

Guidance for Pollution Prevention

Dealing with spills: GPP 22

October 2018 (Version 1.)

This guidance has been produced by Natural Resources Wales (NRW), the Northern Ireland Environment Agency (NIEA) and the Scottish Environment Protection Agency (SEPA).

For Northern Ireland, Scotland and Wales, this document provides guidance on environmental legislation. These guidelines are not endorsed by the Environment Agency for use in England, however, you may find them useful. For guidance on environmental regulations in England go to www.gov.uk

To find the relevant regulations visit www.legislation.gov.uk

Guidance for Pollution Prevention (GPP) documents are based on relevant legislation and reflect current good practice. Following this guidance will help you manage the environmental responsibilities to prevent pollution and comply with the law.

If you cause pollution or allow it to occur, you may be committing a criminal offence. Following these guidelines will help you reduce the likelihood of an incident. If one does occur contact the environmental regulator immediately on the hotline number **0800 80 70 60**

Contents

Acknowledgements	3
1. Introduction	4
1.1 Who is this guidance for?	4
1.2 Legal Requirements	4
2. Pollution Prevention Planning.....	7
2.1 Understand your risk	7
2.2 Assess your risk	8
3. Pollution Incident Response Plan.....	9
4. What to do in the event of a spill.....	9
4.1 Pollution control options and equipment	10
4.1.1 Contain at source	10
4.1.2 Contain close to source.....	11
4.1.3 Contain on the surface	12
4.1.4 Contain in the drainage system	13
4.1.5 Contain on or in the watercourse.....	15
4.1.6 Improvised equipment	18
5. Site specific pollution control options.....	19
5.1 Containment lagoons and ponds	19
5.2 Tanks	19
5.3 Sacrificial areas	20
5.4 Pits and trenches.....	20
6. Spills on a road or highway	21
6.1 Correct signage	21
6.2 Vehicle spill kits and training.....	22
6.3 Emergency responders.....	23
6.4 Spill from a vehicle fuel tank	23
6.5 Spill from a tanker.....	23
7. Spill Clean up	24
7.1 Waste management and your legal duty of care	25
7.2 Sewer jetting.....	25
7.3 Road and highway clean-up	25
7.4 Material specific clean-up	26
7.4.1 Residue clean-up	26
7.4.2 Neutralising agents	26
7.4.3 Animal carcass removal	26

7.5 Site remediation.....	26
8. Spill review and lessons learnt	27
9. Glossary	28
10. References.....	30
11. Website List.....	30
Appendix A: Example Risk Assessment	31
Further Information.....	33

Acknowledgements

We wish to acknowledge the assistance provided by the following organisations in the development of this guidance:

NetRegs

National Chemical Emergency Centre

1. Introduction

1.1 Who is this guidance for?

This guidance is for anyone who is responsible for storing and transporting materials that could cause pollution if they spill. It may also be useful for those who respond to spills, or those responsible for transporting or storing waste from spills.

This guideline gives information and advice about:

- pollution risk assessments; **Section 1**
- pollution incident response plans; **Section 2**
- the pollution control hierarchy; **Section 3**
- pollution control methods and equipment you could use to contain spills; **Section 4**
- site specific pollution control options; **Section 5**
- spills on a road or highway; **Section 6**
- clean-up after you've contained a spill, including pollutant specific information. **Section 7**

1.2 Legal Requirements

There are laws that protect land, water, air, wildlife and people from pollution. If you cause pollution you will be committing an offence. Penalties include fines, imprisonment, fixed penalty notices, stop-work notices or equivalent and having to pay clean-up costs, along with damage to your reputation.

Surface water drains go directly to a watercourse and therefore should only carry clean uncontaminated water

The Legal requirements are different throughout the United Kingdom (UK) (England, Northern Ireland, Scotland and Wales). If you are located in **Scotland** or **Northern Ireland** you can find information on your legal environmental obligations by visiting the NetRegs website (see website list). In **Wales** guidance on regulations can be found on the Natural Resources Wales (NRW) and Welsh Government website (see website list).

You are responsible for ensuring that you understand and comply with all applicable legislation wherever your business is located. If you have any concerns, or require clarification, contact the environmental regulator before taking action. Ignorance is no defence under law, so you need to understand which laws apply to you and your activities.

Spill Response Procedure

If the spill cannot be safely contained or if the spill is causing a threat to life, evacuate the area and call **999** from a safe location

IF SAFE TO DO SO

STOP > CONTAIN > NOTIFY > CLEAN-UP

STOP

- Stop work immediately
- Stop the leak or eliminate the source of the spill
- Eliminate ignition sources and provide natural ventilation

CONTAIN

- Use pollution control equipment (e.g. spill kits, drip trays, bunds of earth and sand) to contain the spill
- Check the spill has not reached any drains, water courses or other sensitive areas
- Cover all drains / manholes to prevent the spill from entering the drainage system

NOTIFY

- Once the spill has been contained notify your emergency contact. Details at the bottom of the page:

CLEAN-UP

- Attempt to soak up the spill using absorbent material
- Always follow your Duty of Care for waste when disposing of contaminated materials including spill kit/equipment.

EMERGENCY CONTACT DETAILS (Complete with your business details)

NAME

TELEPHONE

NEAREST SPILL KIT

Blank Page

2. Pollution Prevention Planning

2.1 Understand your risk

It's always better to prevent spills happening in the first place. Safe secure storage, careful deliveries and staff training, on site and for drivers, are essential for pollution control. You are responsible for the environmental safety of your site and activities.

Common causes of spills include:

- overfilling or poor handling of containers
- damaged containers
- containment failure
- failure of pipework or underground tanks
- collision or accident
- weather related problems e.g. flooding
- fires
- vandalism

Spills will only pose a risk to people and the environment if the three components shown in Figure 1 are present.

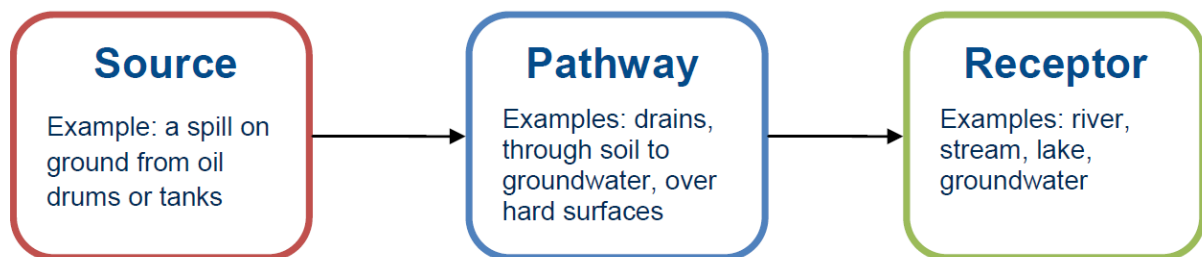


Figure 1: Example of a pollution linkage using the source > pathway > receptor model.
NOTE: Groundwater is both a pathway and a receptor.

You should put in place measures to prevent, minimise or mitigate the effects of any risks and thereby break the pollutant linkages between these three. By doing this, you can identify how to prevent or reduce the likelihood of pollution and reduce the impact of any risks that may occur. It is important that you fully understand the local drainage network as pollution is often caused by mistaking a surface water drain for a foul/combined sewer. Contact your local water company for advice on this. In **Wales** see Reference1 for details on the water and sewerage providers in your area.

2.2 Assess your risk

Before you can decide on the most appropriate mitigation for your site or vehicle, you should carry out a pollution risk assessment or pollution prevention plan, see Appendix A. If you have more than one site, assess the risk for each site and for vehicle routes individually.

An example risk assessment is provided in Appendix A

Your risk assessment needs to consider:

- physical, chemical and biological properties of any material that maybe spilt;
- how materials are stored or transported and the condition of storage containers;
- possible effects of accidents, flooding, vandalism and failure of containment;
- location, including how close you are to local water courses, sensitive groundwater locations, public water abstraction points and environmentally sensitive areas;
- surface water drains and foul sewers that flow off your site;
- any sustainable drainage systems you have on your site;
- operations and layout of your site, or factors to look out for in road traffic collisions;
- risks posed to people and the environment and the extent of the possible damage;
- local landscape and different weather conditions and the flood risk that could be reasonably expected at and around your site.

A risk assessment can be carried out in stages:

1. identify the materials you store or handle on site and activities that may be a hazard;
2. identify and assess potential links between each hazard source, pathways and receptors;
3. assess the likelihood and magnitude of any potential harmful effects.

Once you've completed the risk assessment, prioritise the highest risks first. Then identify measures to reduce the likelihood and impact of a spill. Include these in a pollution incident response plan; more information is provided in section 3 and Reference 2.

You and your staff should always assess the risk of each individual spill, before you take action, to make sure you and others stay safe. If you do have a spill, your planned response may need to be modified during an incident. For example:

- during heavy rainfall;
- if more than one material has been spilt;
- if the incident is on a road or highway near members of the public.

If you change the materials you use or the activities you do on site, you should update your pollution risk assessment.

3. Pollution incident response plan

You should produce a pollution incident response plan as part of the environmental impact management of your work. Include the following:

- site risks
- list of key external and internal contacts (include your environmental regulator, local authority, fire service)
- reporting procedures
- site plan including drainage and location of storage/refuelling areas
- list of stored materials
- details of local environmental receptors e.g. abstractors, high amenity areas and fish farms
- location of spill equipment
- procedures for spill containment and remediation

For further information on how to produce a pollution incident response plan see GPP 21: Pollution Incident Response Planning, Reference 2.

4. What to do in the event of a spill

If you have a spill there are options to help you manage it. These are based around the pollution control hierarchy, figure 2. Many of the facilities, types of equipment and techniques included in the hierarchy are described below.

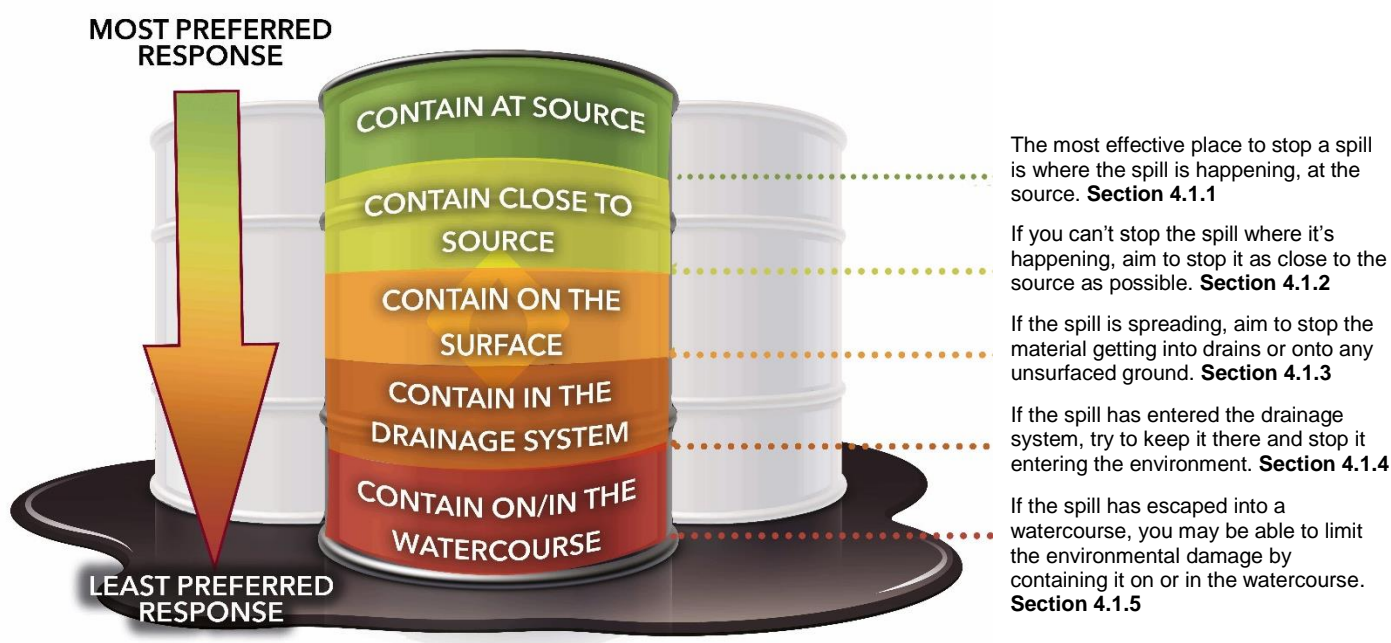


Figure 2. Pollution Control Hierarchy, courtesy NetRegs 2018.

4.1 Pollution control options and equipment

The pollution control hierarchy gives you options for how to control a spill. These options are explained more fully below, with suggestions for pollution control equipment that may help you. These suggestions are only examples and shouldn't limit your pollution control choices. Not all examples will be appropriate for your site; you should follow the prioritised risks from your pollution risk assessment.

Your pollution control equipment should be placed near to where it may be needed, for example drain mats near to manhole covers and open gullies. The equipment should be easily accessible but protected from damage and unauthorised use.

Staff should be trained how to use the equipment safely and what suitable personal protective equipment they need. Health and safety always takes priority.

4.1.1 Contain at source

The most effective place to stop a spill is where the spill is happening, at the source. If the primary container or secondary containment have been breached or failed for any reason, try to contain the spill where it's happening. This will reduce the quantity of material released, meaning there's less spilt material that can cause pollution.

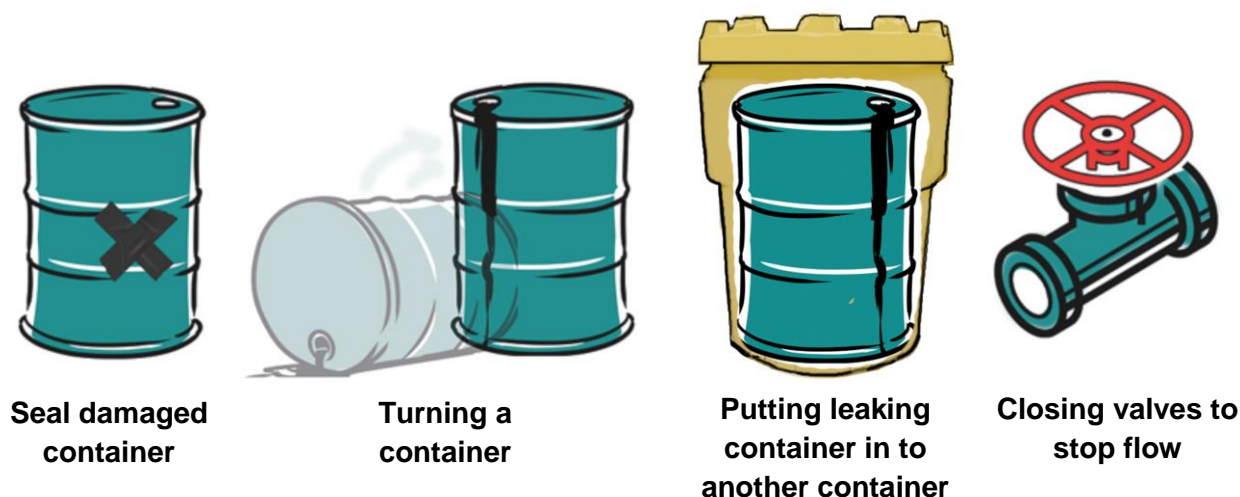


Figure 3. Examples of how to control a spill at the source.

Sealing damaged container or pipework - This option involves physically blocking the leak and stopping any more material being spilled. This isn't a permanent fix and you will have to repair or replace the damaged container or pipework as soon as possible afterwards.

Leak sealing putty. One of the simplest ways to block a leaking container or pipe is to cover the hole with a temporary sealant. Leak sealing putty is available either ready mixed, or as a powder you mix with water. Always follow the manufacturer's instructions to apply the putty. A more permanent method may be required before you can move the damaged container.

Leak sealing equipment. This equipment is designed for when a tank, storage drum or valve has been punctured or damaged. The equipment may be a pad or clamp you fix over the

damaged area like a plaster, or may be a solid or inflatable 'wedge' you can insert into the damaged area and inflate.

Turning a container - If you can, turn a small container, for example an oil drum, so that the damaged part is to the top and the material is no longer spilling from it. Secure the container so it can't roll or turn back over. This will give you time to take action to stop already spilt material spreading further and to make other plans to secure the damaged container.

Putting a leaking container into another secure container - If possible, place a leaking primary container into a clean undamaged container to prevent any more leakage. You will need to plan for this option to make sure the second container has no contamination. This is to make sure any spilt material you put into it doesn't react with its former contents. It should also be made from a material that won't be damaged by the leaking material and cause a bigger problem.

Overdrum - These are large plastic drums designed to safely store leaking or damaged drums, or other containers. They're made from chemically-resistant plastic, but you should check with your supplier to make sure they're suitable for the materials you have on site. Liners may be available for overdrums to make re-use easier. An overdrum can also be used as a temporary store for a small quantity of a spilt liquid, see section 4.1.2.

Close any valves on pipework to stop material flow - Depending on where the spill is coming from, it may be possible to close valves in the pipe work to stop, or minimise the amount of material that can be spilt.

4.1.2 Contain close to source

If you can't stop the spill where it's happening, aim to stop it as close to the source as possible. Where the spill has escaped from the primary and secondary containers you should try to stop it spreading.

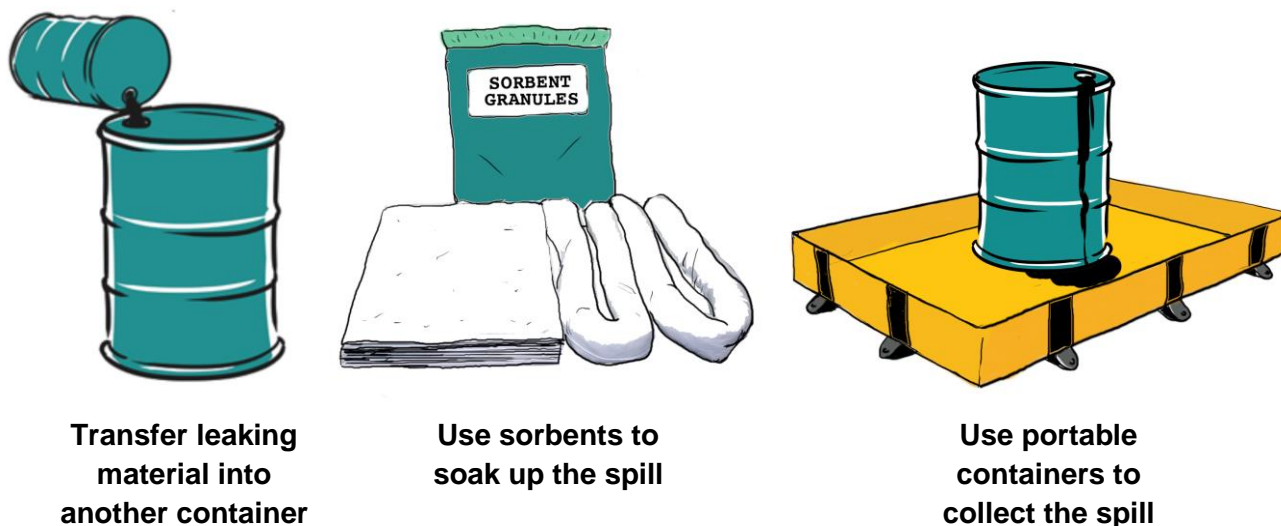


Figure 4. Examples of how to control a spill close to the source.

Transferring the leaking material into an undamaged container

If you can safely move the material that is spilling into another container, it will limit the size of the spill. You'll need to have a suitable container and pump available, which may need to be safe for use in flammable environments. Manual pumps may be suitable for small spills but would be inefficient for moving large volumes.

Use sorbent products to soak up the spill

Sorbents are usually available as loose granules, sheets or rolls, pillows or booms. They can be used to soak up a spill and stop it spreading. There are different types of sorbent available, for example oil selective or chemically resistant sorbents. You should check with your supplier to identify the sorbents most suitable for the materials/substances you store.

Using sorbents generates waste; only use them on small spills, or where a spill has been contained to stop any further spread. All used sorbents must be disposed of according to the Duty of Care for waste and, if soaked in oil or chemicals, will be classed as hazardous waste or special waste in Scotland, section 7.

Use small portable containers to collect the spill

You may be able to collect material that's spilling as it leaves the primary container or secondary containment, for example a damaged vehicle fuel tank or split pipework. Portable storage tanks are usually made from synthetic rubber, polymers or reinforced plastic and they come in a variety of sizes. Small containers, for example pop-up pools or overdrums, can safely be put on the ground where the spill is happening to stop it going any further.

4.1.3 Contain on the surface

If the spill is spreading and you can't safely or effectively contain it near to its source, aim to stop the material getting into the drainage system or onto any unsurfaced ground, unless your incident response plan indicates that you can use your drainage system to contain the spill. Once a spill has been contained, it's easier to remove or transfer into a suitable temporary container to stop it causing more contamination; you should do this as soon as it's safe.

If you can contain the spill on the surface, before it reaches your drainage system, you may be able to transfer it to a temporary container to stop it causing more contamination before you finish cleaning up the spill.

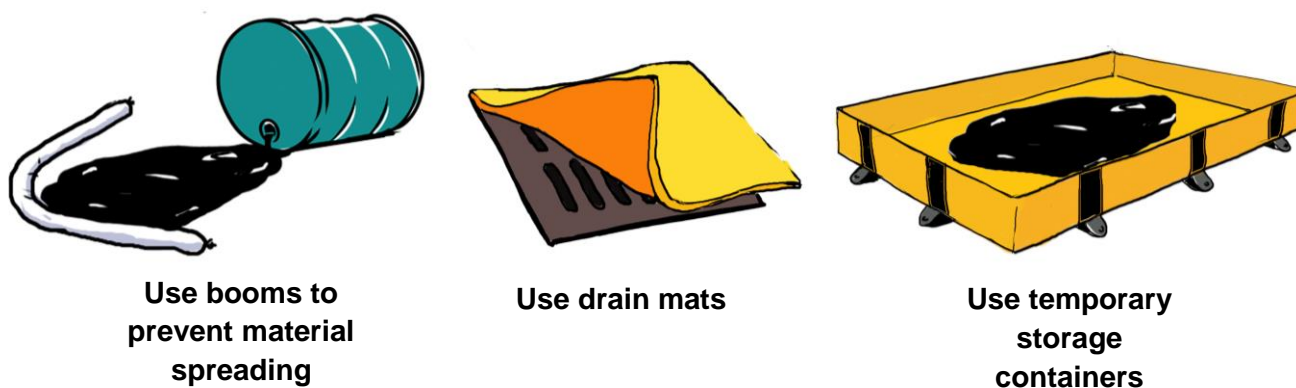


Figure 5. Examples of how to contain a spill on the surface.

Use booms to prevent the material spreading

Booms can be used to divert or contain spills on hard surfaces.

There are two main types:

A physical barrier boom, often made of plastic, with different sections that you'll need to fill with water; the boom can be positioned to contain a spill, isolate a drain or to divert the flow towards a specific area.

Sorbent booms that can soak up a spill and stop it flowing any further. These can be used together with a barrier boom to soak up any spill leaking from below the barrier.

Use drain mats to cover surface drain openings and manhole covers

Drain mats or surface drain seals seal a drain by covering the surface of a manhole cover or drainage gully. They stop liquid flowing into the drainage system and help contain it. There are different types, including clay mats and water-filled bags. Clay mats are single use but you may be able to have other types cleaned for re-use. Keep drain mats close to where they might be used. Identify where liquid that is held back by a drain mat will collect as you may need to keep people away from it until it can be cleaned up.

Use temporary storage containers, portable tanks

Once a spill has been contained you may be able to transfer it into a temporary storage container, where it can be held safely until it's cleaned up. Portable tanks are usually made from synthetic rubber, polymers or reinforced plastic. They're available in a variety of sizes; some have liners you can use so the tank is easier to clean and re-use. Because the tanks are portable they can be moved to near the spill, or to where any run-off has been contained. If you're planning to use a portable tank during an incident, be aware that:

- You'll need a pump, which may need to be suitable for use in flammable atmospheres, in case of an oil, fuel or chemical spill.
- You should have a big enough area of ground to put the tank, near to where your spill will have been collected, which should be level and stable.
- You may need more than one person to move and position the tank.

4.1.4 Contain in the drainage system

If the spill has spread so far that it's already entered the drainage system, try to keep it there and stop it entering the environment.

If you can 'close' your drainage system, you may be able to use its capacity as a temporary containment system to hold the pollutant safely until it can be dealt with properly. In some cases, it may be possible to hose any remaining spilt material into the sealed drainage system, allowing the incident to be dealt with more quickly and safely.

Before you choose this option, make sure the spilt material won't cause an explosive atmosphere within your drainage system, unless the system is designed to control the risk of explosion, see Reference 3.

Make sure the drainage system can be completely sealed, that it's resistant to the material spilt and can provide enough capacity to contain any possible spill; a drainage survey should help you find this information. This will allow the material to be removed safely by a registered waste carrier.

You must also be aware of what will happen to overflows from gullies and other entry or exit points to the drainage system. This will vary depending on where the drainage flows to, slopes on your site and weather conditions. Contaminated liquid may back up and discharge through storm overflows, collect in areas of your site or overflow and bypass the drainage system.

High rainfall will reduce the capacity of your drainage system and create higher volumes of contaminated water. It may cause flooding if the drains back up that could create a hazard itself. If your pollution incident response plan includes the option to contain spills in the drainage system, consider separating your roof and yard drainage from areas where a spill is likely and other site drainage.

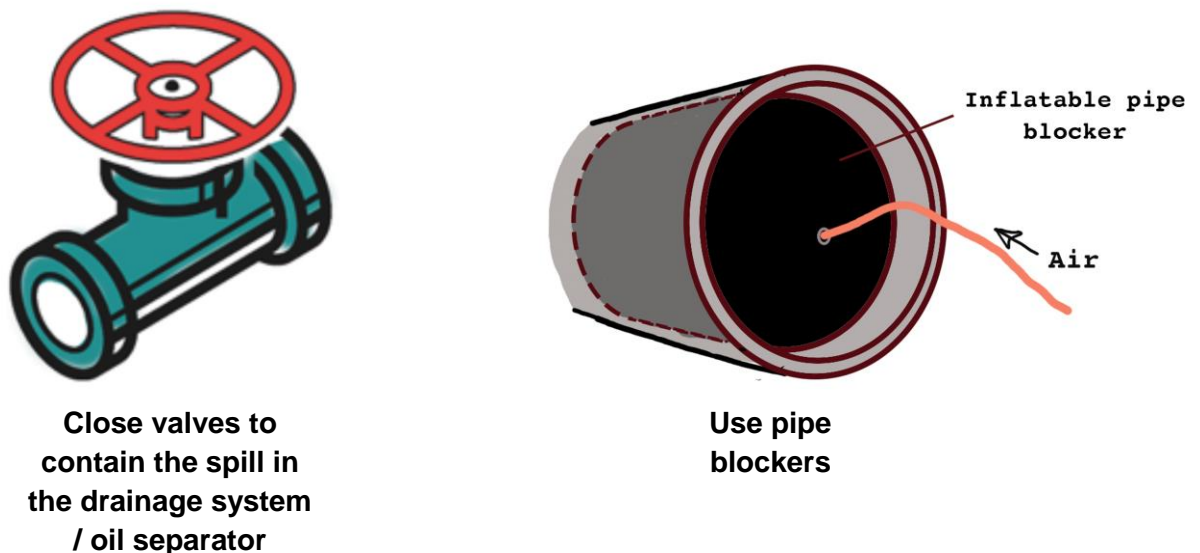


Figure 6. Examples of how to contain a spill in the drainage system.

Closing oil separators

Oil separators, also known as interceptors, are designed to contain spills of hydrocarbons and other liquids that are lighter than, and don't mix with, water. They won't contain soluble substances such as soluble oils, biofuels, emission reduction solutions, for example AdBlue, or solvents that mix with water. An oil separator won't work properly if degreasing agents or detergents can drain from, or are put into it.

Information about where oil separators are needed, choosing the right type and size of separator, closure devices and alarms and separator maintenance is available in 'The use and design of oil separators: PPG 3', reference 4.

Oil separators can be fitted with manual or automatic closing penstock valves at both inlet and outlet to contain larger spills. If you have a spill that has entered the drainage system, it

may be possible to close the entrance to the separator to stop it becoming overwhelmed and protect it. You can also close the exit valve to allow the spill to collect in the separator. If your incident response planning includes using separators to contain large spills of hydrocarbons, you shouldn't use bypass separators.

Check your separator after any spill has entered the drainage system and have it emptied and maintained if needed. Oil spills may have reduced your separator capacity and other spills may affect how well your separator works. Use a specialist contractor to maintain your separator.

Closing penstock valves or pollution control valves in your drainage system

Shut-off valves and penstocks can isolate part or the whole of a site's drainage system. They can help retain a spill on site. How effective they are depends on the capacity and condition of the drainage system. They may be operated manually on site or triggered by automatic sensors.

Generally, simple systems are best. Automatic sensors and closure devices may be used to make sure the valves close quickly on sites where an incident might not be noticed immediately. If you have an incident, it's essential to check if the valves have worked as soon as possible, either by visual inspection or telemetry.

Pipe blockers

If your drainage system doesn't have shut-off valves or penstocks that you can close in an emergency, or they aren't in suitable places, you may be able to seal your drainage system using pipe blockers. These can be fitted inside a pipe or gully. They're usually purpose-made bags or tubes which are inflated with air, although a builder's drain bung can also be effective.

Make sure the pressure head of the contained liquid doesn't cause the pipe blocker to fail.

Consider the health and safety of the person installing or removing a drainage blocker to make sure they aren't exposed to any hazardous conditions or materials.

4.1.5 Contain on or in the watercourse

If the spill has escaped from the drainage system into a watercourse, lake, loch, lough or pond, you may be able to limit the environmental damage by containing it on or in the watercourse before it spreads.

If the spilt material floats on water, for example oil, you may be able to put a river boom across the water.

If the spilt material mixes with water, you'll need to block the whole flow of the watercourse by damming it. This is only suitable for small watercourses.

You may also be able to put a boom across the outfall from your site.

These pollution control methods can have effects beyond containing the spilt material, for example affecting river navigation or the risk of flooding.

Only consider these options in your pollution incident response plan if you have:

- fully identified the possible effects and risks
- pre-selected suitable places, downstream of the discharge point into the watercourse, where you can safely do this.

You must fully identify the possible effects and risks before including these options in your pollution incident response plan and ask us for advice. You must ask the environmental regulator and the navigation authority for advice before finalising these plans. You may also need to ask the permission of the land owner alongside the watercourse before you can plan for this option. If you have a spill, you'll need to tell the environmental regulator (as well as the Department for Infrastructure Rivers in Northern Ireland) before you boom or dam a watercourse.

When you select the booming place, you must take account of:

- Buried services, for example electricity cables or oil pipes, to make sure these won't be hit when the booms are secured.
- How fast the watercourse flows; too fast and the spilt material will wash past or under the boom.
- Variation in flows at different times of the year.
- How a tanker may gain access to the side of the watercourse to remove the collected material.

Contact the spill response company in your incident response plan to help you decide on suitable booming points as they have experience of putting booms in place.

If you've had a spill that has reached a watercourse, lake, loch, lough, pond, estuarine or coastal waters call the UK pollution Hotline on **0800 80 70 60**. At this time you should let us know if you have or will deploy a boom or dam the water, especially if the structure across the water will affect other users of the water. We can then warn other people or companies who use the water, for example water companies who abstract water for drinking, that the water may have pollutants in it.



Deploy a river boom



Dam the watercourse

Figure 7. Examples of how to contain a spill in the watercourse.

Deploy a river boom

You may be able to use a river boom to collect oil flowing down a watercourse. A river boom is a physical barrier designed to float partly above and partly below the water surface. They can be solid but buoyant booms that piece together to the length you need, or inflatable booms you cut to the length you need, with two or more compartments; the lower one(s) to fill with water and a higher one(s) to fill with air.

Booms should only be deployed and secured by suitably trained people.

You may be able to put a sorbent boom downstream of the river boom to soak up any small amounts of oil that pass the river boom. This will only work with oil selective sorbent booms that float on the water's surface.

We recommend that the ends of the booms tethered to the banks are staggered, see figure 3; this allows you to collect the spilt material in one area near to the bank so it can be removed from the watercourse, often using a vacuum tanker.

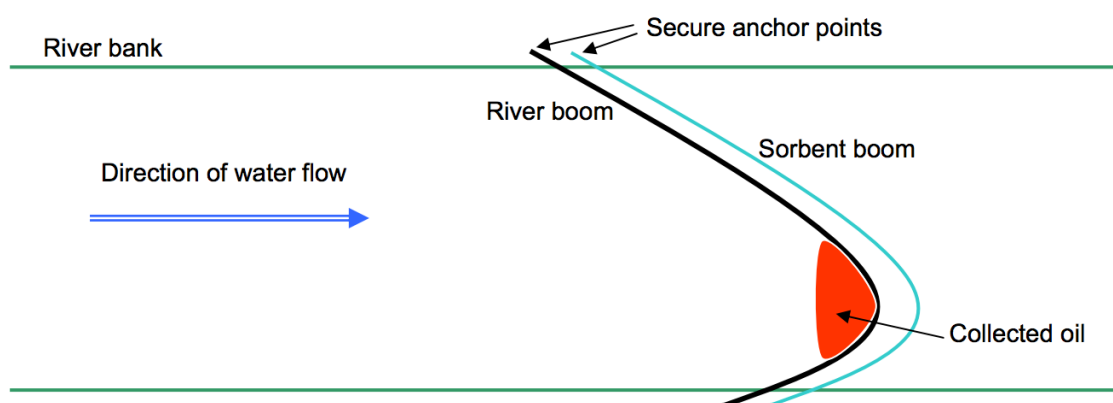


Figure 3: Boom deployment on a watercourse.

If there's still some spill left after you have removed as much as possible, you may be able to use oil selective sorbent booms or pads to collect extra spilt material. We don't recommend using loose granular sorbents on a watercourse unless you're cleaning a reed bed. If granular sorbents are used, a boom should be installed downstream of the area the sorbent is being applied, to collect and contain the sorbent.

Any used sorbents may be classed as hazardous waste or special waste in Scotland and must be disposed of safely and appropriately in accordance with the Duty of Care for waste. See section 7.1 for information about safe and legal disposal.

Dam the watercourse

If the spilt material mixes with water you can't boom the watercourse as the pollution will just flow under the boom. If it's a small watercourse and has a low flow rate, you may be able to dam it and stop the water flow which will prevent the pollution spreading.

You can use different materials to build a dam, for example sand bags, wooden planks, hay bales and soil. Keep these securely near your planned damming point and train people how to dam the watercourse.

If your incident response plan includes the option to dam a watercourse, you must also include plans to have the contaminated water removed as quickly as possible. Water will quickly collect behind the dam and could flood other people's property and/or wildlife habitats with polluted water. You are responsible for making sure this does not happen.

You will need an alternative response plan in case high flow or rainfall makes damming impractical.

4.1.6 Improvised equipment

If you have a spill and pollution control equipment isn't readily available, you may be able to contain it using materials already on your site like:

- salvage sheets or tarpaulin and wooden planks to create a temporary boom in a river;
- fire hoses used as a boom;
- straw bales used as a boom and sorbent;
- a shovel to spread sand or earth onto small spillages or to construct a dam;
- a car foot well mat or a sheet of polythene, weighed down with sand or earth as a drain seal.

Sand and sand bags

If you have no other sorbent products available, dry sand or earth may soak up a spill of oil or chemicals. Sand bags can be used to channel substances to a collection point, to block off drains, contain spills or to dam ditches. Once contaminated, sand and sand bags must be properly disposed of in accordance with the Duty of Care for Waste (see section 7.1.) and not washed into drainage systems.



Sand bags used to contain an oil spill.

5. Site specific pollution control options

Your site pollution risk assessment may identify that you need or can use site specific pollution control systems. These can include on-site structures that you can divert or pump a spill to, to contain the pollution. The person who completed your risk assessment should be able to give you advice on the suitability of different options.

All these options are only short term containment measures and you should plan to remove contained material as soon as possible to prevent further risk to the environment.

5.1 Containment lagoons and ponds

Where the size and slopes of your site and the ground and soil conditions are suitable, earth banked containment lagoons can provide cost effective, remote containment systems. You may also be able to use them to contain and re-use firewater run-off.

Lagoons or ponds may be constructed above or below the surrounding ground level depending on the most cost effective option for your site.

To protect groundwater, the lagoon or pond must be impermeable. This may mean you need to put an impermeable liner into the lagoon or pond as it's built to make sure it doesn't leak. Where a liner isn't needed, we recommend a minimum of 1 metre of engineered clay, with a maximum permeability of 1×10^{-9} m/s to line the area.

Lagoons and ponds should be built so they can be isolated from the main drainage system in an emergency. Flood defence installations, such as a balancing lagoon or shared, off-site flood storage facilities may be used to contain a spillage, providing that they incorporate shut-off devices, unless a flood is happening or expected. If pumped storage or transfer facilities are in use, a back-up power supply should be considered.

5.2 Tanks

You may be able to use purpose-built tanks to temporarily contain a spill. Although most tanks aren't designed specifically for this use, the UK standards for liquid storage tanks and vessels are high and many of these are suitable for use as containment. They may be more expensive than lagoons, but this can be offset by the smaller land area required. A tank may also allow firewater to be contained and re-used in some circumstances.

The actual type, size, design standards and protective finishes of the tank will be influenced by how high the risk is your site poses to the environment as well as the retention time, the quantity and the nature of the materials stored. A more economical option might be to use a redundant or spare tank. If you're considering this, make sure the tank has been cleaned so that any spilt material you put into it doesn't react with its former contents.

Make sure any tank you use remains fit for purpose and doesn't leak. The tank will need to be protected from corrosion and aggressive conditions. This may be provided by a range of coatings, including bitumastic paints, epoxy coatings and rubber and glass linings. These will be determined by the substance to be contained, as well as other corrosive influences. You should inspect your tanks regularly and may need to have them tested. If an inspection or test highlighted that the tank needs to be repaired, you should do this as soon as possible.

When you design a tank system for pollution control, consider the worst possible case scenario: total containment failure of your largest storage container or tank at the same time as heavy rainfall.

In some emergencies, it may be possible to use storm tanks in the sewerage system, at a waste water treatment works (WWTW) or at other effluent treatment facilities. You must have agreement from the sewer provider or treatment plant operator before you do this. Only use this option as a last resort and don't rely on it, as the tanks may be full, for example after heavy rainfall. The effects of the discharge on the WWTW should also be considered, as damage to the treatment process may result in greater environmental harm, due to the discharge of raw or partially treated sewage, as well as the contaminated run-off.

5.3 Sacrificial areas

You may be able to allocate areas on your site as sacrificial areas. These are areas that under normal circumstances have other uses, for example car parks or hard standing, but if you have a spill you can divert or pump the spill there. The area must be impermeable to prevent spilt materials causing groundwater contamination.

Bunding car parks and other hard standing areas - Impermeable yards, roads and parking areas can be converted to temporary lagoons. You can use sandbags, suitably excavated soil or sand from emergency stockpiles to form perimeter bunds, but only if the surface has been maintained and is in good condition. Permanently installed bunding, for example with low kerbs or roll-over bunds, around suitable impermeable areas, the entire site, or just the sensitive area, is a better option.

If you have a spill, all drain inlets such as gullies within the area, must be sealed to prevent the pollutant escaping. See Section 4.1.3 for information about containing spills on the surface. If appropriate, a liner may be used to improve the impermeability of the sacrificial area to protect groundwater.

You may be able to combine a sacrificial area with containing a spill in your drainage system to contain a larger volume of liquid that your drainage system can hold.

5.4 Pits and trenches

You may be able to use pits or trenches when other pollution control methods have failed or no other method is available. You should consider their use carefully due to the risk of groundwater contamination; ask the environmental regulator for advice when you're planning for this option. Use a liner to protect against land and groundwater contamination; this is essential in areas of high groundwater vulnerability. You should ensure the liner will remain undamaged by the material spilt. If you don't use a liner the contaminated ground will need to be removed and legally disposed of as soon as it's safe to do so.

Pits and trenches may be used to add reagents for neutralising harmful substances or other clean up products (see section 7.4.2).

6. Spills on a road or highway

It's more difficult to write an incident response plan for a spill on a road or highway as you can't predict where it may happen and you're less likely to know about the local environment or any existing pollution control options.

If your drivers follow specific routes, you can find out about environmentally sensitive areas and local drainage systems on those routes. You may be able to agree pollution incident response plans with the fire and rescue service, the environmental regulator, the local authority or highway or road authority. A plan can give you information about who to contact if you have a collision or a spill and the size of a spill you should call us about. It should also address incident response and clean-up or remediation responsibilities, as any delay in incident response can make an incident harder and more expensive to deal with.

If you have a spill on a road or highway and are in any doubt about the environmental effects, call your environmental regulator for advice.

Even if you can't write a pollution incident response plan, you can still take measures to minimise the environmental and public health effects of a spill.

6.1 Correct signage

Depending on what you are transporting and where, you may be required to classify, package, label and certify the substance or material being transported. This allows all organisations in the supply chain, including the emergency authorities, to know and understand what the hazard associated with your load is.

You have a responsibility to identify the hazards of the goods you intend to transport, and meet requirements for packaging, labelling and documentation.

If you transport **dangerous goods**, you must comply with certain legal requirements regulated by the Health and Safety Executive (HSE) or the Health and Safety Executive Northern Ireland (HSENI).

There are different **classes** of dangerous goods including:

- corrosive substances
- explosive substances and articles
- flammable liquids
- flammable solids
- gases
- oxidizing substances
- radioactive substances
- toxic substances.

The Health and Safety Executive has guidance on the 'Carriage of Dangerous Goods' on their website, see Reference 5.

6.2 Vehicle spill kits and training

All vehicles transporting goods should carry a spill kit and personal protective equipment appropriate to the goods being transported. Include absorbent materials and sealing or containment materials, such as sealing putties and drain sealing mats. Carry a shovel, as earth can be used as an absorbent or to make a barrier to contain a spillage.

You should also include the UK pollution Hotline number **0800 80 70 60**. Depending on what you're transporting, carrying some pollution control equipment will be a legal requirement, References 6 and 7. This may sometimes mean a vehicle needs a dual purpose spill kit for the material being carried and the contents of the fuel tank.

Depending on what you're transporting, carrying some pollution control equipment will be a legal requirement,

Drivers should be trained how to use the spill kit safely and effectively, and when they should call the environmental regulator, emergency services and highway or road authorities. Under the UNECE (United Nations Economic Commission for Europe) 'European agreement concerning the International Carriage of Dangerous Goods by Road (ADR)', there are training requirements for drivers of certain vehicles.

Drivers should:

- know what to do to contain a spill and protect the environment;
- follow the pollution control hierarchy, see section 4;
- be able to recognise signs by the highway that show where pollution control devices may be available so they can highlight these to emergency responders when they arrive and save valuable time.



Chemical spill training FRS (courtesy of SEPA).

6.3 Emergency responders

The fire and rescue services carry some pollution control equipment and as primary responders they are able to respond to an incident quickly.

Some highway or road authority contractors also carry pollution control equipment but their response time may not be as fast as the emergency services. If you have a spill that's spreading, contact the highway or road authority, or their local representatives as they may have plans of the local drainage systems that could help contain a spill. They can also manage traffic around the incident and make sure the road is safe to use after the spill is cleaned up.

The Chemical Industries Association runs a rapid response scheme 'Chemsafe'. 'Chemsafe' is the UK chemical industry's voluntary scheme for providing expert advice to the emergency services in the event of a chemical emergency. The scheme is designed to deliver a rapid and co-ordinated response following a chemical incident.

6.4 Spill from a vehicle fuel tank

If you have an accident or road traffic collision that causes the vehicle fuel tank to leak, take care in case the leaking fuel produces flammable vapours. If it's safe to do so, use your vehicle spill kit to stop the spill from spreading.

If your diesel vehicle has an emission reduction solution tank, for example AdBlue, to reduce your greenhouse gas emissions, check it isn't leaking after any collision. If it's leaking, try to stop the spill spreading. This solution is a mixture of urea and water; it's highly toxic to river life and can cause extensive groundwater pollution.

6.5 Spill from a tanker

If a tanker transporting material is damaged in transit and starts to leak, the driver should stop the vehicle. If it's safe to do so, they should use their vehicle spill kit to try and contain the spill. It may then be possible to transfer the remaining product into another undamaged tanker.



Inspection of tanker pipework.

7. Spill Clean up

After you've stopped a spill and contained the material, you should clean it up as soon as possible. A spill contractor may be able to help with this. We recommend that mechanical recovery is used to remove as much of the collected material as possible before you use sorbents. These methods don't add to any pollution that's already been caused and create as little waste as possible.

It's important that the spilt material, or any residue after its removal, can't continue to cause pollution. You may need to employ specialist companies to help you determine if there is still a pollution risk and to clean up.

It isn't the responsibility of the fire and rescue services or the environmental regulator to make sure the waste from the spill is kept safely until it can be legally disposed of. Your incident response plan should include details of who will look after your site after the spill has been made safe until the clean-up is finished.

Any material that you've collected in pools, tanks, sacrificial areas or that's being held in place with a boom must be transferred to a safe container or removed as safely and quickly as possible. After the collected material has been removed, check to see if the spill caused land or groundwater contamination, see section 7.5.

If you've used any re-usable equipment to contain the spill, for example containment tanks, it should be emptied and cleaned as soon as possible so it's ready to use again.

Any contaminated sorbents, soil or sand must be disposed of in accordance with the Duty of Care, see section 7.1.

The responsibility for the disposal of waste and pollutants after an incident is with the polluter and must be carried out using registered waste contractors. Where the polluter can't be found, responsibilities are:

- Local authority – for materials on playing fields, public open spaces, beaches.
- Land owner or occupier – for materials on private land or inside premises.
- Highway or road authorities or their representatives – for materials on highways and major trunk roads.
- County, metropolitan, or unitary authorities – for materials on roads not covered by the road authorities.

In Northern Ireland and Wales if the environmental regulator has to take action during an incident or to clean up after your spill or if the fire and rescue services have helped with emergency containment, the environmental regulator will normally recharge you for the time and equipment that's been used.

In Scotland, SEPA can recover the costs of clean-up operations if you are legally required to do the work but fail to do so.

7.1 Waste management and your legal duty of care

Waste material from an incident will come under the Duty of Care for waste. This means you have a legal duty to make sure that any waste the incident produces:

You must follow your Waste Duty of Care when dealing with waste material.

- doesn't escape your control;
- is transferred by a registered waste carrier to an appropriately authorised waste management facility (you can check our web sites for listings);
- is covered by a waste transfer note, with a full description of what it is, when you transfer it to someone else;
- is disposed of lawfully.

If its hazardous waste, or special waste in Scotland, for example waste oil, acids and/ or solvents or sorbents and soil contaminated with these, additional requirements will apply. When dealing with hazardous/ special wastes:

- you must store, handle and dispose of these differently to non-hazardous wastes
- you must not mix different types of hazardous or special wastes together
- if you mix hazardous or special wastes with non-hazardous wastes then you must consider everything as hazardous or special waste
- the movement of hazardous/ special wastes must be accompanied by a consignment note. Everyone involved in the transfer of the waste, including your environmental regulator, must keep copies of the consignment notes for proof of legal disposal.

In Scotland and Northern Ireland, for free advice and guidance on how to comply with waste legislation visit the NetRegs website (see website list).

7.2 Sewer jetting

Where pollution has entered sewers or drainage systems, these may need to be jetted to remove residues. You must consult the local sewer provider if public sewers are involved. All effluent generated by this process must be contained and disposed of by a registered waste contractor.

7.3 Road and highway clean-up

If the spill has been on a road or highway, there may be other clean-up considerations beyond removal of waste. To make sure other road users are safe, the surface must be left in a sound condition and must not be slippery; the highway or road authorities decide if a road is safe.

Some vehicle fuels, for example diesel, or chemicals may damage the road surface. The highway or road authority may decide you need to employ or pay for a contractor to remove part of the roadway and re-lay a new surface.

7.4 Material specific clean-up

7.4.1 Residue clean-up

If you need to clean residues left from a spill, products exist that are designed and manufactured to clean up in different ways. These include dispersants, surface cleaners and bioremediation products. To use some of these products, you have to add them directly into the water environment. Often the products are pollutants on their own and can cause a worse problem if they aren't used correctly and for the right purpose.

You should carefully select an appropriate product for your spill and where you want to use it. Ask the environmental regulator for advice on the best product for your spill clean-up.

If you use a clean-up product on your site or on a road or highway, you must contain all the effluents that are produced for correct disposal, see section 7.1. You shouldn't allow any effluent to be washed into, or run into drains.

7.4.2 Neutralising agents

You may be able to safely neutralise some substances after they've been contained, for example soda ash may be used for dealing with acid spillages. You'll need to consider your options case by case, with expert advice. For example, this will depend on the volumes that have been spilt and contained and where the spill is contained. You'll need permission from the environmental regulator before you can use these agents to make sure they don't cause further environmental damage.

7.4.3 Animal carcass removal

If any fish or animals were killed during a spill from your site or vehicle, you'll be responsible for their safe and legal movement and disposal. A spill clean-up contractor may be able to help you remove them.

Make sure dead fish or animals are collected and transported in leak-proof, closed containers or sealed new packaging.

If the fish or animals were 'wild', you must follow the Duty of Care for their removal, see section 7.1.

If the animals were being farmed and were killed during the spill incident, then animal by-products rules apply. Businesses in Scotland and Northern Ireland can find information on the animal by-products regulations on the NetRegs website, see website list.

7.5 Site remediation

After any spill or pollution incident, you should assess the damage and take any necessary action to restore the environment. Your insurance company should be able to help you do this. If you're in any doubt about what you need to do, contact the environmental regulator.

Depending on what was spilt, how hazardous it is and local conditions, you may need an experienced consultant to help you investigate if any land contamination or groundwater pollution has been caused and to set up appropriate monitoring. If there is contamination or pollution, they can recommend options to restore it.

Restoration of either land or groundwater is a specialised process and you'll need to employ a competent company to do this.

You should agree what your actions will be with the environmental regulator and agree a timescale for the work. If you don't take action to restore the environment, you will be committing an offence and you will be liable for enforcement action.

8. Spill review and lessons learnt

After any spill or incident, you should review what happened. The aim is to find what happened so you can stop it from happening again, not to hold someone responsible.

The review should identify what went well and what could be improved. Include all your staff who responded to the spill. We suggest you invite people from outside your company who also responded to help in the review.

You should investigate:

- what happened;
- how did it happen;
- how well did you respond;
- how well did you follow your incident response plan;
- did the plan work, what went well and what didn't;
- what was the overall impact of the spill, both to the environment and costs to your business.

You may need to:

- review and improve management procedures to make sure whatever caused the spill can't happen again;
- review staff training for management procedures and incident response;
- update your pollution incident response plan if something didn't work or could be improved.

9. Glossary

Clean, uncontaminated water	Water which is free from any contamination, for example uncontaminated could include rainwater directly from roofs. Even if the water looks clear it may still be contaminated with e.g. chemicals, so it is essential the sources of runoff are considered carefully when checking whether water is contaminated or not.
Combined drains/sewers	Sewers or drains that collect both foul sewage and surface water run-off and carries it safely to a waste water treatment plant. Either owned privately or by the local water and sewerage provider.
Duty of Care	A legal obligation to take reasonable care and avoid causing damage.
Environmentally sensitive area	Examples include: Site of Special Scientific Interest (SSSI), Area of Special Scientific Interest (ASSI), Special Area of Conservation (SAC), Special Protected Area (SPA), National Nature Reserve, Sites of international conservation importance – Ramsar sites, areas of Outstanding Natural Beauty (AONBs), National Scenic Area.
Foul sewer	Sewers or pipes that collect foul water (sewage and trade effluent) and convey it to a sewage treatment facility. They can be owned privately or by the local sewage treatment provider.
Firewater run-off	Water that has been used to fight a fire, likely to be contaminated with the products of combustion and unburnt materials that are washed off the site.
Groundwater	All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil
Hazard	A situation with the potential to result in harm. A hazard does not necessarily lead to harm.
Hazardous waste	Wastes, specified in the European Waste Catalogue, that may be harmful to human health or the environment. This includes but isn't limited to: <ul style="list-style-type: none">• paint (oil and solvent based);• oils and oily sludges, for instance engine oil;• other chemical wastes such as disinfectants, solvents, insecticides and pesticides;• garage waste such as used oil/fuel filters, aerosols, antifreeze and brake fluids, lead acid batteries, contaminated rags;• asbestos.
Highway or Road	Includes the road carriageway, curtilage, pavement and embankment.

Highway or Road Authorities	Includes local councils and in: <ul style="list-style-type: none"> • England, the Highways Agency or the Highways Authority • Northern Ireland, Department for Infrastructure Roads • Scotland, Transport Scotland • Wales, the Welsh Assembly Government
Oil separator	An oil separator is a piece of equipment used to separate oil and water mixtures into their separate components
Penstock valve	A sluice or floodgate to regulate the flow in a watercourse.
Primary container	The container the material is stored in, for example a tank, intermediate bulk container or drum. It's the first line of defence and must be fit for purpose.
Risk	The likelihood that the harm from particular hazards is realised including the extent to which the risk covers, the population affected and the consequences for them.
Secondary containment	This is another container in which a primary container is located. It is impermeable to the product being stored and water, and designed to catch spills, leaks or overflows from the container (including its pipework and equipment) in everyday use, accidents and emergencies. Secondary containment is essential to prevent pollution. Bunds and drip trays are examples of secondary containment.
Sorbent	A generic term for absorbents or adsorbents.
Special waste	The term used in Scotland for what is known as hazardous waste in England, Northern Ireland and Wales. See hazardous waste above.
Spill kit	A collection of pollution control equipment held in one place and specific to the materials you have on site. Proprietary oil and/or chemical spill kits are available; check with your pollution control equipment supplier that the contents are suitable for your needs before purchase. We recommend that a spill kit is stored near to where it may be needed, for example next to storage containers or delivery areas and in an alternative location in case it isn't safe to reach some of the spill kits during an incident
Surface water drain	A drain that collects surface water only from buildings, roads and yards, which usually discharge directly into the water environment.

10. References

1. Ofwat reference map to show which water companies supply each area of England and Wales. Available at <http://www.ofwat.gov.uk/households/your-watercompany/map/>
2. GPP 21: Pollution Incident Response Planning. Available at <http://www.netregs.org.uk/media/1436/gpp-21-final.pdf>
3. The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR): Statutory Instrument 2002 No. 2776. Available at <http://www.legislation.gov.uk/uksi/2002/2776/introduction/made>
4. PPG3: Use and design of oil separators in surface water drainage systems. Available at: <https://www.sepa.org.uk/media/60086/ppg-3-use-and-design-of-oil-separators-in-surface-water-drainage-systems.pdf>
5. HSE Carriage of Dangerous Goods Manual. Available at <http://www.hse.gov.uk/cdg/manual/index.htm>
6. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment, Regulations 2009: Statutory Instrument 2009 No. 1348.
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010.
7. ADR 2009, European agreement concerning the international carriage of dangerous goods by road (current at time of publication, usually amended every two years).
8. GPP 2: Above ground oil storage tanks. Available at: <http://www.netregs.org.uk/media/1317/gpp-2-pdf-feb-2017.pdf>

11. Website List

NetRegs - Guidance on environmental regulations for businesses in Scotland and Northern Ireland

www.netregs.org.uk

Scottish Environment Protection Agency (SEPA) website

www.sepa.org.uk

Natural Resource Wales

www.naturalresources.wales

Welsh Government

www.gov.wales

Department of Agriculture, Environment and Rural Affairs Northern Ireland

www.daera-ni.gov.uk

Appendix A: Example Risk Assessment

Hazard <i>What has the potential to cause harm?</i>	Source <i>Source(s) of hazard</i>	Pathway <i>How can the hazard reach the receptor?</i>	Receptor(s) <i>What/who is at risk?</i>	Risk management actions <i>What measures will be taken to reduce the risk?</i>	Exposure probability <i>How likely is this to happen?</i>	Consequence <i>What harm can be caused?</i>	Overall Risk <i>What is the risk?</i>
Fuel/ chemicals/ oil leak	Fuel oil storage areas Refuelling areas Site plant/ machinery	Land, groundwater and air	Ground Surface water/ groundwater Local school to the north of the site Local residents (located in the residential area to the north west of the site)	Follow refuelling protocol at all times Only use suitable containers to store fuel/oil and store these according to the oil storage regulations and away from sensitive receptors Store solvents, chemicals and paints in accordance with the COSHH data sheets Bulk fuel storage should be integrally bunded or kept within a bunded area Use drip trays/plant nappies for plant / machinery Implement and follow procedures for storage, use, delivery, inspection and monitoring of polluting substances	Possible	Water pollution Contaminated ground Odour nuisance	Low if the risk management techniques are applied
Dust / Particles	Site surfaces (dry and windy weather) Soil stockpiles Earthworks using mobile plant	Air	Site personnel/ visitors Local school Local residents	Damp down earthworks during dry weather Locate stockpiles out of the wind (or if necessary provide wind breaks) Vegetate soil stockpiles Minimise the height of fall of materials during earthworks	Likely – esp. during summer months	Dust nuisance	Low if the risk management techniques are applied

Hazard <i>What has the potential to cause harm?</i>	Source <i>Source(s) of hazard</i>	Pathway <i>How can the hazard reach the receptor?</i>	Receptor(s) <i>What/who is at risk?</i>	Risk management actions <i>What measures will be taken to reduce the risk?</i>	Exposure probability <i>How likely is this to happen?</i>	Consequence <i>What harm can be caused?</i>	Overall Risk <i>What is the risk?</i>
Odours	Biodegradable waste on site	Air	Site personnel/visitors Local school Local residents	Store waste away from site boundary, main access roads and downwind of sensitive receptors Use covered containers for organic waste (e.g. food, weeds and other vegetation) and remove wastes frequently	Likely	Odour nuisance	Low if the risk management techniques are applied
Leachate	Stored wastes	Ground	Surface water/groundwater	Use covered containers suitable for their contents Ensure waste storage containers are in good order i.e. not corroded or worn out Store waste away from sensitive receptors i.e. water environment, drains. Store waste in areas away from vehicle movements to minimise the risk of impact	Possible	Water pollution	Low if the risk management techniques are applied

Further Information

For information about environmental compliance, or to report inconsistencies or inaccuracies in this guidance, visit www.netregs.org.uk.

You can view guidance on environmental regulations online at www.netregs.org.uk (for businesses in Scotland and Northern Ireland) and at <http://naturalresources.wales> (for businesses in Wales).

This guidance is issued by the Scottish Environment Protection Agency (SEPA), Northern Ireland Environment Agency (NIEA) and Natural Resources Wales (NRW).

This document is available at www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/.

First published October 2018

Useful contacts

Incident/Pollution hotline: Northern Ireland, Scotland and England

0800 80 70 60 (24-hour service)

Emergency hotline - Wales

0300 065 3000 (press 1 – 24-hour service)

Floodline – Wales, Scotland and England

0845 988 1188

Flooding incident line - Northern Ireland
(Please Note: Flooding is the responsibility of the Department for Infrastructure in Northern Ireland)

0300 200 0100

Natural Resources Wales

www.naturalresourceswales.gov.uk

Head Office (Ty Cambria)
29 Newport Road
Cardiff
CF24 0TP

Tel: 0300 065 3000 (Mon – Fri, 9am–5pm)

enquiries@naturalresourceswales.gov.uk

Scottish Environment Protection Agency

www.sepa.org.uk

Corporate Office
Strathallan House
The Castle Business Park
Stirling
FK9 4TZ

Tel: 03000 99 66 99

www.sepa.org.uk/contact

Northern Ireland Environment Agency

www.daera-ni.gov.uk

Head Office
Klondyke Building
Cromac Avenue
Gasworks Business Park
Malone Lower
Belfast
BTZ 2JA

Tel: 0300 200 7856

nieainfo@daera-ni.gov.uk