

Section 8

Control of Significant Hazards



Index

Page	Title
2 - 3	Section Introduction
3	Part 1 – Managing the Safety of Toxic Gases
4	Part 2 – Explosive Atmospheres
4 - 5	Part 3 – Fire Precautions
6	Part 4 – Chemical Delivery and Controlling Spillage
6	Part 5 – Management of Change
7 - 10	Part 6 – Health and Safety Emergency Arrangements
11 - 12	Part 7 – Control of Incidents on COMAH Sites

Section Introduction

This section provides advice on additional measures required to safely manage Thames Water processes that present significant hazards.

Significant hazards, if uncontrolled, could affect the surrounding population and/or environment.

This section is a guide for managers to help them ensure significant hazards are managed under controlled conditions.

Significant hazards include:



Part 1 – The handling of toxic gases
(Chlorine, Sulphur Dioxide and Ammonia)



Part 4 – Delivery of chemicals



Part 5 – Management of change



Part 2 – Explosive atmospheres
(biogas, sewage pumping stations)



Part 6 – How to prepare for possible emergencies



Part 3 – Fire
(preventative and protective measures)



Part 7 – Control of Incidents on COMAH Sites

To control significant hazards, managers and members of their teams have the following key responsibilities:

- Identify significant hazards covered by a local health and safety procedure SHE 4 and toolbox talk.
- Ensure that any health and safety procedure relevant to the hazard are communicated, understood and followed.
- Conduct monthly site inspections using the site observation checklist SHE 6C.

If you require any further information please contact your local Health, Safety and Wellbeing team member.



Part 1 – Managing the Safety of Toxic Gases

All sites that use or store toxic gases must ensure:

- Each site has an appointed responsible officer.
- The *cylinder and drum changing risk assessment and toolbox talk form RAG121*, available from the Health, Safety and Wellbeing section of the Portal, has been reviewed, completed and communicated to all relevant staff. Keep local records of this.
- Regular inspections of their sites are done, i.e. one site per month using the *site observation checklist SHE 6C*, available from the Health, Safety and Wellbeing section of the Portal.
- Drum and cylinder cards are completed with the correct information.
- Pigtails have labels with replacement dates.
- Gas drum heating is operating and there is no pipework corrosion evident.
- The *contractor gas room working procedure, HSP1*, is communicated, understood and followed. This health and safety procedure is available from the Health, Safety and Wellbeing section of the Portal, reference HSP1.
- Response team training and breathing apparatus refreshers have been completed. Keep local records of this.
- Protective equipment (gas suits, breathing apparatus and gas monitors) receive prescribed regular maintenance and are available for use.



Internal delivery of toxic gases

The following additional measures for sites that transport toxic gases are required:

- Review, complete and communicate, to all relevant staff, the *transportation of toxic gases risk assessment and toolbox talk form RAG206*. Keep local records of this.
- Leave vehicles in a secure compound and lock the keys away.
- Don't store chemicals on vehicles overnight.



Part 2 – Explosive Atmospheres

Explosive atmospheres may be encountered at: digester plants, gas mains, sewage pumping stations and ammoniation facilities. An explosive atmosphere means a mixture, under atmospheric conditions, of air and one or more dangerous substances in the form of gases, vapours, mists or dusts in which, after ignition, combustion spreads to the entire unburned mixture.

Managers are responsible for the following:

- Ensuring the [explosive atmosphere risk assessment and toolbox talk form RAG131](#), available from the Health, Safety and Wellbeing section of the Portal, has been reviewed, completed and communicated to all relevant staff. Keep local records of this.
- Ensuring the explosion protection document, for the site (located on Asset Documentum) is completed and accurately reflects the current site status.
- The hazardous area plan (part of the explosion protection document) is displayed and has been communicated to individuals using the [toolbox talk form SHE 13](#), available from the Health, Safety and Wellbeing section of the Portal.
- Checking that zoned areas are marked appropriately.
- Ensuring that the working in explosive atmosphere's procedure is communicated, understood and followed (including contractors). This Health and Safety Procedure is available from the Health, Safety and Wellbeing section of the Portal, reference [HSP2](#).
- Ensuring a competent verifier authorises all significant modifications to equipment within zoned areas.



Part 3 – Fire Precautions

All locations must have the required preventative and protective measures to safeguard its employees from the risk of fire.

Fire Risk Assessment



Each location must have an up-to-date Fire Risk Assessment available that has a record of the precautions and controls in place to prevent harm to any occupants, and to ensure the controls are effective.

Health and Safety Procedure [HSP42 Management of Fire Risk Assessments](#), available from the Safety, Health and Wellbeing section of the Portal, provides further guidance on the categories of Fire Risk Assessment, who carries out the assessment and how often they should be reviewed.

Fire Log Book

Each location must have an up-to-date Fire Log Book, with clear responsibility allocated as to its upkeep. The purpose of the Fire Log Book is to have an available record, which must be accessible for inspection by the fire and rescue service. For example:



Fire alarm systems, including weekly alarm tests and periodic maintenance;



Emergency lighting systems testing and maintenance;



Fire extinguishers, hose reels and fire blankets, etc. inspections and maintenance;



Any automatic life safety fire suppression systems, such as sprinklers;



Staff instruction and training in fire safety and the evacuation procedure; and



Fire drills (note: fire drills may be recorded on the [emergency exercise record form SHE 6J](#), available from the Health, Safety and Wellbeing section of the Portal).

Fire warden and marshal's appointment and training



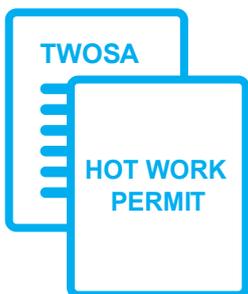
The Fire Risk Assessment will establish the number of fire wardens and marshals a premise requires. The appropriate manager must then arrange for those selected, as fire wardens/marshals, to attend the required training. Training can be found under employee self-service on the Portal. The course is entitled Fire Extinguisher/Marshal Training. Post a list of appointed fire wardens and/or marshals for the premises on notice boards throughout the office, along with suitable instruction on what to do in the event of a fire.

Review the local health and safety organisational and arrangements documents, within each location, at least once a year to ensure there are sufficient fire wardens/marshals.

Fire drills

Ensure each location's emergency procedures are adequately tested and monitored. Perform fire drills every six months, ensuring there's a debrief after each one and share any learning points. Keep records of fire drills, and any resulting actions, in the Fire Log Book.

Visitors and contractors



Make visitors to the office aware of any fire arrangements e.g. drills, assembly points, etc. during the opening meeting or induction. Control access by contractors carrying out works in the office by issuing a Thames Water Operational Site Authorisations (TWOSA) form – see section 7, Managing Contractors. Note: if the contractor intends to carry out 'Hot Work' under a TWOSA, then a hot work permit must be completed.

Health and Safety Procedure [HSP23, Fire Risk Management](#), is available from the Health, Safety and Wellbeing section of the Portal and provides further guidance.



Part 4 – Chemical Delivery and Controlling Spillage

All sites that use or store chemicals are responsible for ensuring that:

- The *chemical delivery and controlling spillage procedure, HSP3*, is communicated, understood and followed. This health and safety procedure is available from the Health, Safety and Wellbeing section of the Portal.
- The risk assessment guidance, identified below, have been reviewed, completed and communicated as a toolbox talk to all relevant staff involved in chemical delivery and controlling spillage. Keep local records of this.
 - *RAG207: Use of intermediate bulk containers*
 - *RAG208: Bulk cryogenic chemical deliveries*
 - *RAG209: Bulk liquid chemical deliveries*
 - *RAG210: Bulk powder chemical deliveries*

The above are available from the Health, Safety and Wellbeing section of the Portal.

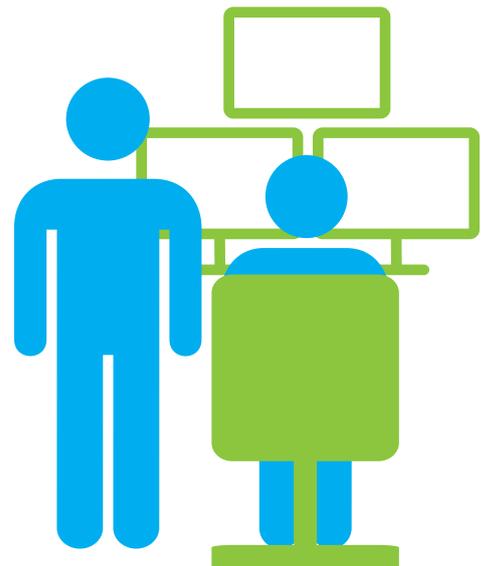
- A Thames Water employee is present during connection and disconnection for delivery of bulk chemicals.
- If bulk deliveries are left unattended between connection and disconnection, identify this as a hazard within the local risk assessment. Identify control measures, emergency response arrangements, and clearly outline and identify staff members' roles and responsibilities.



Part 5 – Management of Change

The transfer of responsibility and information is vital for successfully managing health and safety during periods of change. Managers are responsible for the following:

- Ensuring the management of change health and safety procedure is followed in order to identify and minimise any risk. This health and safety procedure is available from the Health, Safety and Wellbeing section of the Portal, reference *HSP4*.
- Ensuring that safety roles, identified within the local organisational arrangements documents (LOAD), are part of the change review to ensure that all safety critical roles are clearly allocated to members of staff, and any additional training requirements are identified and planned, see section 4 'Managing people'.
- Ensuring that all control room staff follow a structured shift handover to ensure that important site information is transferred accurately. The control room handover is a health and safety procedure and is available from the Health, Safety and Wellbeing section of the Portal, reference *HSP5*.





Part 6 – Health and Safety Emergency Arrangements

This part provides advice and guidance on ways to minimise the risk to operators, and others, if there is an emergency. Thames Water has procedures to guide managers in event management and response, available from the Business Resilience and Security Team within health and safety.

To support these procedures, managers have four key health and safety responsibilities to ensure emergency arrangements are in place for their sites:

- Carry out risk assessments, as outlined within section 3 of the Health, Safety and Wellbeing Manual, to identify the major hazards on-site and ensure emergency arrangements are in place.
- Ensure all persons on-site are briefed on the emergency arrangements, through toolbox talks, including the allocation of key roles (keep local records of this).
- Ensure accurate site information is available for emergency services.
- Test emergency arrangements on a planned basis and capture learning points, and any identified actions. Record these on the [emergency exercise record form, SHE 6J](#) – available from the Health, Safety and Wellbeing section of the Portal.

For any emergency arrangements to work well, managers must understand that it is vital that **all staff** members are aware of the arrangements and participate in testing them.



Emergency type	Description	Potential consequence ¹
Chemical gas leak	A leak of toxic gas (Chlorine, Sulphur Dioxide or Ammonia).	Major consequence, which may affect off-site community.
Explosion	Explosion of gas or dust.	Major health, safety and process consequences.
Liquid chemical spill	A spill of chemicals (including fuel oil).	Significant environmental damage.
Fire	A fire from any source, and in any location, across the site.	Major fires having significant consequences for health, safety, environment and process.
Serious injury or death	Physical injury to staff, contractors, visitors or trespassers that occur on-site and require more medical treatment than first aid.	Significant health and safety consequences, no environmental consequences.
Structure collapse	Structural collapse of any building or structure on-site.	Significant consequences to health, safety, environment and process.
Security alert	Trespass, terrorism, petty theft, vandalism, bomb threat or security incident.	Major incident that threatens site security and ongoing health and safety of the operation.
Flood	Water from external or internal sources that threatens low-lying installations on the site.	Widespread flooding could have major consequences to safety, health, environment and process.

¹Worst case most likely consequence



Planning for emergencies

Site managers must ensure all site staff and visitors are aware of the following:

- Methods for raising the alarm and calling the emergency services.
- The assembly points and designated safe havens.
- The importance of not putting themselves in danger.

In addition, site staff should also be aware of:

- How to provide the emergency services with necessary information to find the site (e.g. the grid reference and the access points from the main road).
- Any specific role they perform in an emergency (e.g. fire marshal).

The above points should initially be covered within the site induction, but it is important that this information is regularly refreshed using a toolbox talk.

In addition, managers are responsible for ensuring their sites have:

- Written emergency procedures for the major hazards.
- Arrangements for the emergency services to gain access to sites (especially where security gates are present).
- Roll call arrangements and means of reporting missing persons to emergency services.
- The provision of a suitable area for the emergency services to assemble (it is not uncommon for more than six vehicles to attend a major fire).
- The identification and allocation of key roles.
- The provision of evacuation areas in the event of a fire or toxic gas emission. These must be clearly marked and detailed on the emergency information-site plan. It is also advisable to identify an assembly point outside of the site premises for use in a security alert.
- An annual programme of planned exercises.
- The inspection and maintenance of equipment used in emergency response. Keep such equipment readily available.



Roles and responsibilities



As detailed in the company emergency response procedure, there are a number of specified roles that need to be assigned to appropriate individuals during an incident. Depending on the scale of an incident, the key roles and responsibilities are:

Event controller

Maintains overall management of the incident, and takes over control from the event responder. They will also liaise with external bodies.

Event responder

Identifies developing emergency events and reports information to the event controller in order to help control and mitigate emergencies.

Fire marshal and chemical assembly leaders

Ensure role calls are done to identify any missing persons within designated areas.

Operational control duty managers

Provides secondary support to the event controller and/or event responder. They will provide guidance at all stages of the incident, and may also perform additional functions such as coordinating extra resources or contacting specialist company professionals.

Immediately report incidents involving serious injury or death to a senior manager. Refer to section 10.

Training and exercises



Individuals who act as event controllers or event responders in an emergency must receive training, available on SAP.

These training courses raise levels of awareness with regard to the ever-evolving challenges of event management, and will enhance skills that deal with emergency events.

Exercises

The frequency of exercises should reflect the level of risk for the site. Exercises should focus on the most significant risk on-site, but managers should ensure that all site personnel fully understand the emergency plans for all site hazards.

Site	Minimum exercise frequency
All manned sites – fire drill	Two per year for manned premises
Sites with toxic gas	Two per year
COMAH sites	Four per year

Managers must ensure exercises are recorded and kept, along with all learning points and any identified actions that must also be in the local action plan, with timescales for completion. Record any actions on Safeguard and track until completed.

Documentation for emergency services

Key information that managers must provide to the attending emergency services:

Information	Description	Available on-site ²	Asset doc
Site emergency information card (SIC)	Details special hazards and contact arrangements.	x	x
Emergency information-site plan	Plan of site. Scale drawings of buildings.	x	x
Asbestos information	Details of locations of asbestos on-site.	x	x
Roll-call details	Confirmation of any missing persons.	x	x

² Information should be available to hand to emergency services upon arrival



All COMAH sites have premise information boxes located at designated entrances containing the above information.

In addition, when the fire brigade is in attendance they will request locations of any gas cylinders (e.g. Butane or Acetylene). They are likely to impose a 250 metre exclusion zone for 24 hours around any cylinders which have been exposed to fire.

Safe condition and decontamination

- Render spills involving hazardous materials as “safe for disposal” or “further treatment” as appropriate.
- Wash the area with large volumes of water once the material has been removed.
- Assess disposal routes (e.g. drains) of wash water or fire water run off to ensure they will not cause pollution.
- Decontaminate personnel and equipment if required.
- Inspect and replace (if required) any equipment used in an incident as soon as possible.



Post emergency information

Scene preservation and evidence

Preserve the scene and capture all relevant evidence for major incidents. Certain incidents, such as the loss of life, require the scene to be preserved by law.

- Before a scene is preserved, it must first be made stable and pose no further risk.
- It is the role of the event controller to ensure that photographs are taken as soon as possible.
- Witnesses should be escorted to separate rooms and give independent statements as soon as possible after the incident.



Event learning

Once the incident has been contained and the site restored to normal operation, the causes of the incident need to be investigated and the learning points identified. The aim is to ensure that similar incidents do not occur again and to clarify if emergency responses were adequate.

The event controller must gather all information relating to the incident and attempt to identify the root cause and learning points.

Counselling and support arrangements



Some major incidents may involve levels of psychological trauma to those involved, and in these circumstances it is the company's policy to offer counselling to help them recover from the incident.

The company operates a confidential counselling service as part of its employee assistance programme. This is manned by trained counsellors who can provide advice and assistance on a range of issues and arrange formal face-to-face counselling sessions where necessary.

Report any cases requiring formal counselling to the Thames Water occupational health team. This will enable them to follow up on cases and ensure a full recovery. The team will also be able to offer advice and assistance on how to deal with the situation.



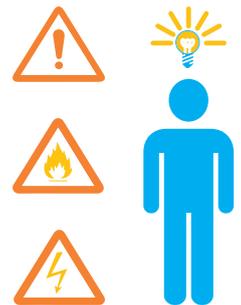
Part 7 – Control of Incidents on COMAH Sites

COMAH sites are subject to the Control of Major Accident Hazards Regulations because of the quantities of hazardous substances held on such sites. If you are a manager of a COMAH Site (or have a role in managing activities on a COMAH site) there are certain things you will need to do and records you will need to keep in order to comply with the regulations. This will give you a brief summary of your responsibilities. It also makes reference to supporting documentation on the Health, Safety and Wellbeing section of the Portal, which provides further information.

Note: the table in [HSP 34 “Management of COMAH sites”](#) on the HS&E Section of the Portal, gives the criteria for determining whether or not a site falls within the scope of the regulations. If there is any doubt, seek advice from your Health, Safety and Wellbeing Advisor.

Information instruction and training

It is essential to ensure that all visitors and personnel who work on site receive a general induction and are made aware of hazards. In addition to the Thames Water induction procedure, there is additional information, relevant to COMAH sites and emergency procedures, which must also be passed on during the induction. This should be delivered as a toolbox talk and recorded on the [SHE 13](#) and filed in your Health and Safety Records File. The detailed toolbox talk can be obtained from your Health, Safety and Wellbeing Advisor.



Monitoring



Managers conducting monitoring activities at clean water COMAH sites should use the [SHE 6E Toxic Gas Safety Observation Checklist](#); while managers monitoring activities at waste sites should use the [SHE 6G Explosive Atmosphere Safety Observation Checklist](#). File copies of the SHE documents in your Health and Safety Records File. Log any actions, resulting from the monitoring, on Safeguard and track to conclusion.

Construction and other major works on COMAH sites

Occasionally it will be necessary to carry out construction work on COMAH sites. Depending on the scope, there may be an impact on compliance with the regulations. It is essential to inform your Health, Safety and Wellbeing Advisor about any planned works at an early stage, so that relevant documentation can be amended and any necessary notifications given to the enforcing authorities. Comprehensive guidance on this issue is provided in [HSP 36 “Temporary Occupied Buildings”](#).



Process safety performance indicators



Process Safety Performance Indicators (PSPI's) have been developed for COMAH sites and these form part of the monthly report to senior management. They measure key activities (e.g. safety critical maintenance) which are crucial to the safe management of COMAH sites. You must ensure that these activities are carried out. More information on PSPI's can be obtained from your Health, Safety and Wellbeing Advisor.

Notification of changes on COMAH sites

It is essential to maintain an accurate inventory of the hazardous substances on your site. This helps prevent inadvertently creeping above the threshold for total dangerous substances (aggregation rules contained in the regulations), which may trigger the regulations (your Health, Safety and Wellbeing Advisor can provide more information).



It is also essential to remember that if circumstances change (increases or decreases in quantities of hazardous substances, or changes in process, etc. see [HSP 34](#)) you must tell your Health, Safety and Wellbeing Advisor before the changes are made so that the competent authority can be notified.

Major Accident Prevention Policy (MAPP)

All COMAH sites require a MAPP. It is your responsibility (with the help of your Health, Safety and Wellbeing Advisor) to ensure that this document is updated annually and actions arising are logged on Safeguard and tracked to conclusion.

Safety report for top-tier sites only

A safety report needs to be produced for any top-tier site, as per HSP34. This is reviewed every five years with assistance from your Health, Safety and Wellbeing Advisor. Any actions arising from the review must be logged on Safeguard and tracked to conclusion.

Hazard identification



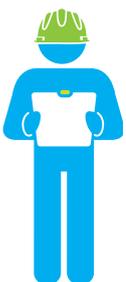
The hazard identification requirements are detailed in [HSP 35 “COMAH Hazard Identification and Risk Assessment”](#) which can be found on the HS&E section of the Portal. Again, these must be reviewed every five years with the assistance of your Health, Safety and Wellbeing Advisor. Actions arising should be logged on Safeguard and tracked to conclusion.

On-site emergency plan

All COMAH sites require an on-site emergency plan. The on-site emergency plan is written to cover the full range of possible major incidents on site. Site managers must ensure the plan is tested at least four times a year and reviewed annually. Actions arising from the tests, and the review, must be logged on Safeguard and tracked to conclusion.

Off-site emergency plan for top-tier site only

The COMAH off-site emergency plan details the actions and responsibilities for responders in the event of a major incident. The plan is compatible with the on-site emergency plan. Responsibility for production of the off-site plan rests with London Fire Emergency Planning Authority.



Audit

In keeping with the requirements of HS (G) 65, regular audits of COMAH sites must be done by the Health, Safety and Wellbeing Team using a specifically-designed audit tool.