

Pollution Prevention Guidelines:

July 2011

Safe storage

The safe operation of refuelling facilities: PPG 7

These guidelines are produced by the Environment Agency for England and Wales, the Northern Ireland Environment Agency and the Scottish Environment Protection Agency, referred to here as 'we' or 'us'.

Pollution Prevention Guidelines (PPGs) are based on relevant legislation and reflect current good practice. Following the guidelines will help you manage your 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.

You can find our contact details at the end of these guidelines.

This document is produced in accordance with the Code of Practice on Guidance on Regulation, reference 1.

1. Introduction

These guidelines have been produced for operators of both retail and non-retail liquid fuel refuelling facilities.

They will help you prevent damage to surface waters, groundwater, land and air. They describe good practice in fuel storage and management that can reduce the environmental risk of your site. These guidelines also refer to the storage and handling of other liquids commonly used in association with fuel storage and dispensing.

These guidelines apply to all types of fixed refuelling facilities but you may need to comply with additional legislation and guidance depending on the:

- type of fuel you store
- quantity of fuel you store
- type of facility (commercial, retail or private)
- intended use of the fuel
- environmental sensitivity of the location.

Table 1 highlights other guidance and regulations that may apply to your refuelling facility. You should read the ones that apply to you together with these guidelines.

Table 1.

| Type of facility | Guidance/Regulation |
|------------------|--|
| Mobile bowsers | For above ground storage, see reference 2 and working at construction and demolition sites, reference 3. |

| Type of facility | Guidance/Regulation |
|---|--|
| Drums and Intermediate Bulk Containers (IBC) | For correct storage and use, see reference 4. |
| Gaseous fuels at normal temperatures; for example liquid petroleum gas and compressed natural gas | Regulated by Petroleum Licensing Officers and Health and Safety Executive (HSE) - see HSE, in useful website list. |
| Storage for agricultural use | This type of facility is covered by the following regulations: In England, Northern Ireland and Wales: the Silage, Slurry and Agricultural Fuel Oil Regulations, (SSAFO) reference 5. In Scotland: The Water Environment (Oil Storage) (Scotland) Regulations 2006, reference 6. |

These guidelines refer to environmental legislation you ‘**must**’ follow in England, Northern Ireland, Scotland and Wales. Where our recommendations aren’t a legal requirement, we say you ‘should’.

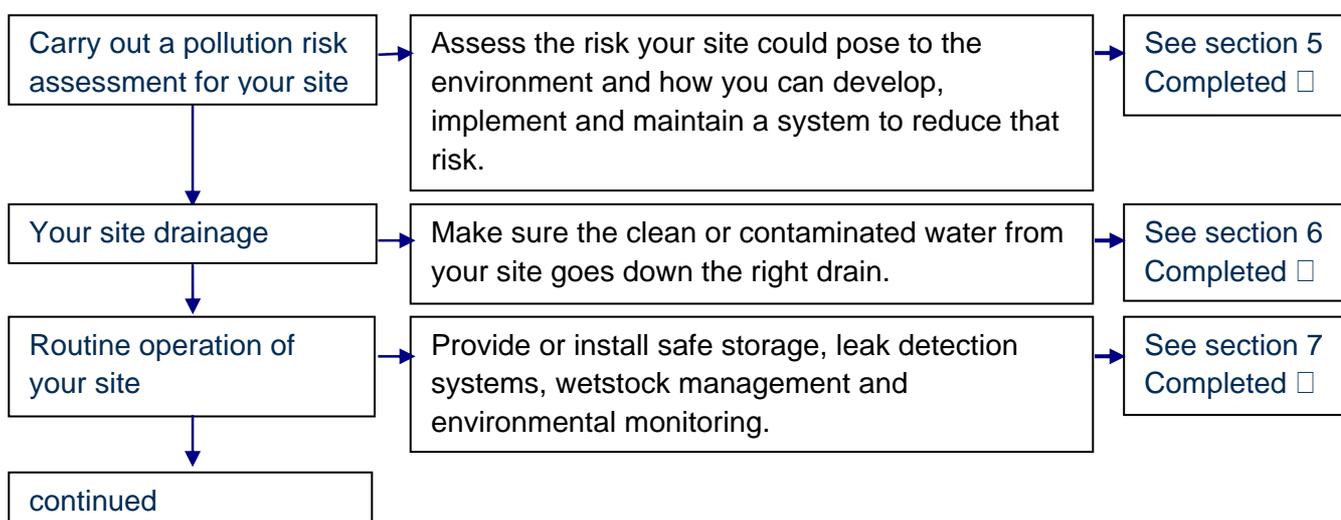
The guidance doesn’t cover:

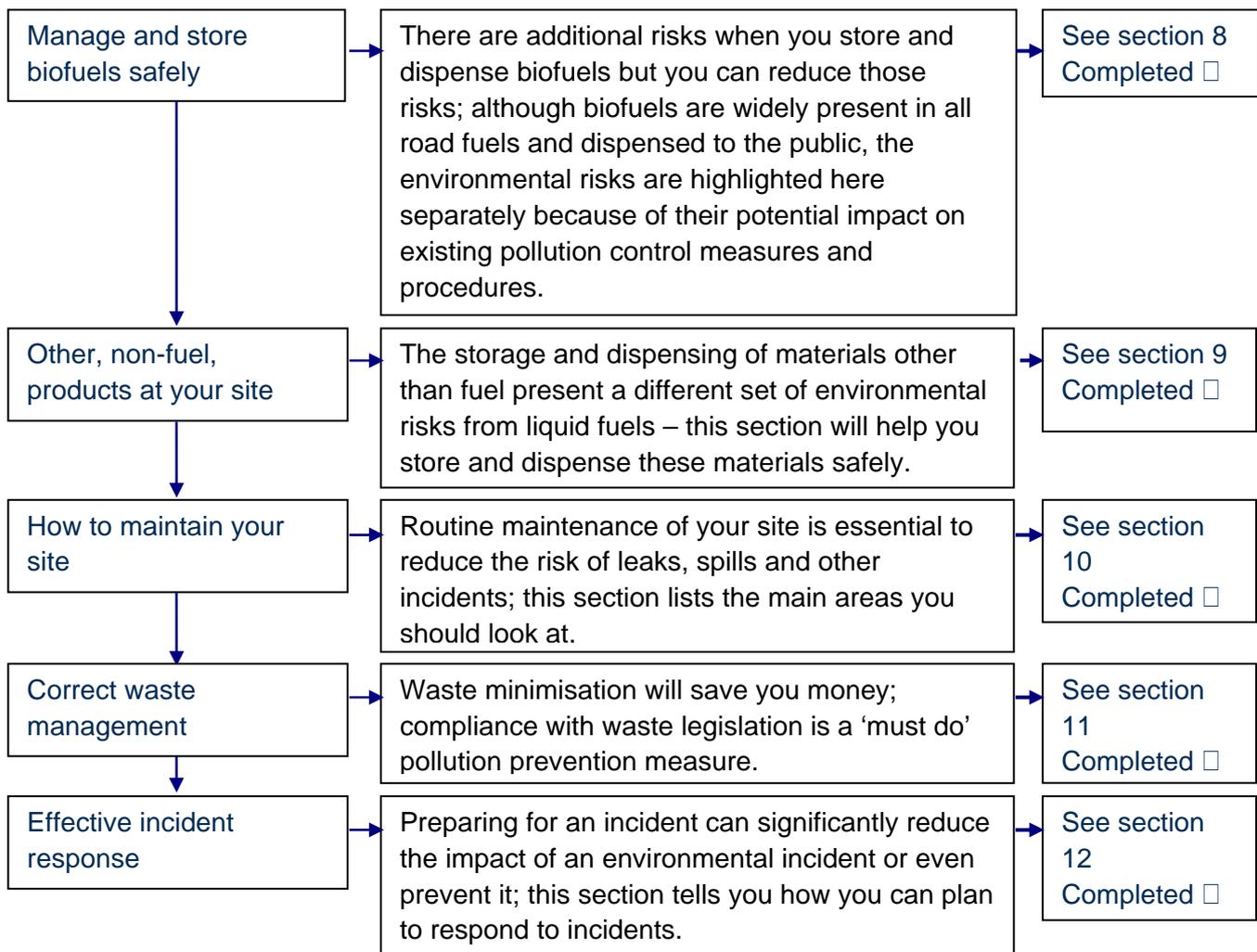
- health and safety aspects of refuelling facilities or incident management;
- fire prevention or control;
- design, construction or decommissioning.

For more information on these areas, see reference 7 which covers many aspects of design and construction, beyond the scope of this guidance. Although it refers primarily to retail facilities it's applicable to delivery, storage and dispensing from non-retail facilities.

2. Key points for the safe operation of refuelling facilities

You should consider the following points to make sure your refuelling facilities don’t put the environment at risk.





3. Background

Fuel storage and dispensing facilities have the potential to cause significant damage to the environment which could threaten water supplies, human health and wildlife. Causes of environmental incidents on your site include:

- delivery and use of materials;
- overfilling storage containers;
- plant or equipment failure;
- containment failure;
- fires, explosions and failure to contain fire fighting water;
- wrong connections of sewers and pipes;
- incompatible materials coming in contact, uncontrolled reactions;
- discharge of partially-treated or raw effluent;
- accidents and vandalism;
- flooding of part of, or your entire, site.

Any of these incidents could affect:

- drainage systems, surface waters, groundwater and soil;
- air quality by producing toxic fumes and airborne pollutants;
- thermal radiation.

All of which can damage human health, animals, ecosystems and the environment.

The impacts may be immediate or may take a while to become apparent but are generally long lasting; you may be responsible for the costs of clean-up. Remediation can be expensive and there may be additional costs associated with our incident response and/or fines or costs through the criminal and/or civil courts. Your company's business reputation may suffer.

4. Legal background

This section outlines your main legal obligations associated with permitting and licensing for environmental protection.

4.1 Permits and consents

Whilst various parts of the United Kingdom are covered by different sets of regulations, their aim is the same: to protect water, land and air against damage. The different requirements throughout the UK are outlined in the following sections.

4.1.1 England and Wales

Discharges into surface waters and groundwater (the water environment) are controlled by the Environmental Permitting Regulations (England and Wales) 2010.

These regulations apply to all direct contaminated discharges into surface waters or groundwater, and to discharges into groundwater via soakaways. We don't automatically grant a permit and, in environmentally sensitive areas, may refuse to grant a permit to protect the environment.

All discharges to the public sewers (foul or surface water) require prior authorisation from your local sewer provider and may be subject to the terms and conditions of a trade effluent consent or trade effluent agreement.

For guidance on how we manage and protect groundwater, see reference 8.

4.1.2 Northern Ireland

In Northern Ireland, the Water (NI) Order 1999, means you need a consent to discharge from the Northern Ireland Environment Agency (NIEA) before you make any discharges into the water environment, surface water or groundwater. If you make a discharge without a consent, or that doesn't meet the conditions of your consent, you are committing an offence. Pollution Prevention and Control Legislation regulates certain types of businesses. If your business carries out an activity regulated by the PPC legislation, you will need a PPC Permit from the NIEA.

4.1.3. Scotland

In Scotland, unloading petrol into stationary storage tanks at terminals and service stations (above certain qualifying thresholds) is regulated under the Pollution Prevention and Control (Scotland)

Regulations 2000 (as amended) Part B, for emissions of petrol vapour to air. Any operator of a petrol refuelling facility will need permission from the Scottish Environment Protection Agency (SEPA) before starting operation and must comply with the conditions contained within their permit. To apply to operate a service station, i.e. unload petrol into stationary storage tanks, see SEPA's Pollution Prevention and Control (PPC) application forms webpage, see useful websites. A further regulatory requirement will come into effect in 2012 where the refuelling of vehicles at a service station (above certain qualifying thresholds) will also be required to be permitted under the same legislation.

Where non-compliance is found, SEPA may issue a Notice requiring improvements in operation or suspension of the activity.

All sites must also comply with the Water Environment (Controlled Activities) (Scotland) Regulations (CAR) which regulate discharges to the water environment. For more information, see CAR Practical Guide.

For more details on permits and authorisation, see reference 9.

4.2 Oil storage regulations

4.2.1 England

In England, above ground oil storage is regulated by the Control of Pollution (Oil Storage) (England) Regulations 2001, (OSR England). Oils covered by these regulations include petrol, diesel, vegetable, synthetic and mineral oils. They apply to most industrial, commercial and institutional sites storing oil in containers over 200 litres and to private dwellings with containers storing more than 3,500 litres.

4.2.2 Northern Ireland

In Northern Ireland, above ground oil storage is regulated by the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2011, (OSR NI). These regulations apply to petrol, diesel, vegetable, synthetic and mineral oils. The regulations apply to most industrial, commercial and institutional sites storing oil in containers over 200 litres, including drums and IBCs.

4.2.3 Scotland

In Scotland, above ground oil storage is regulated by the Water Environment (Oil Storage) (Scotland) Regulations 2006 (OSR Scotland). These regulations apply to any kind of oil including petrol, diesel, mineral oil, heating oil, lubricating oil, agricultural fuel oil, waste oil, and vegetable and plant oil, but don't include uncut bitumen. See SEPA oil storage web pages, in useful websites.

4.2.4 Wales

There aren't any similar regulations that apply to Wales at this time but the standards set out in the Oil Storage Regulations of England should be followed.

For details on the OSR England, OSR NI or OSR Scotland see reference 6.

For underground storage of liquid hydrocarbon, and guidance on the storage of drums and bulk containers, see references 10 and 4.

Even if your above ground oil storage isn't covered by the oil storage regulations of the different countries, you should follow the good practice advice in reference 2 to prevent pollution.

4.3 Control of Major Accident Hazard Regulations (COMAH)

If you store fuel in volumes beyond the thresholds defined in the COMAH Regulations then they apply to your site. The competent authorities are the Health and Safety Executive (HSE), the Environment Agency, NIEA and SEPA who have issued a Containment Policy and Guidance for all COMAH sites; see reference 11.

4.4 Environmental Damage/Liability Regulations

Depending on where you are in the UK, the Environmental Damage Regulations (EDR) or Environmental Liability Regulations (ELR) apply. If serious environmental damage occurs or there's a risk of such damage as a result of your economic activity and you must do your best to prevent the damage occurring. 'Economic activity' includes:

- private businesses;
- farming;
- manufacturing;
- construction and demolition businesses;
- waste management businesses;
- forestry operations;
- public sector – schools, hospitals and government departments or agencies;
- charitable and voluntary organisations.

Environmental damage is considered to be:

- serious damage to surface water or groundwater;
- contamination of land where there is a significant risk to human health;
- serious damage to EU protected natural habitats and species or damage to Sites of Special Scientific Interest (SSSIs) in England and Wales or Areas of Special Scientific Interest (ASSIs) in Northern Ireland.

These regulations follow the 'polluter pays' principle. If you or your activities threaten to cause or have caused environmental damage, you must take steps to prevent the damage (or further damage) occurring. You must tell us about the damage; we'll tell you what to do to prevent and/or remedy it.

For more information on EDR and ELR, see reference 12.

4.5 Petroleum licences

The primary legislation covering refuelling facilities is the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR). It requires that the risk of fires and explosions caused by dangerous substances in the workplace must be assessed. In Northern Ireland, this is covered by the Dangerous Substances and Explosive Atmosphere Regulations (Northern Ireland) 2003. These regulations are administered by the HSE and enforced by the Petroleum Licensing Authority (PLA) where petrol is dispensed to motor vehicles.

Petrol filling stations are defined as sites that dispense petrol into the fuel tanks of vehicles, boats or aircraft by electrical or mechanical means. The Petroleum (Consolidation) Act 1928 (as amended by DSEAR) requires that anyone operating a petrol filling station should have a licence issued by their local PLA mostly every three years but some every year.

In Northern Ireland, this is covered by the Petroleum (Consolidation) Act (Northern Ireland) 1929 and Petroleum (Transfer of Licences) Act (NI) 1937 and licences are normally issued each year. The

licensing regime applies to petrol filling stations that are facilities where fuel is dispensed for retail and non-retail filling purpose. Filling stations operated by private individuals or recreational clubs (non workplace) where fuel is dispensed for the sole use of the owner or club members are also subject to the licensing regime but in these situations the provisions of DSEAR don't apply.

For consistency of enforcement throughout the UK, most PLAs have adopted the Model Conditions of Licence issued by the Petroleum Enforcement Liaison Group (PELG). The model conditions cover:

- notifications to the PLA;
- record keeping;
- restriction on the type of containers that can be filled;
- prohibition of sales to under 16s.

With the exception of non workplace filling stations, DSEAR still applies.

The Petroleum Enforcement Liaison Group (PELG) produces circulars (PETELs) to advise and guide local authorities on enforcement and technical matters to achieve consistent standards in health and safety enforcement across local authorities. The guidance in these circulars covers many aspects of a refuelling facility and may apply to non-retail facilities which dispense fuels other than petrol.

The HSE provides more information; see useful websites.

For more information on Petrol Licensing legislation, see references 13 and 14.

5. Identifying and managing your environmental risks and hazards

This section tells you how to assess the risk your site could pose to the environment and how you can develop, implement and maintain a system to reduce that risk.

5.1 Risk assessment

The best way to prevent pollution is to stop something becoming a hazard; it's better to avoid potential pollution problems in the first place than to try to control them through engineering, operational and management solutions.

We recommend you carry out a risk assessment, whatever size your site is, to evaluate the environmental risk. Guidance to help you complete a risk assessment is available in reference 15. Alternatively you could hire a consultant to help you do it.

For your site to pose a risk to environment and human health, three components need to be present: 'source - pathway – receptor'. 'Source' would be a potential source of pollution, 'receptor' would be what could potentially be affected by the pollution, and 'pathway' is the path/media source materials can potentially travel through, from source to receptor.

For a refuelling facility, stored fuel travelling through the site drainage could potentially leak into groundwater or a river if site drainage is faulty; so, the three components could be, for example:

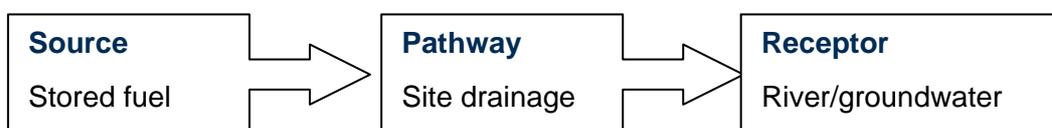
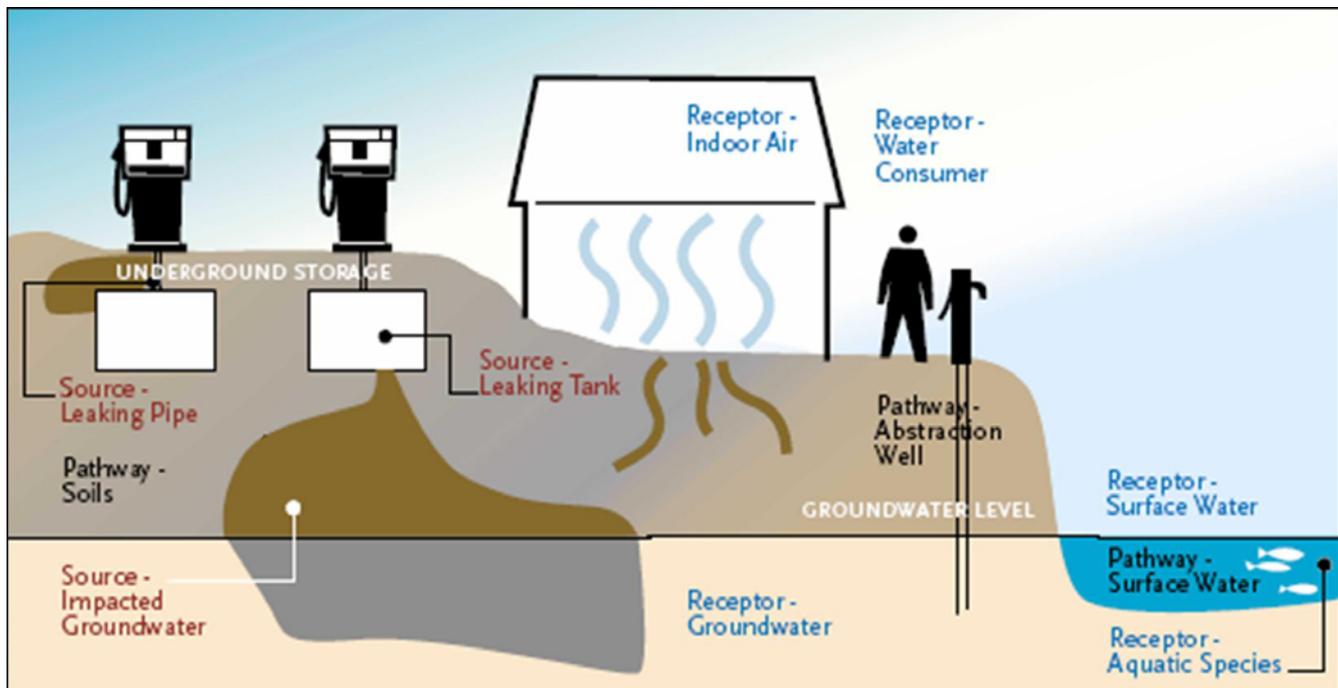


Figure 1 shows how the source/receptor/pathway can vary depending on the location and surrounding environment. Note how groundwater and surface water can also become a source once contaminated.

Figure 1.



An example of risk management that breaks the ‘source – pathway – receptor’ link is to use appropriate fuel storage and drainage systems that prevent the release from the source via a pathway into a receptor. You need to consider all the possible links, as there may be several. For example, you may need to consider the risk to the groundwater under the site and how this will affect local abstractors, or the movement of contaminants via groundwater to the river.

Your site environmental risk assessment can be carried out in stages and should take account of:

Hazard identification. Identifying polluting materials and processes such as:

- fuels
- detergents
- lubricants
- solvents
- storage
- catalytic reduction fluids
- wastes
- fuel delivery
- dispensing
- vehicle washing.

Possible causes of pollution. Consider what could go wrong:

- spills and leaks due to equipment failure, overfilling or mishandling of containers;
- damage, for example due to collisions;
- fire and explosions;
- vandalism;
- floods.

Your local environment. What's on and around your site including the:

- physical and chemical properties of your stored materials;
- potential impact of incidents occurring on your site;
- proximity to your site of sensitive receptors:
 - watercourses
 - canals
 - lakes/lochs/loughs
 - coastal waters
 - groundwater
 - nearby abstraction points
 - protected environmental features
 - local populations
- potential pathways from your site;
- type of operations you carry out on your site.

You should also consider the costs, benefits and social considerations as outlined in the Department for Environment Food and Rural Affairs (Defra) document for England and Wales - Guidelines for Environmental Risk Assessment and Management, see useful website list.

You can contact us for information about local environmental sensitivities. In England and Wales, you can follow the links to the 'What's in your backyard' section of the Environment Agency website; details at the end of this guidance.

5.2 Environmental management systems

You should use the results of your risk assessment to develop an environment management system (EMS) for your site; more details are on the Environment Agency's web site for England and Wales. This should detail the correct management and operational control procedures for your site which will greatly reduce the risk your site poses. As a minimum, the EMS produced for your site should include:

- operational control procedures;
- training provision and records:
 - on site hazards and risks;
 - risk management and procedures;
 - emergency response;
 - control of contractors;
- maintenance regimes and records;
- leak detection and environmental monitoring;
- appropriate emergency plans.

Activities that may need operational control procedures include:

- storage;
- delivery and unloading;
- dispensing;
- product volume monitoring (wetstock reconciliation see section 7.2);
- response to major and minor spills;
- leak detection and notification;
- maintenance;
- training.

Risk reduction measures that can be used in refuelling facilities include:

- built in automatic leak detection system (see section 7.2);
- wetstock reconciliation methods (see section 7.2);
- emergency shut down and pump shut down controls;
- use of dry break couplings for loading and dispensing;
- groundwater monitoring, both as a routine or if an actual or potential leak had been identified.

The government on-line business advice and support service, see useful websites, has guidance: 'How to set up your EMS'.

6. Your site drainage (pathways)

This section outlines good practice to help you deal with clean and contaminated water from your site and correct site drainage.

Incorrect or poorly designed and maintained site drainage systems are a common pathway for spills and leaks to enter the environment and cause pollution.

There are two types of drainage system that may serve your site. It's important to understand the difference between these two systems and the responsibilities linked with each of them so you can make sure you protect local environmental receptors.

Separate systems

These have two drains:

- **Foul sewer** carrying contaminated water (sewage and/or trade effluent, for example vehicle wash water) to a sewage treatment works; the works may either be private or run by your local sewage treatment provider.
- **Surface water drains** carrying uncontaminated clean water (drainage from roof or clean yard areas) connected directly to the water environment.

Combined systems

These have one sewer carrying both foul and surface water to a sewage treatment works. If you don't have access to public foul sewers, please see reference 16.

6.1 What to do with your clean water

All clean, uncontaminated rainwater should be drained to one of the following:

- a surface water drainage system;
- a combined drainage system downstream of the oil separator;
- directly to a local watercourse, to a sustainable drainage system (SUDS see section 6.4) or a soakaway.

This includes roof water and uncontaminated drainage from those areas of your site where vehicles aren't stored, repaired, refuelled or washed. These discharges may require prior permission from us or your local sewer provider.

6.2 What to do with your contaminated water; forecourt and site drainage

6.2.1 to foul sewer or combined drainage system

If you have access to a foul sewer system or a combined drainage system, you should direct any contaminated water to these. You may need permission from your local sewer provider before you can make these discharges.

6.2.2 to surface waters

Where your forecourt or site drainage connects to the surface water drainage system, we recommend you have a Class 1 full retention oil separator as the minimum level of protection for the environment. You should also have a method to close the outlet from the separator - either an automatic or manually operated shut off valve.

Class 1 separators are designed to achieve a discharge standard of less than 5 parts per million (ppm) of oil under standard test conditions. A full retention separator has the capacity to treat all the run-off from the drainage system. They are used where there is a risk of regular contamination with oil and a foreseeable risk of a significant spill, for example in vehicle maintenance areas and retail fuel forecourts.



Example of a full retention separator during installation.

You may need additional spill control measures for a road tanker delivery such as a dump tank designed to take the maximum volume of one tanker chamber. Bypass separators fully treat flows up to a certain rainfall rate. Flows above this rate are allowed to by-pass the separator. You should only use these separators for areas of your site where only small spillages can occur or the risk of spillage is small. For detailed advice on oil separator design and use see reference 17.

6.3 Make sure you have a site drainage plan

An up to date drainage plan of your site will help you stop pollution. You can draw the plan yourself or employ a reputable drainage company. Make sure the plan includes:

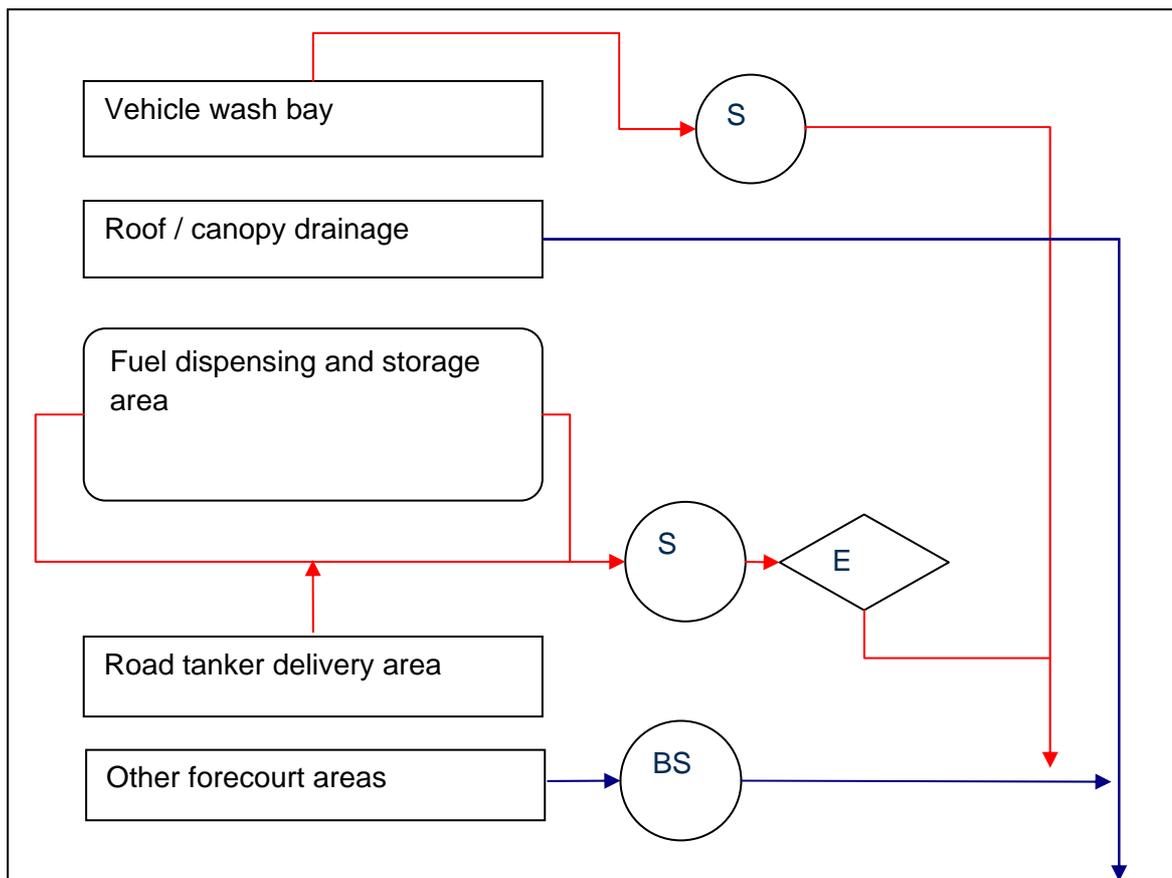
- the location of and direction of flow for all sewers and drains on your site;
- the location of all drain covers and gullies;
- all surface water drain outfalls;
- the destination of all foul sewers or combined drains;
- the location of all pollution control facilities, for example oil separators.

The common standards for drainage plans are to mark surface water drains in blue, foul sewers in red and combined systems with a red 'C'. This marking should be clear on the plan. We recommend you also paint these on the ground, especially for drain covers, indicating the direction of flow with arrows. This will save time identifying them if you have an accident on site where fuel is spilt.

You should make your plans available to everyone on site and any external responders to spills. If you make any changes on site, check the drainage plan to make sure new connections are made into the right drains. Update your drainage plan when the work has been finished.

Guidance to help you produce a drainage plan as part of your incident response planning is in reference 18.

Figure 2: Typical site drainage plan for a refuelling facility



Key to figure 2

S= Class 1 interceptor

E = Emergency shut off valve

BS = By-pass separator

Red = Foul drains connecting to local sewage treatment works

Blue = Surface drains connecting in to watercourses

6.4. Can you use sustainable drainage systems to protect the water environment?

You should consider using sustainable drainage systems (SUDS), known in Scotland as sustainable urban drainage systems, as part of your treatment of contaminated water. SUDS such as constructed wetlands or reed beds may offer an environmentally friendly and cheaper alternative to traditional methods of treating site drainage. They may also be suitable as a replacement for separators for oily water run-off, provided the system is compatible with local groundwater conditions and acceptable to the PLA.

Wetlands systems can offer an acceptable level of environmental protection provided they're properly designed installed and maintained. In some situations, they may provide better environmental protection than conventional drainage systems.



Example of a reed bed system

In England and Wales, you should contact us during the early design stages of any wetland system to make sure it will provide enough treatment and to check if you'll need a permit for the discharge. Information is available on the Environment Agency website.

In Northern Ireland, SUDS requirements are promoted by NIEA and the Rivers Agency and are starting to enter planning legislation following the findings of 'A Strategy for Promoting the use of Sustainable Urban Drainage Systems within Northern Ireland'.

In Scotland, SUDS are a legal requirement for all sites constructed after 1 April 2007, except single dwellings and those that discharge directly to coastal waters. For certain developments, such as industrial estates, car parks for more than 1000 cars, or developments with more than 1000 houses, you will require a licence from SEPA for SUDS. For smaller developments, where the risk of pollution is lower, you must follow CAR General Binding Rules 10 and 11, see CAR Practical Guide in reference 9. If your site was constructed after 1 April 2006, you must have a CAR licence to discharge into the surface water drainage system (even if this has SUDS), any untreated surface water which contains run-off from a fuel delivery or refuelling area, or from areas where potentially polluting materials, such as chemicals and oil, are delivered, handled or stored. These areas should be covered to prevent surface water run-off. Any discharges from these areas should either go to a foul sewer with the permission of your sewage provider, an on-site treatment facility or be stored for disposal off-site by a registered contractor. If a discharge to the surface water drainage system is unavoidable, you must obtain a CAR licence.

For more information on SUDS see useful websites, CIRIA's SUDS publications page, the government online business advice and support service, and in Scotland also SEPA's SUDS web pages.

6.5 Groundwater protection (receptor)

Groundwater is particularly vulnerable to pollution from underground fuel storage.

In England and Wales, policies related to development in areas of high groundwater sensitivity can be found in reference 8 and from the Environment Agency's website. We use Source Protection Zones (SPZ) as a primary risk screening tool for responding to developments and planning.

There are three SPZ subdivisions and bespoke SPZs defining all major abstraction sources intended for human consumption i.e. boreholes and springs.

Each zone has three subdivisions for each source moving out from the source. These are:

- Zone I (Inner Source Protection)
- Zone II (Outer Source Protection)
- Zone III (Source Catchment).

The closer your activities are to the inner area, Zone I, the greater are the restrictions we impose on activities and discharges to protect the groundwater.

An additional 'Zone of Special Interest' is defined in some areas. These zones highlight areas where known local conditions mean that potentially polluting activities could affect a groundwater source even though the area is outside the normal catchment of that source. Details on how to avoid groundwater pollution can be found in reference 8.

In Northern Ireland, regional groundwater vulnerability maps can be obtained from Geindex – in the useful websites list. Site specific groundwater vulnerability might have to be established during a site visit. The site investigation should also include a water features survey to make sure minimum

distances to boreholes, wells or springs (as well as surface water receptors) including those used for private supplies. Consult the public water supplier Northern Ireland Water on the extent of source protection/safeguard zones.

In Scotland, the approach is more general. Operators should identify all potential receptors that could be affected by the activity and undertake an appropriate assessment of the risk to each receptor. Mitigation measures must then be introduced to reduce the risk to acceptable levels. Reference 8 gives more information on the storage and handling of chemicals, including hydrocarbons; more information for underground installations is in reference 10.

7. Routine operation

This covers:

- fuel storage
- leak detection systems
- delivery and dispensing of fuels.
- vapour recovery
- washing activities

7.1 Fuel storage and leak detection

The details in this section mainly refer to underground fuel storage. For further information about above ground tanks, see references 2, 5 and 7.

We recommend that underground tanks should be double skinned and provided with an automatic leak detection system. Although installing underground tanks reduces the risk of fire and explosion since they are protected against radiated heat or fire and they allow uninterrupted space at ground level, it's difficult to inspect the tank and ancillary equipment to check the condition and for leaks.

In England and Wales, we don't recommend the installation of new underground storage tanks and associated infrastructure below the groundwater table.

Tank systems should be designed, constructed and installed to protect the public and the environment against any release of product. When properly installed, the complete system should retain its integrity for the duration of its design life.

Underground tanks should have:

- suitable levels of leak detection;
- corrosion and chemical action protection;
- leak containment.

Double wall tanks manufactured to BS EN 12285-1 standards reference 19 meet these requirements.

In Scotland, those involved in the design, installation and operation of underground fuel storage tanks should see reference 10.

7.2 Leak detection systems

A major leak involving the loss of large volumes of product over a short period should be easy to detect.

Smaller leaks from storage tanks and pipework are more common and may be difficult to detect as they can be masked by normal variances in fuel throughput volume and the effects of dispensing vapour recovery systems when displaced vapours are returned to a storage tank. Over a long period, this can result in the loss of a large volume of fuel. Leak detection equipment and techniques are available and should be installed on all new installations or as modifications to existing equipment.

Different leak detection equipment, techniques and systems can identify leaks at varying minimum detectable volumes. The most appropriate way to detect leaks at your site may depend on the environmental sensitivity of the site and the outcome of your environmental risk assessment.

See reference 7 for detailed guidance on the types of leak detection available and the various conditions and locations where they should be used. Leak detection systems should comply with BS EN 13160 standards reference 19.

Summarised information about different leak detection systems is given below:

- automatic leak detection system;
- wetstock monitoring;
- environmental monitoring.

The level of leak detection you need for your site will be influenced by the sensitivity of its location and reflected in your environmental risk assessment. The potential severity or impact of a leak from your site will determine the level of leak detection you need. Information to help you assess the severity of a leak, the likelihood of a leak occurring and your site classification can be found in references 7 and 8.

The main types of leak detection and wetstock monitoring systems can be split into classes 1 to 7, summarised in Table 2.

Table 2

| Class | Description | Detection capability | Effectiveness |
|-------------------|--|---|---|
| 1. Leak detection | Monitors for leaks in double skinned equipment using pressure or vacuum. | Leaks are detected in either skin of the equipment by changes in pressure equilibrium. Connects to control unit or automatic tank gauge with an alarm. | Indicates failure before loss to the environment. |
| 2. Leak detection | Monitors for leaks using fluid between the two skins. | Detects a leak in the outer layer allowing only detection fluid to escape. | Indicates leaks above and below product level in outer skin of equipment. |

| Class | Description | Detection capability | Effectiveness |
|--|---|---|--|
| 3. Leak detection | Monitors leaks using liquid level and fluid discriminating sensors or vapour detectors. | Detects below the product level only. | This class is usually more appropriate for monitoring double skinned pipe work underneath dispenser sumps and tank fill and dip chambers. |
| 4.a,b and c Dynamic, Quiet Period and Static | Analyses rates of change of tank contents in conjunction with an automatic product gauge. | Leak isn't detected until product is lost to the environment. | These systems require the product levels to be within specified limits and their effectiveness depends on the frequency of testing. |
| 5. Wetstock reconciliation* | Measures changes in, and compares the volume of, product in the tank with the volume delivered and dispensed. | This system can vary from a sophisticated statistical inventory reconciliation to simple dipstick monitoring. | Requires the collection, recording and reconciliation of data on a fixed daily period and relies on maintaining the accuracy of measurement gauges. |
| 6. Environmental Monitoring | Monitoring wells outside the storage tank or area picking up vapour and product on groundwater. | Detects leaks in the ground outside the equipment. | There are limitations to the effectiveness of either vapour or product detection based on local conditions such as soil permeability, groundwater levels and location of bore holes relative to the product and receptors. |
| 7. a and b Pressure line leak detection and mechanical in-line leak detection | Detect leaks by measuring pressure in double skinned pipe work only i.e. for dispensing systems. | Detect leaks by monitoring the changes in pressure characteristics of the line. | Limitation of this class is that it requires the system to be inactive for sufficient time to measure the specified test requirements. |

* See reference 20.

7.2.1 Integrity test

Integrity testing should give a pass or fail result for tanks or pipework at any given time. An integrity test should be carried out before a facility is brought into service and after repairs have been made. You should also test for integrity:

- to support a monitoring system;
- if you suspect you have a leak;
- for the periodic testing of the vapour pipe work;
- before you reinstate a tank or containment system which has been out of operation for more than 12 months.

Tank or pipe work integrity tests should use a precision technique, such as a volumetric or non-volumetric test, in preference to a hydrostatic test. Integrity testing may allow a leak to continue undetected for a very long time (years/decades) and should be used only as a minimum level of leak detection. For further information see references 2 and 21.

7.3 Delivery to your tanks

Only staff who have been trained in delivery and emergency procedures should supervise deliveries. We recommend all deliveries are supervised. This helps avoid spills, prevents damage to the environment, reduces risks to people and saves valuable fuel oils. You should have a detailed discussion with your fuel delivery company covering the environmental risk assessment practices to agree safe delivery and emergency procedures. The measures you should put in place include:

- All tanks should be clearly labelled with the product name and volume of the tank.
- Make sure any storage tank is filled with the correct fuel intended for it.
- Display a notice giving details of safe delivery procedures and what to do in an emergency at the delivery point (your Incident Response Plan, section 12, should include a possible emergency during delivery, reference 18). As long as it's safe for people to respond to a spill they should follow your incident response plan.
- Establish the best sequence to attach and remove hoses to maximise vapour recovery, and follow that sequence for every delivery.
- Make sure the delivery points are clearly marked with the tank number, tank contents and maximum tank capacity and are secured when not in use.
- Make sure you accurately measure the volume of fuel stored and the available capacity in your tanks before every delivery to avoid tanks being overfilled.
- Use non-return (check) valves and sealed connections where appropriate.
- Protect filling points from overfill by installing high level alarms that can't be over-ridden (BS EN 13616 provides the standard for overfill devices reference 19).
- Wherever possible, keep the length of the delivery pipe as short as is practicable.
- The whole delivery area should drain to a suitably sized forecourt separator. We recommend the separator is fitted with a shut off valve.
- Where deliveries aren't supervised, make sure the driver has been trained to deal with an emergency at that location.

- Make pollution control equipment such as spill kits (for example drain mats or sorbent materials) readily available and train staff how to use them.
- Consider tanker access when planning a new installation.
- Where a tanker is used for deliveries, you may need to provide additional protection to contain a potentially large-scale spillage during the delivery.
- Protect your delivery point using drainage grids, gullies, kerbs or drain mats.
- Smaller losses can be contained using drip trays under delivery pipes which should be checked after each delivery and emptied. Alternative methods may be appropriate depending on whether the delivery point is above or below ground or made directly into, or offset from, the storage tank.

In Scotland, where an installation is permitted under PPC, controls are placed on the delivery and unloading of petrol into storage tanks at a service station. You must follow these controls to comply with the permit. Statutory guidance on unloading petrol into storage at petrol stations is in reference 22.

7.4 Dispensing from your tanks

The surface of fuel dispensing areas should be impermeable and drained through an oil separator, reference 17. Any damage to the surface should be repaired immediately to stop spilt fuels entering the ground and groundwater.

There are three main types of fuel dispensing systems, in order of preference:

- Suction systems, which draw fuel through the pipes using a partial vacuum; (below ground tanks).
- Pressure systems, which pump fuel using a high pressure pump (above ground tanks only).
- Gravity systems (above ground tanks only), which use the weight of the fuel in the tank to force fuel down the dispensing pipework.

We recommend dispensing fuel via a suction system because, provided it's correctly fitted with a non-return (check) valve directly below the dispenser, it allows fuel within the pipework to drain back to the tank if there's a leak, reducing the risk of a spill that could cause pollution.

A pressure system must have adequate secondary containment and a leak detection system fitted. Losses can be significant as the fuel is lost under pressure, but leak detection can be relatively fast if operated correctly.

We don't recommend using gravity systems because it's impossible to achieve accurate measurement during dispensing.

New dispensers should comply with BS EN 13617 standards reference 19 or be of a similar acceptable level of safety. Where older dispensers don't comply with this standard, you may need to fit and use break couplings, drip trays and under pump valves at higher risk sites. All fuel dispensing equipment must also be protected against collision damage from vehicles and unauthorised use.

People often put the wrong fuel in their cars; this then has to be dealt with, usually on the forecourt, and removed fuel will be hazardous/special waste (see section 11). Make sure vehicles and tanks are fuelled with the right fuel. Display warning notes visibly, to customers and operators, reminding them to double check that the correct fuel is being added to the correct tank.

7.5 Vapour recovery

The EC Directive 94/63/EC for the control of volatile organic compound (VOC) means you must recover petrol vapour from your storage equipment and unloading operations. The delivery and storage of petrol at many petrol stations, and refuelling activities at some petrol stations require an environmental permit. Guidance on standards throughout the UK is contained in Process guidance note PG1/14(06) available from the Defra web site. The regulator for these permits is the relevant local authority in England, Wales and Northern Ireland, and the Scottish Environment Protection Agency in Scotland. The technical details of vapour collection are beyond the scope of this guidance; please see reference 7. More detail on vapour recovery legislation on the European Commission Environment Legislation website, see useful websites.

7.6 Washing activities

We recommend that all washing and cleaning operations, including the washing vehicles or plant, are carried out in a designated area clearly marked on the ground and in any plans. This area should be isolated from both the surface water drainage system and unmade ground or porous surfaces (for example using drainage grids, gullies or kerbs).

Wash water should be re-circulated whenever possible. Otherwise it should drain to, or be disposed of, via the foul sewer (where available). You must check with your local sewerage provider before making a disposal to the foul sewer.

You should make sure that cleaning agents, such as detergents, (including biodegradable ones) can't enter the surface water system or soak into groundwater unless specifically permitted after appropriate treatment. They shouldn't enter oil separators because they reduce their effectiveness (the oil will be dispersed and washed through); see reference 23 for more guidance on preventing pollution from washing activities.

8. Biofuels

This section provides information about the additional risk associated with the storage and dispensing of biofuels and how you can reduce those risks. Although biofuels are widely present in all road fuels and dispensed to the public the environmental risks are highlighted here separately because of their potential impact on existing pollution control measures and procedures.

The Renewable Transport Fuel Obligations 2010 require road fuel suppliers in the UK to supply 5% by volume of all road vehicle fuel from a sustainable source. Biofuels is the generic term for all organically derived transport fuels. The main types of biofuels in the UK are blends of ethanol (Bioethanol) and oils (Biodiesel).

The change in the chemical composition of fuels, from previous non organic sources, means they may have additional storage and dispensing problems above those of traditional fuels. The ethanol in the fuel gives them properties that make them potentially harmful to the water environment; these include:

- If it reaches surface waters, ethanol breaks down in the water and reduces oxygen levels and therefore may kill fish.
- Other pollutants in the fuel, such as benzene and toluene, travel further in groundwater when ethanol is present, spreading contamination.
- By-products from the breakdown of ethanol can make water taste or smell unpleasant or result in low pH (acid conditions).

8.1 Bioethanol and Biodiesel

Bioethanol is usually dispensed as a 5% solution of ethanol blend (E5). But there are higher blend ethanol fuels (HBEF) up to 95% (E95) which aren't widely available to the public. Some commercial and fleet companies will store HBEF for their vehicles.

Biodiesels are blended up to 7% (B7) with oils such as waste cooking oil and oil seed rape.

The physical and chemical properties of ethanol blend fuels mean you need control measures to reduce both the risk of fire and their environmental impact. The properties are:

- altered material compatibility;
- increased conductivity;
- increased flammability range;
- solubility with water.

8.2 Materials compatibility

The material storage tanks and ancillary equipment are made from can be affected by the ethanol content of biofuels. Metals such as aluminium, zinc and brass can be affected, as well as plastics and rubber. Glass reinforced plastic (GRP) tanks can be softened and may fail. Epoxy lined steel tanks may not be suitable for ethanol blends. Contact your equipment supplier to check all your storage containers and ancillary pipe work/pumps, leak detection and dispensing equipment are compatible with the ethanol in the biofuels.

8.3 Increased conductivity

Biofuels have higher electrical conductivity than fuels that aren't blended with ethanol. This can increase galvanic corrosion which could affect equipment such as submersible pumps, tank gauge probes and overfill prevention devices.

8.4 Increased flammability range

Ethanol and petrol have different flash points and limits of flammability; an explosive gas atmosphere in an ethanol blend fuel storage tank will exist across a wider temperature range than that in a petrol storage tank.

8.5 Solubility with water

The ethanol in biofuels affects how water behaves with the fuel. Water is fully soluble in ethanol and your fuel can undergo phase separation this means that the ethanol can separate out of the fuel if there's water in the storage vessel.

More critically, the phase separation means that conventional oil water separators won't capture spills of biofuels with ethanol in them. The fuel will be released together with the water in the discharge. Ethanol is readily biodegradable which could cause rapid de-oxygenation in surface waters which can kill fish and cause other water quality problems.

For guidance on storage and dispensing E5 petrol and B5 diesel, see reference 24.

9. Other non-fuel products at your site

The storage and dispensing of materials other than fuel present a different set of environmental risks from liquid fuels; this section advises on how to store and dispense these materials safely.

There's a range of potentially polluting materials that are readily soluble in water, and can be stored and dispensed at refuelling facilities, particularly at retail outlets. These include:

- emission reduction solutions for example Adblue;
- screen and car wash fluids;
- solvents and paints.

9.1 Emission reduction solutions (ERS), for example AdBlue

Stricter exhaust emissions for commercial vehicles with diesel engines, (buses, trucks, HGVs and coaches) have been issued by the European Union. To meet these standards, the automotive industry has adopted several technologies. One is Selective Catalytic Reduction (SCR) using emission reduction solutions, where harmful exhaust gases are converted to nitrogen and water by catalytic conversion, typically using anhydrous ammonia, aqueous ammonia or urea.

ERS are stored at refuelling sites and will become a common feature at filling stations for commercial diesel vehicles and private depots. Vehicles using ERS have a separate tank, the solution is injected into the engine exhaust stream, from the tank, immediately after the combustion chamber.

If they get into the environment, ERS can seriously pollute groundwater and surface waters. It's important that they are stored, dispensed and handled correctly. They're often stored in drums and intermediate bulk containers (IBC); reference 4 gives general good practice advice on pollution prevention and correct storage of liquids in drums and IBCs. The principles of bulk storage can be found in reference 2 and should be followed for all types of bulk storage.

Ammonia can be corrosive to some metals, such as copper and its alloys. ERS should be stored in containers that are specifically designed and manufactured from materials that are suitable for use with urea. The same applies to the ancillary equipment, such as valves, dispensing nozzles and pipework.

ERS are soluble in water and should be kept out of surface water drainage systems that discharge to the environment. It will not be removed in an oil separator so it's important to isolate the ERS dispensing area drainage from the surface water system to reduce the possibility of spills and drips causing pollution. If this isn't possible, your site management systems should make sure any spills of ERS are cleaned up immediately with proprietary sorbents.

Tank manufacturers are now producing storage solutions for ERS. Steel and plastic storage systems with integral secondary containment are available. Some companies are proposing to supply specialist IBCs that are delivered full and then collected when empty, see reference 4.

9.2 Forecourt drainage

In addition to ERS, screen and car wash fluids and solvent or paints can all cause pollution if they're spilt.

If the site drainage from your site discharges into the surface water drain, a soakaway or the water environment (via a SUDS), seek our advice before introducing any bulk storage of soluble materials onto your site. You should:

- Make sure your storage containers, pipe work and dispensing equipment are all suitable and compatible for those products.
- Install appropriately sized secondary containment for the container and ancillary equipment.
- Design the dispensing area drainage so that it's not connected to surface water drains.
- Use trigger nozzles with an auto shut off to dispense the products and make sure that the nozzle can't be left in the open position.
- Provide appropriate pollution control equipment to deal with large and small spills, i.e. proprietary spill kits, drain mats, pipe blockers, or permanent valves on drainage systems to provide containment.
- Develop an emergency response plan and train staff to deal with a spill or other accident; see reference 18 for more details.

10. Maintenance

Routine maintenance on your site is essential to reduce the risk of leaks, spills and other incidents.

This section lists the main areas you should look at: tanks, containment systems monitoring equipment and site infra-structure.

Even a small fuel leak can result in significant pollution. You must frequently inspect and maintain all the equipment on your site, both above and below ground. This will reduce the risk of leaks. Keep a record of your inspections, any problems found and maintenance carried out.

As a minimum, your maintenance checks should cover inspecting:

- tanks and other storage containers for damage, leaks or corrosion;
- secondary containment for damage, cracks or leaks;
- pipework, particularly joints and connections;
- monitoring equipment, make sure these are calibrated regularly;
- dispensers;
- impermeable surfaces around storage areas;
- separators, which should be cleaned regularly;
- access chambers;
- drainage channels;
- any other associated equipment or areas.

If you identify problems, record and correct them as soon as possible. Follow the maintenance schedule in the manufacturer's instructions (where available) or as necessary to prevent polluting the environment.

Historically, more fuel leaks and other losses are caused by failures and/or damage to associated pipe work (particularly underground unprotected steel pipes) than by failure of the storage tank itself. We strongly recommend installing your pipework above ground wherever possible. If not above ground,

it should comply with BS EN 14125 reference 19 and, if pressured, should be doubled skinned. This allows you to carry out regular maintenance checks more easily and to identify leaks earlier.

In Scotland, businesses subject to PPC will have conditions placed in their permits that cover maintenance, they must comply with these requirements.

Where these are not a legal requirement, they should be followed as best practice. Further detailed guidance on maintenance inspections is in reference 25.

11. Waste management

Minimising waste will save you money and complying with waste legislation is a must do pollution prevention measure.

We suggest you carry out a waste minimisation review and consider how you can reduce the volume of waste you produce. This can reduce your raw material use and make your processes more efficient, saving you money and reducing your impact on the environment. Contact waste minimisation organisations, listed in useful websites, for free advice and publications.

Check with your suppliers if they can provide your materials in refillable or recyclable containers. Use these whenever possible.

11.1 Legal Overview

If you produce, import or arrange for waste to be disposed of, you have a legal responsibility to make sure it's stored, transported, kept, treated and/or disposed of without harming the environment. This is called your Duty of Care and it's a legal requirement.

The Duty of Care requires that you must:

- Deal with your waste so it can't escape your control.
- Only allow authorised people or businesses to transport or handle your waste.
- Complete transfer notes, or consignment notes for hazardous or special waste, to accompany your waste, with enough information to make sure it can be handled correctly by any recipient.
- Keep transfer notes for two years and consignment notes for three years.

If you produce hazardous waste, special waste in Scotland, for example waste oils, acids and solvents or sorbents and parts contaminated with these, there are legal requirements that apply to these wastes - in Scotland, see SEPA special waste pages in useful websites. In England and Wales, you must be registered as a hazardous waste producer. It's illegal to dilute or mix different categories of hazardous or special wastes or mix them with non hazardous wastes and you should store them separately, unless you hold a permit or licence that specifies you can mix them.

In Scotland you must pre notify SEPA between at least three working days and maximum of one month prior to moving the special waste. You can't move these wastes without a consignment note, unless it's an emergency. If you have to move hazardous or special waste in an emergency, you must take steps to minimise the risk to the public or the environment. You must complete the consignment note as soon as possible.

We recommend you check the government on-line business advice and support service for up to date legal requirements for your Duty of Care and for information about types of waste, maximum storage times, notices that must accompany waste transport and how to check that your waste carrier is authorised to move your waste. You must also check if you need a permit, licence or registered exemption for your waste activities.

11.2 Waste storage

Waste containers must always be clearly labelled with their contents. All waste and waste containers should be stored in designated areas, which are isolated completely from surface water drains or direct discharge to the environment.

The area where waste is collected and stored should be able to safely contain any spill or leak. Empty containers shouldn't be allowed to accumulate, but should be collected by your supplier (where possible), dealt with using suitable on-site facilities or removed as soon as possible by a registered waste carrier to a permitted or licensed facility. It's a good idea to remove wastes often enough so they don't cause odour, pest or vermin problems and so the risk of fires is reduced. For further information on the storage and disposal of waste oils, see reference 26.

12. Incident response

Preparing how you'll respond to an environmental incident can significantly reduce its impact on the environment or even prevent it causing pollution. This section tells you how you can plan to respond to incidents.

To respond effectively to an environmental incident, we recommend you produce an incident response plan. There is guidance and a template to help you in our guidance in references 18, 25 and 27.

Train your staff to deal with an environmental incident – this may be a legal requirement. Keep a record of all their training. Training should include a background to environmental sensitivities around the site and a formal emergency procedure that details actions to be taken in the event of:

- spills
- fires
- collision with storage or dispensing equipment
- odours being detected off-site
- suspected leaks.

The following checklist outlines the main points we recommend you follow to implement your plan.

Procedures checklist

- Clearly define when the plan should be activated. This will depend on the nature of your site and the type of the incident.
- Make sure all relevant staff know how and when to contact other emergency responders; emergency services, us, local authority, sewage treatment providers and other organisations identified in your emergency plan.
- Consider the impact that an incident on your site could have on the environment outside your boundary: nearby properties, surface waters, groundwater, downstream abstractors,

agricultural land or environmentally sensitive sites. Once identified, agree contact procedures with them if possible.

- Put in place staff evacuation procedures – your local authority emergency planning department will help you with these.
- Identify any special methods you need to deal with substances that pose particular health or environmental risks.
- Develop a fire fighting strategy with your local fire and rescue service; if a controlled burn is an agreed option, state this clearly. The same applies to the use of foam.
- Train staff to use spill kits, drain blockers and other pollution control equipment and how to operate pollution control devices.
- Identify procedures for recovering spilled product and the safe handling and legal disposal of any waste associated with the incident.
- We recommend that you train appropriate staff to deal with media enquiries.

13. Glossary

| | |
|------------------------|---|
| BS EN Standards | These are European technical standards adopted in the UK which often supersede existing national technical standards. |
| Groundwater | All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. The saturation zone is where all the cracks in the rock and all the spaces between the grains of rock and within the soil are filled with water; these are known as aquifers. |
| Hazardous waste | This is 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"> • all fuels and certain additives – petrol, diesel, biofuels, LPGs, some emission reduction solutions (check with the manufacturer for further information); • oils and oily sludges, for instance engine oil; • garage waste - used oil/fuel filters, aerosols, antifreeze and brake fluids, lead acid batteries and contaminated rags; • other chemical wastes such as solvents, paints (both oil and solvent based), screen and car washing fluids, and disinfectants. |
| Hydrostatic testing | The tank is filled with water (usually dyed) and put under pressure to check for leaks. |
| Non volumetric testing | The tank has a vacuum applied or is put under pressure and is monitored for: <ul style="list-style-type: none"> • air intake • increase in water content • increase or decrease of product level • decrease of vacuum or pressure. |
| Special waste | The term used in Scotland for what is known as Hazardous waste in England, Northern Ireland and Wales. See Hazardous waste above. |

| | |
|--------------------|--|
| Surface water | Includes rivers, streams, burns, ditches, lakes, lochs, ponds, estuaries and coastal waters. |
| Volumetric testing | The change in volume in tank due to a leak by measuring the change in levels of a product over time. |

14. References

All the Pollution Prevention Guidance notes (PPGs) are available at:

www.environment-agency.gov.uk/ppg

<http://www.doeni.gov.uk/niea/index/publications.htm?act=l&typ=s&ftx=ppg>

www.sepa.org.uk/about_us/publications/guidance/ppgs.aspx

1. [Code of Practice on Guidance on Regulation 2009](#).
2. Above Ground Oil Storage Tanks: PPG 2
3. Pollution prevention guidance for working at construction and demolition sites: PPG 6
4. Drums and intermediate bulk containers: PPG 26
5. For England: [Water Resources \(Control of Pollution\) \(Silage, Slurry and Agricultural Fuel\) \(England\) Regulations 2010](#)
For Northern Ireland: [The Control of Pollution \(Silage, Slurry and Agricultural Fuel Oil\) Regulations \(Northern Ireland\) 2003](#)
For Scotland: [The Water Environment \(Oil Storage\) \(Scotland\) Regulations 2006](#)
For Wales: [The Water Resources \(Control of Pollution\) \(Silage, Slurry and Agriculture Fuel Oil\) \(Wales\) Regulations 2010](#)
6. For England: [Guidance note for the Control of Pollution \(Oil Storage\) \(England\) Regulations 2001](#). Department for Environment, Food and Rural Affairs (Defra),
For Northern Ireland: [The Control of Pollution \(Oil Storage\) Regulations \(Northern Ireland\) 2010](#)
For Scotland: The Water Environment (Oil Storage) (Scotland) Regulations 2006.
7. Guidance for the design, construction, modification and maintenance of petrol filling stations (known as the Blue Book) 3rd edition. The Association for Petroleum and Explosives Administration/Energy Institute, 2011. Energy Institute. ISBN 978-0-85293-600-9
8. For England and Wales: [Groundwater Protection: Policy and Practice \(GP3\) Parts 1-4](#) (under review 2011)
For Scotland: [Section F of Groundwater Protection Policy for Scotland](#), v3, 2009, SEPA
9. For England and Wales: [Environmental Permitting \(England and Wales\) Regulations: Statutory Instrument 2010](#) No. 675 and amendments
For Northern Ireland: [The Water \(Northern Ireland\) Order 1999](#)
For Scotland: [The Pollution Prevention and Control \(Scotland\) Regulations 2000](#): SSI 323 and amendments [Water Environment \(Controlled Activities\) \(Scotland\) Regulations – A Practical Guide](#), usually known as 'CAR Practical Guide', SEPA 2008

10. [Underground Storage Tanks for Liquid Hydrocarbons – Code of Practice for Installers, Owners and Operators of Underground Storage Tanks \(and Pipelines\)](#), SEPA 2006
11. For England, Scotland and Wales: [Control of Major Accident Hazards Regulations 1999](#) SI 743 and amendments; [Control of Major Accident Hazards \(Amendments\) Regulations 2009](#)
For Northern Ireland: [Control of Major Accident Hazards \(Amendments\) 2005](#)
[COMAH competent authority policy on containment of bulk hazardous liquids at COMAH Establishments](#), 2008
[Secondary and Tertiary Containment of Bulk Hazardous Liquids at COMAH Establishments \(Operational Delivery Guide\)](#) – COMAH Competent Authority Work stream, 2010
[A guide to the Control of Major Accident Hazards Regulations 1999 \(Amended\)](#) 2006, Health and Safety Executive.
12. For England: [The Environmental Damage \(Prevention and Remediation\) Regulations 2009](#): Statutory Instrument 2009 No. 153
For Northern Ireland: [The Environmental Liability \(Prevention and Remediation\) Regulations \(Northern Ireland\) 2009](#): Statutory Rules of Northern Ireland 2009 No. 252
For Scotland: [The Environmental Liability \(Scotland\) Regulations 2009: Scottish Statutory Instrument 2009](#) No. 266 and amendment.
For Wales: [The Environmental Damage \(Prevention and Remediation\) \(Wales\) Regulations 2009](#): Statutory Instrument 2009 No. 995 (W.81)
13. [The Dangerous Substances and Explosive Atmosphere Regulations 2002](#)
14. [Petroleum \(Consolidation\) Act 1928](#) (as amended by DSEAR)
15. Controlled Burn: PPG 28
16. Treatment and disposal of sewage where no foul sewer is available: PPG 4
17. Use and design of oil separators for surface water drainage systems: PPG 3
18. Incident response planning: PPG 21
19. British Standards are available from the British Standards Institution
[Fabricated steel tanks BS 12285](#)
[Tank gauge leak detection systems BS 13160](#)
[Overfill prevention devices BS 13616](#)
[Metering pumps dispensing standards BS 13617](#)
[Underground pipework standards BS 2014125](#)
20. [Wetstock Reconciliation at Fuel Storage Facilities](#), Association for Petroleum and Explosives Administration (APEA)
21. Installation, decommissioning and removal of underground storage tanks: PPG 27
22. Process Guidance Note 1/14 (06), [Unloading of Petrol into Storage at Petrol Stations](#), 2006
23. Vehicle washing and cleaning: PPG 13
24. [Guidance for the storage and dispensing of E5 petrol and B5 diesel at filling stations](#), ISBN 978 0 85293 508 8 Energy Institute Publication 2008

25. [Petrol Filling Stations Guidance on Managing the Risk from Fire and Explosion](#), (known as the Red Guide), Health and Safety Executive and Local Authorities Enforcement Liaison Committee
26. Safe storage and disposal of used oils: PPG 8
27. Dealing with spills: PPG22

Other useful sources of information:

For general guidance on pollution prevention, see the following guidance available from our website:

- [Is your site right? - Pollution Prevention 10 Point Checklist](#)
- [Pollution Prevention Pays](#)
- [General Guide to the Prevention of Pollution: PPG1](#)

Environment Agency '[What's in your backyard](#)'.

Environmental Guidelines for petroleum distribution installations, ISBN 978 0 85293 Energy Institute Publications 2007

Sustainable Drainage systems at petroleum installations, ISBN 978 0 85293 439 5 Energy Institute Publication 2009

Guidance Document on Risk Assessment for the Water Environment at Operational Fuel Storage and Dispensing Facilities, ISBN 0 85293 256 1 Energy Institute Publications 1999

Environmental management toolkit – General version industry available from Environment Agency website

Defra – [The Groundwater Protection Code: Petrol Stations and other Fuel dispensing facilities involving underground storage tanks](#) - for England and Wales.

Useful websites:

Association for Petroleum and Explosives Administration: www.apea.org.uk/

CIRIA: Home page www.ciria.org

- CIRIA's SUDS publications <http://www.ciria.org.uk/suds/publications.htm>

European Commission Environmental Legislation: <http://ec.europa.eu/environment/air/legis.htm>

Health and Safety Executive (HSE): Home page www.hse.gov.uk

- The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) - <http://www.hse.gov.uk/fireandexplosion/dsear.htm>
- Petroleum Enforcement Liaison Group and circulars <http://www.hse.gov.uk/lau/pelqfoi.htm>

Department for Business, Innovation and Skills: www.bis.gov.uk

Department for Environment and Rural Affairs: www.defra.gov.uk

The government on-line business advice and support service:

- In England: Business Link www.businesslink.gov.uk
- In Northern Ireland: NIBusinessInfo www.nibusinessinfo.co.uk
- In Scotland: Business Gateway www.bgateway.com
- In Wales: FS4B www.fs4b.wales.gov.uk
- NetRegs: www.NetRegs.gov.uk

SEPA web pages

- [Oil Storage](#)
- [Pollution Prevention and Control \(PPC\) – application forms page](#)
- [Special Waste](#)
- [SUDS](#)
- [Water Regulations](#)

Waste minimisation information available from:

- In England: Envirowise, <http://envirowise.wrap.org.uk/> Tel: 0822 585 794
- In Scotland: Zero Waste Scotland, <http://www.zerowastescotland.org.uk/> Tel: 0808 100 2040
- In Wales: Envirowise, <http://www.envirowisewales.org.uk/>

For more information on groundwater see the following web pages:

- UK Groundwater Forum <http://www.groundwateruk.org/>
- Factsheet on the hydrological cycle http://www.doeni.gov.uk/niea/04_hydrological_cycle.pdf

In Northern Ireland the regional groundwater vulnerability can be obtained online via the Geoindex webpage. Guidance on how to access and use the webpage is available by e-mailing waterinfo@doeni.gov.uk.

We welcome any questions or comments about this guidance, or suggestions about how we could improve it. Please email us at pollution.prevention@environment-agency.gov.uk, phone us on 03708 506 506 or write to us at:

Environment Agency
 99 Parkway Avenue
 Sheffield
 S9 4WG.

This PPG is next due to be reviewed by June 2015.

| UK wide Incident/Pollution hotline 0800 80 70 60 (24 hrs) | | |
|--|--|---|
| Floodline (England, Wales and Scotland) 0845 988 1188 | | flooding incident line (NI) 0300 2000 100 |
| Environment Agency | Scottish Environment Protection Agency | Northern Ireland Environment Agency |
| www.environment-agency.gov.uk | www.sepa.org.uk | www.ni-environment.gov.uk |
| HEAD OFFICE Horizon House Deanery Road, Bristol BS1 5AH | CORPORATE OFFICE Erskine Court The Castle Business Park Stirling FK9 4TR | HEAD OFFICE Klondyke Building Cromac Avenue Gasworks Business Park Lower Ormeau Road Belfast BT7 2JA |
| Tel: 0117 934 4001 | Tel: 01786 457 700 Fax: 01786 446 885 | Tel: 0845 302 0008 |
| Pollution.prevention@environment-agency.gov.uk | netregs@sepa.org.uk | NIEAPollutionPrevention@doeni.gov.uk |

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