warning: Decanting Sodium Hydroxide from a bulk storage tank is prohibited in Seqwater

### Safe handling and transporting requirement

Rev. no. 10



#### Prior to decanting

- A JSEA/SWMS must be developed and followed for decanting Hypo from the bulk storage container.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly.
- Decanting must be carried out in a designated area and use the correct connection point and hose.
- Only decant into suitable, cleaned containers that are devoid of materials or liquids (must be washed at least 3 times with clean water).

#### Decanting

- Position container to prevent it from moving.
- Where required, use suitable medium as a funnel for pouring to prevent spills.
- The decanted containers must be properly labelled and stored in a cool, dry, well-ventilated area.

#### Transportation

- When transporting the decanted chemical containers to another workplace, the quantity of the chemical carried must be no more than 500 litres.
- The chemical containers must be appropriately secured when transporting.
- Incompatible chemicals must not be transported in the same vehicle.
- A SDS must be carried within the vehicle transporting the chemical.

#### Safe disposal

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Contaminated containers and equipment must only be washed down in the designated area.
- Contact the licenced waste transporter to arrange disposal.
- Follow the Regulated and Trackable Waste Management Procedure (PRO-01496)
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy to<u>waste@seqwater.com.au</u>

#### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – NaOCI Hypo	Active	TRIM – D15/186680
Operating Procedure – Receiving Bulk Chemicals	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Sodium Hypochlorite at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse
AS 3780: The storage and handling of corrosive substances.	Active	www.saiglobal.com/online

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# Appendix N: Bulk chemicals safety – Sulphuric Acid Solution

Chemical name	Sulphuric Acid Solution		
Dangerous Goods (DG) / Hazardous Substance (HS)	DG 🛛 HS 🖂		
Hazardous classification	Metal Corrosion – Category 1 Skin Corrosion – Sub–category 1C Eye Damage – Category 1 Acute Aquatic Toxicity – Category 1		
Hazard statement(s)	H314 Causes severe skin burns and eye damage. H400 Very toxic to aquatic life.		
ChemAlert risk color rating	Amber		
Placard	HYPOCHLORITE         Solution         Image: Solution		
Training	All WTP operators and maintenance staff required to work with sodium hypochlorite will be provided with online sodium hypochlorite awareness training through Our Learning.		
PPE requirement	<ul> <li>Where a risk of exposure exists, the following PPE must be used:</li> <li>Chemical protective gloves e.g. rubber or PVC.</li> <li>Chemical protective apron.</li> <li>Safety footwear or gumboots.</li> <li>Chemical splash goggles. In addition, a face shield must be worn over the goggles for continued or severe exposure.</li> <li>Respirators must be used if there is a risk of inhaling the vapour or dust mists.</li> </ul>		
Other requirement e.g. health monitoring and air monitoring	• Nil		
Bulk storage locations	<ul> <li>Molendinar WTP</li> <li>Mudgeeraba WTP</li> <li>Kalbar WTP</li> <li>Mt Crosby - Westbank WTP</li> <li>Mt Crosby - Westbank WTP</li> <li>Mt Crosby - Westbank WTP</li> <li>Mt Crosby - Westbank WTP</li> </ul>		

Safe storage requirement



#### Bulk storage asset requirements

- Any new bulk storage installations or existing assets undergoing refurbishment or expansion must be designed and constructed in accordance with the requirements of Seqwater's Liquid Chemical System Specification (B-TMP-STD-007) and AS 3780: The storage and handling of corrosive substances.
- Where the existing assets are identified as not being compliant with Seqwater's engineering standards or AS 3780: The storage and handling of corrosive substances a business case that is supported by a risk assessment must be developed to address the areas of non-compliance.

#### Storage operational requirements

The WTP operator must make sure that:

- Only authorised person can access the bulk storage area.
- Access to the bulk storage area must be kept clear at all times.
- Good housekeeping is maintained so that no extraneous matters are kept within 3m of the storage area.
- An up-to-date SDS is readily accessible in the storage area.
- Spill kits and appropriate fire-fighting equipment are readily available.
- Storage areas are inspected as part of the operator's routine inspection.
- A placard must be displayed in the vicinity of the storage area.

#### Incompatible chemicals

Incompatible materials must not be stored in the area. The common incompatible chemicals are provided below.

Chemicals used by Seqwater:

- Acids and acidic Compounds
- Chemicals / products containing ammonia
- Sodium Sulfite

Other chemicals:

- Hydrogen Peroxide
- Sodium Bisulfite
- Sodium Hydrosulfite
- Sodium Thiosulfate
- Sodium Chlorite

#### Managing the risks of exposure during operational and maintenance works

Role	Responsibility	
WTP operator	<ul> <li>Follow the Operational Sites – Receiving Bulk Chemicals Procedure (PRO-02383) to make sure the chemical is delivered and filled safely at Seqwater workplace.</li> </ul>	
	<ul> <li>Any routine work that does not involve exposure to the chemical should be conducted as per the relevant work instructions and/or pre-approved JSEA/SWMS.</li> </ul>	
	Follow the SDS to clean up any small spills.	
	Follow the site IERP to respond any large spills.	
Maintenance worker	• A JSEA/SWMS must be developed and appropriate controls implemented prior to commencing any maintenance work to be carried out in the bulk storage area.	
	<ul> <li>The relevant requirements identified in the SDS and chemical risk assessment must be considered in the JSEA/SWMS.</li> </ul>	
	Appropriate PPEs must be used and worn properly.	
All workers	Chemical splash goggles must be worn at all times while inside a bund.	

# Warning: Decanting Sodium Hydroxide from a bulk storage tank is prohibited in Seqwater

Rev. no. 10 **Doc Owner** 



### Safe handling and transporting requirement

### Prior to decanting

- A JSEA/SWMS must be developed and followed for decanting Hypo from the bulk storage container.
- Appropriate PPE specified in the JSEA/SWMS must be used and worn properly. •
- Decanting must be carried out in a designated area and use the correct connection point and hose.
- Only decant into suitable, cleaned containers that are devoid of materials or liquids (must be washed at • least 3 times with clean water).

#### Decanting

- Position container to prevent it from moving.
- Where required, use suitable medium as a funnel for pouring to prevent spills.

The decanted containers must be properly labelled and stored in a cool, dry, well-ventilated area.

#### Transportation

- When transporting the decanted chemical containers to another workplace, the quantity of the chemical carried must be no more than 500 litres.
- The chemical containers must be appropriately secured when transporting.
- Incompatible chemicals must not be transported in the same vehicle.
- A SDS must be carried within the vehicle transporting the chemical.

#### Safe disposal

- Chemicals being disposed of (including any contaminations collected in spill kits) must be stored and labelled properly.
- Contaminated containers and equipment must only be washed down in the designated area.
- Contact the licenced waste transporter to arrange disposal. •
- Follow the Regulated and Trackable Waste Management Procedure (PRO–01496) •
- Obtain the Waste Transport Certificate from the waste transporter and provide an electronic copy • towaste@seqwater.com.au

#### Supporting documents and references

Description	Status	Location
Hazardous Chemical Risk Assessment – NaOCI Hypo	Active	TRIM – D15/186680
Operating Procedure – Receiving Bulk Chemicals	Active	Q-Pulse & Waternet
Site specific work instructions developed for any works that relate to Sodium Hypochlorite at a WTP	Active	Q-Pulse
Site specific Incident and Emergency Response Plans (IERPs)	Active	Q-Pulse
AS 3780: The storage and handling of corrosive substances.	Active	www.saiglobal.com/online

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