



# Pollution Prevention

**Safe People**  
**Happy People**  
**Sustainable Business**

## Key messages

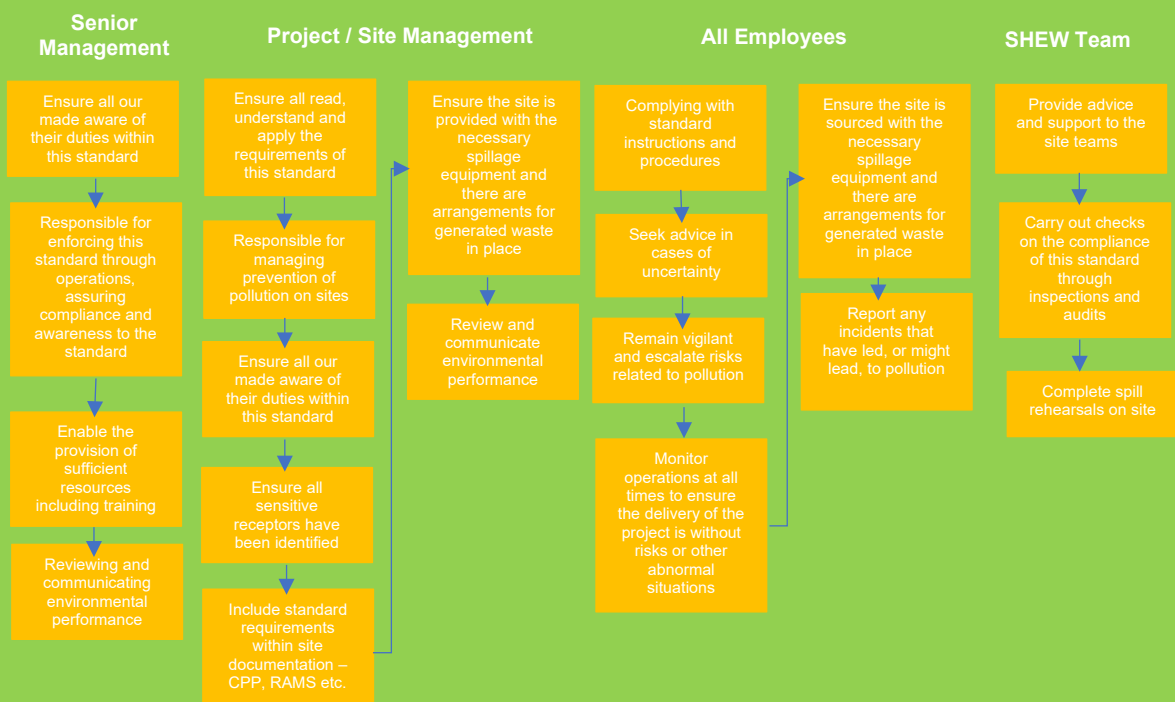
Poor management of pollutants has the potential to be a major cause of serious pollution incidents. In planning and carrying out works on site precautions must be taken to ensure the protection of controlled waters, land, air and groundwaters against pollution.

All sites that use and store potentially polluting materials are responsible for ensuring:

- This standard, including staff members roles and responsibilities on site are communicated, understood and followed
- All identify and exercise control measures and emergency response arrangements

Pollution prevention must be considered when risk assessing any activity on site with the potential to have environmental impact. Pollution prevention measures must receive formal consideration via the Construction Phase Plan, appendices & safe systems of work.

## Roles and Responsibilities



## Definitions

Definitions	Pollution	The release of any substance that can harm people or animals, plants, soil, water or air. Common pollutants include silt, oil (including fuel), concrete, chemicals, sewage and waste
	Environmental Impact	Any element of an organisations activities, products or services that can interact with the environment
	Hazardous Substance	A substance that has the ability upon release to harm people or animals, plants, soil, water or air
	Controlled Waters	Includes territorial waters, coastal waters, inland freshwater (i.e. lake, pond, river, reservoir) and ground waters
	Surface Waters	Include rivers, lakes, lochs, reservoirs, ponds, streams, canals and ditches, including those that are temporarily dry, estuaries and coastal waters up to three miles offshore
	Groundwater	All water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil
	Environmental Permit	Consent given from the relevant environmental regulator (i.e. Environment Agency), required for certain types of activity including discharges to watercourses
	Trade Effluent Consent	Consent given from a statutory water company allowing trade effluent to be discharged to the foul drainage system
	Silt	A fine inert sediment derived from soils and rocks
	Hazardous Waste	Controlled waste that is difficult or dangerous to handle. It includes waste that displays hazardous properties, such as being flammable, toxic or corrosive

## 1. Purpose and Scope

This standard defines the working practice to be adopted to fulfil our legal obligations with respect to pollution prevention. The standard specifies the arrangements to use in planning and managing environmental risk and contingency measures to prevent pollution from occurring.

Common causes of pollution include release, escape, spills, incorrect storage and handling of hazardous substances, vandalism, accidental leaks, overfilling or failure of storage structures, firewater, incorrect or damaged drainage systems, odours etc.

## 2. Pollution Prevention Principles

In planning and carrying out operations and works, precautions must be taken to ensure the protection of controlled water, land and air against pollution. Ensuring we safely maintain control of potentially polluting substances is critical to protecting the environment.

If a pollution incident or potential pollution incident, occurs we must ensure we respond in a timely, safe and responsible way.

### 2.1 Source, pathway, receptor model

The movement of a potentially polluting substance from its source (e.g., an oil drum) to a receptor (e.g., a river) may result in harm to the environment. Breaking or weakening the movement between the source, pathway and receptor can reduce the impact of a potential pollution.



Different pathways where pollutants could enter the environment include:

- Surface water drainage system
- Direct run-off into a watercourse
- The waste network where pollutants could be discharged through storm overflows
- The waste network where pollutants could pass through a sewage treatment works and reduce the performance of its treatment processes

### 3. Specific pollution risks to land and water

In planning and carrying out works, precautions must be taken to ensure the protection of controlled waters, land and air against pollution.

#### 3.1 Trade discharges to the foul sewer

No discharges are permitted to the foul sewer without authorisation from the appropriate sewage treatment company.

#### 3.2 Discharges to surface waters

Do not discharge any liquid effluent, drainage water or wastewater into surface waters, for example rivers, streams, estuaries, lakes, canals or coastal waters, as an environmental permit may be required.

#### 3.3 Drains

On the majority of sites there will be two types of drain:

- Surface water drains: designed to carry uncontaminated rainwater directly to local stream, river or soak away. Nothing which could cause pollution should enter surface water drains or be stored within 10 metres of these drains. All reasonable steps must be taken to ensure that any matter liable to block, obstruct, or otherwise impair the ability of the drainage is prevented from entering the system.
- Foul water drains: designed to carry wastewater to a STW for treatment. Do not discharge to a foul sewer without authorisation from the wastewater treatment company. All discharges must comply with the conditions of the formal permission given.

A site drainage plan should be available showing the drainage locations, e.g., surface water drains, soakaways, foul water drains, combined sewers etc. if there is no drainage plan available that it must be assumed that all drainage is surface water drains unless evidence is secured to the contrary. When setting up site and carrying out activities on site that have the potential to cause pollution, the location of drains must be considered.

On some sites drains maybe identified by colour. (this is an example of good practice)



#### 3.4 Hazardous substances and surface water run-off






Surface water run-off contaminated by any hazardous substance must not be allowed to enter surface water drains or watercourses. All are to assume that all drains flow to the environment unless they are known to return to waste treatment process.

### 3.5 Watercourses onsite or adjacent to a site

Where a watercourse runs through or adjacent to a site, a high degree of care must be taken to prevent any contamination.

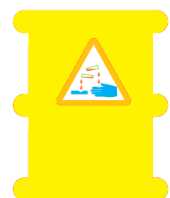
### 3.6 Over pumping of sludge / wastewater / Sewage

Over pumping can be a high-risk activity depending on the environmental features and landscapes in the immediate vicinity of the works.

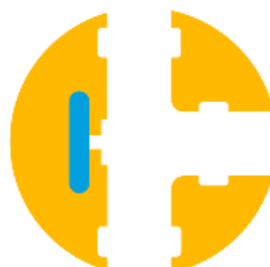
<b>Assessment</b>		The location must be assessed with consideration made to pollution pathways and environmental receptors
<b>Equipment</b>		Prior to any discharge, all must ensure pipework and valves and other equipment used in the over pumping operations are secured, well maintained and in good working order without risks of leaks. Drip trays must be in place where required.
<b>Arrangement</b>		The discharge must be placed carefully at the receiving flow end to avoid disruption or destabilisation of the receiving entry. Capture equipment must be located close to the pumping operation and be fully stocked.
<b>Security</b>		A monitoring regime must be in place with the frequency reflective of the risk of the site. There must be a documented plan in place for dealing with leaks or spills. An individual must supervise the setup of the over pumping operation and monitor the operation.
<b>Storage</b>		When not in use, flexi-hoses and equipment to be used for over pumping operations must be stored securely, serviced and maintained in accordance with manufacturers standard

## 4. Storage and Use of Hazardous Substances

A hazardous substance is a substance (liquid or solid) that has the ability upon release to harm people or animals, plants, soil, water or air and cause environmental pollution. Oil, fuel, chemicals, detergents, sewage and effluent, concrete and cement, are all examples of hazardous substances that Bridges use and work with.



Consideration must be given to the storage of hazardous substances on site. All must be stored to prevent the release of the hazardous substances and protect potential pathways such as site drainage etc.



#### 4.1 Storage of Hazardous Substances

Storage containers can include oil drums, mobile bowsters, generators & jerry cans.



Any storage of hazardous substances must be held inside secondary containment as described below, including temporary use. Secondary containment is usually either a bund or a drip tray.



A bund is an outer case which holds the container, with the primary function to retain and control the flow of a hazardous substance



A drip tray is a tray beneath a container used as a catchment area for drips and spills

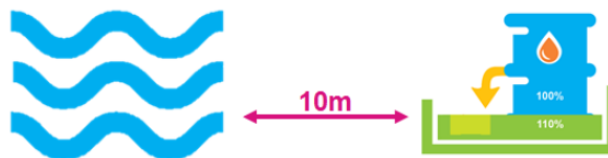
Fixed tanks must always be stored in a bund, all other storage containers must be held either within a bund or drip tray.

#### 4.2 Placement

All placements of hazardous substance storage must consider the topography, distance from the watercourse, site drainage plan and vehicle/personnel movements.



Hazardous substances shall not be stored within 10 metres of a surface water drain or watercourse, and should be at least 50 metres from any spring, well or borehole.



All must avoid siting hazardous substance containers on soft, uneven and sloping ground. All containers of potential pollutants must be positioned in a manner which minimise the risk of the container being damaged by impact, i.e., tanker drive routes, car parking.

If no such location exists, those containers must be protected to the degree where any impact will not damage the container, i.e. by placing effective barriers around a tank.

All containers of hazardous substances containing incompatible substances must be stored in separate bunds or drip trays so that the substances do not mix in the event of a spill. Reference must be made to the Material Safety Data Sheets (MSDS) to identify incompatible substances.



### 4.3 Above ground external storage of more than 200 litres of oil

The storage of any type of oil (including petrol) that is not kept underground or in a building and is more than 200 litres in volume must be held in accordance with the below. These requirements apply to mobile oil bowzers, stand by generators and generators in daily use that have a connected oil supply tank with a capacity of over 200 litres

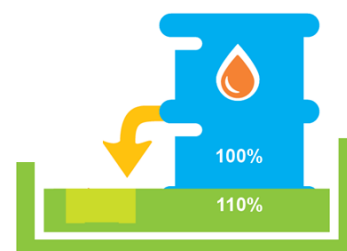
1. Fixed tanks must be stored in bunds and other containers, containing oil must either be in a bund or a drip tray
2. The containers must be sufficiently strong not to leak or burst during normal use, the bund base and walls must be impermeable to oil and water and no means of drainage through the bund, anything that penetrates the bund must be sealed to prevent the escape of oil
3. The tank must be clearly marked with its contents and capacity
4. Drum or IBCs must be marked with the letters UN for 'united nations'
5. Filled storage of oil must not be stacked
6. Oil storage tanks with capacity greater than 4500 litres and their associated pipework must be inspected annually by an OFTEC registered technician

### 4.4 Bund Design

For fixed tanks, mobile bowzers, IBCs and other single containers, the bund capacity must be at least 110% of the volume of the oil container (or if the bund contains more than one oil container, the greater of either 110% of the largest tank or 25% of the aggregate storage capacity).

Bunds must ensure the following:

1. Be impermeable to oil and water
2. The base or walls of the bund does not have a pipe, valve or opening that allows the bund to be drained
3. The capacity of the bunds' catchment should be labelled and included on the bund itself
4. Any fill pipe or draw off pipe that passes through the bund base or wall is sealed to stop oil getting out of the bund
5. Details of the bund must be kept on site with volume contained with, the bunded state i.e., double-bunded, age and inspection agenda required
6. The bund contains every part of the container and associated equipment
7. All tanks, bowzers and containers are labelled as to their contents and capacities



### 4.5 Drip Trays

The secondary containment for a drum or smaller container is usually a drip tray. Drip trays must have a capacity equal to or more than one quarter of the drum it's holding. If the drip tray can hold more than one drum, it must be able to hold one quarter of the combined capacity of the drums it can hold. This applies even if the tray is only used to hold a single drum.

### 4.6 Maintenance of secondary containment – bunds and drip trays

Bunds and drip trays must be maintained in line with factory guidelines. A good housekeeping regime must be in place to ensure bunds are regularly drained to prevent degradation of packaging in standing water.



The ingress of rainwater into bunds and drip trays should be prevented. Any rainwater entry into bunds and drip trays must be drawn out as soon as possible once observed to ensure the bund retains its catchment capacity and to prevent erosion. Coverings or enclosed bunded units can be used.

Care must be taken not to give rise to any pollution during any removal of rainwater from a bund or drip tray. Rainwater may be pumped only into the foul site drainage if it is known that it is clean and uncontaminated, or to grassland provided that the pumping operation will not cause flooding and it is known that the discharge is clean and uncontaminated. Where appropriate, pH levels of the water should be tested. Permission from the water authority must be sought prior to draining to the foul drainage.

If the water is contaminated, i.e., visual or odour evidence with resembles drips captured from refueling of small plant or recorded site spill, the appropriate absorbents are to be used to remove the contaminant before disposing of the remaining water to the foul sewer.

#### 4.7 Use of Hazardous Substances

Care must be taken to avoid spills when handling materials and substances. When filling a container with hazardous substance outside of a bund or drip tray designed to capture leaks from the container, for example when refueling a welfare unit or item of plant a drip tray/plant nappy must be used under the point of exchange.

Hazardous substances must never be left unattended when opened. Mobile bowser must be locked using a padlock when not in use.



#### 4.8 Groundworks

Prior to any breaking the ground activity on site the underground services shall be identified and clearly marked. Damage to underground structures is not only a health and safety risk but a pollution risk. Follow the guidance set out in ESS-03 Breaking the Ground.

#### 4.9 Concrete and Cement

Fresh concrete and cement can cause serious pollution as it is highly alkaline and corrosive. It is essential to take particular care with all works involving concrete and cement, especially when working near a watercourse, surface water drain, or vulnerable groundwater protected asset.

- Do not allow concrete wash-out on site or hose down spills of concrete or cement into surface water drains
- Limit the requirement for concrete wash-out (e.g., excess concrete scrapped off the equipment before it is washed and secured as the appropriate waste stream)
- Use concrete wagons with integrated wash-out collection tanks – contain on site and pump back into concrete wash out for reuse at the batching plant

Washing out of any concrete plant should be undertaken in contained areas, away from watercourses, and where the effluent will be taken away to the appropriate treatment facility. Washout water must not be allowed to enter any drain or watercourse.

#### 4.10 Escape of Waste

The escape of waste can cause pollution of water and land therefore must be properly contained and managed to prevent pollution. Bridges have a legal responsibility to ensure compliant storage of waste to avoid its escape into the environment.

- Waste storage facilities shall be secured against vandalism, unauthorized use and other outside interference
- Waste shall not be kept in corroded or worn containers and the container must be secure to prevent accidental spillage or leaking

#### 4.11 Silt

Silty water can arise from dewatering, exposed ground, unsecure stockpiles and wheel washing. Never discharge silty water to a watercourse. The silty water must be treated prior to discharge to ensure that the silt settles out.

All activities on site shall be managed and controlled in a way which prevents silt generation and shall be managed to prevent silt from entering watercourses or surface water drainage.

- Stockpile levels shall be minimised, and the level of exposed ground kept to a minimum
- Spoil heaps and temporary stockpiles should be sited away from controlled water and drainage systems and covered during periods of wet weather or high wind
- Consideration shall be given to forming cut-off trenches and vegetation corridors to prevent spoil, and subsequently silt, entering watercourses/drains
- Use of settlement tanks, filtration sock, lagoons, silt busters, infiltration through straw bales and filter beds etc.



**Clean water only** that has gathered at the base of an excavation can be pumped out over adjacent ground as long as:

- Only pump over land that is part of the site or you have permission from the land owner
- Pump at a rate that allows the water to quickly be absorbed into the ground
- Move the discharge point to prevent ponds forming
- Don't pump onto land that is already saturated, as this can lead to pollution if water flows overland to a watercourse

#### 4.12 Working in or Near Watercourses

Where a watercourse runs through or adjacent to a site, a high degree of care must be taken to prevent mobilisation of any contamination, and deposits in the water.

Storage arrangements and materials handling should be managed away from watercourses wherever possible, and in such a way as to ensure the complete protection of water from hazardous substances pollution, silting and erosion.

When working in, over or under a watercourse consent must be obtained from the Environmental Agency.

## 5. Contingency: Emergency Spill Response

### 5.1 Instruction & Training

For any emergency arrangement to succeed, all employees and subcontractors where applicable need to be made aware of the arrangements for the emergency spill response & participate in testing them.

Site management should ensure all persons on site are briefed on the emergency arrangements, including methods of raising the alarm, assembly points, the location & storage of chemicals & oils, the location of spillage equipment and any nearby environmental receptors, through toolbox talks & induction. All briefings must be recorded & retained in the site records.

Site management must all ensure that all persons on site participate in emergency arrangement testing. The SHEW Team can assist with these rehearsals.



### 5.2 Equipment

Site Managers/Supervisors must ensure appropriate spill kits or absorbent materials is held on site, appropriate for the pollutant to be contained. This should be located close to the environmental risk in question.

Equipment should be signed with its contents. All sites and which store or handle hazardous substances must have access to a spill kit.

Other equipment can include drain covers, flood barriers, booms where appropriate, drainage plans and appropriate PPE.

Where plant is used on site i.e. generators, MEWPs etc, then plant nappies must be available and used.



### 5.3 Reporting Spills

Any event which may cause, is having, or is likely to have a polluting effect to the environment should be reported through the 112 incident reporting procedure.

The quicker this is done, the sooner help and support can be provided. In the event of a pollution incident, effective management is essential to prevent a bad situation becoming much worse.



## 5.4 Hazardous Waste

After cleaning up a spill or any contained pollution there may be liquid waste as well as contaminated materials i.e., soil or used spill kit materials that require disposal as hazardous waste. For example, oil, diesel and chemicals are all hazardous wastes.

Used spill kits and granules should be cleared away immediately after use, into a secure bag for containing hazardous waste and stored in a secure; lockable container awaiting collection and disposal. Hazardous waste must be stored separately from other hazardous waste types & also stored away from inert or non-hazardous waste.

All hazardous waste movements shall be accompanied by a consignment note prior to the waste leaving the site, these notes should be retained for 3 years.



## 5.5 Methods of Contingency



Identify environmental hazards on-site and ensure emergency arrangements are in place.



Ensure accurate site information is available and seek advice from the SHEW Team if you have any doubts



Ensure all persons on-site are briefed and trained on the emergency arrangements, through toolbox talks and induction. Ensure any briefing is recorded and retained as local records.



Participate in emergency arrangement testing

The key to preventing pollution is to stop hazardous substances from entering surface waters and groundwaters.

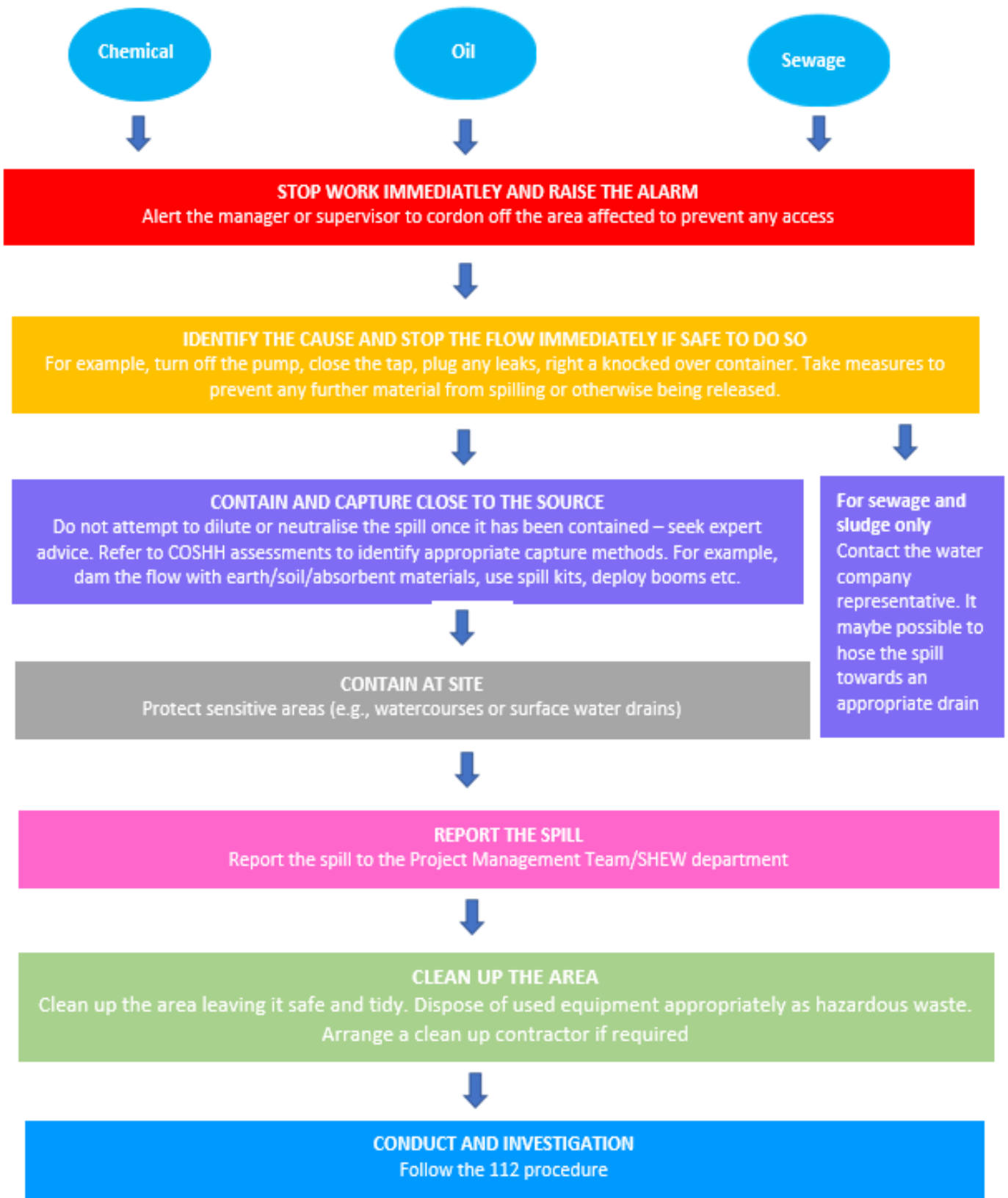
If there is spill or release, the site team where possible must ensure that these liquids and solids are contained, and action is taken to stop hazardous substances from entering drains, channels, gullies, watercourses and unmade ground.

No staff shall attend a spill of a hazardous substance unless it is safe to do so, refer to the Health and Safety Management System. All personnel are to wear PPE when engaged in clean-up duties

Physical barriers should be in place to contain spills or divert spills from vulnerable and sensitive areas. To prevent a direct flow to surface water when containment is not possible, divert flows to soils as this will filter the liquid and may reduce its polluting effects. However, this should be avoided if a negative effect on groundwater is likely, and a drinking waterbody will be affected.

If a spill enters a wet well, escapes site or has entered an unknown drain, the SHEW department must be contacted immediately.





## 6. Appendix: Examples of some Hazardous Wastes

Waste Type	EWC Code
Oil	<p>Wastes of liquid fuels</p> <p>13 07 01* Fuel oil and diesel</p> <p>13 07 02* Petrol</p> <p>13 07 03* Other fuels (including mixtures)</p> <p>13 02 05* mineral-based non-chlorinated engine, gear and lubricating oils</p> <p>13 02 08* other engine, gear and lubricating oils</p>
Absorbents, wiping clothes, protective clothing contaminated by dangerous substances (i.e. spill kits)	15 02 02* Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances (M)
Fluorescent tubes	20 01 21* Fluorescent tubes and other mercury-containing waste
Paint	20 01 27* Paint, inks, adhesives and resins containing dangerous substances (M)
Detergents	20 01 29* Detergents containing dangerous substances (M)
Chemical	<p>16 05 07* Discarded inorganic chemicals consisting of or containing dangerous substances (M)</p> <p>16 05 08* Discarded organic chemicals consisting of or containing dangerous substances (M)</p>
Asbestos	<p>17 06 01* Insulation materials containing asbestos (M)</p> <p>17 06 05* Construction materials containing asbestos (M)</p>
Batteries	<p>16 06 01* Lead batteries</p> <p>16 06 02* Ni-cd batteries</p> <p>16 06 03* Mercury-containing batteries</p>
Aerosols	16 05 04* gases in pressure containers (including halons) containing dangerous substances (M)
Sludges containing dangerous substances	19 08 11* Sludges containing dangerous substances from biological treatment of industrial waste water (M)