Llywodraeth Cymru
Welsh Government

Groundwater protection codes for Wales

Underground storage tanks

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Contents

1. Introduction

Groundwater lies below the surface of the ground. If you carelessly use or release fuels on your site they could pollute groundwater. Even in small quantities fuels cause pollution and can seriously impact the quality of groundwater and contaminate drinking water sources such as boreholes, wells, springs and streams making them unfit for drinking water or other uses such as food production.

You should read and follow this code if you store petrol, diesel, heating fuel, waste oils or other 'petroleum hydrocarbons' in an underground storage tank (UST). For example, if you:

- own or operate UST facilities
- design or construct UST facilities
- are involved in decommissioning UST facilities

This code has advice and good practice on how to protect groundwater when storing liquid fuels in USTs. This code offers the best environmental options for facilities but it isn't a detailed list of procedures you must follow in all cases. You'll need to adapt elements to suit your facilities.

This code doesn't cover the following (although the general principles may apply):

- liquefied natural gas
- liquefied petroleum gas
- storing hydrocarbons in above ground tanks (there are covered by separate **oil storage standards)**[1]

By following this code of practice you can reduce the risk of causing groundwater pollution.

You could be imprisoned and subject to an unlimited fine if you discharge hydrocarbons directly to groundwater from leaking USTs or pipework.

By using this code you will be able to show that you have taken steps to avoid pollution and are complying with your legal requirements under the

[1] http://gov.wales/topics/environmentcountryside/epq/waterflooding/oil-storage-standards/?lang=en

Environmental Permitting (England and Wales) Regulations, 2016. You must also follow applicable guidance and laws like the health and safety regulations.

Natural Resources Wales would look at whether you followed or are likely to follow the code when deciding whether to serve a notice on you under the Environmental Permitting (England and Wales) Regulations, 2016. Such notices can include the requirement for you to get a permit, or to stop your use or storage of fuel on site. Failure to comply with a notice is also a criminal offence.

The Blue Book and technical information

If you need detailed technical information on installation, decommissioning and removing USTs you should read the **Association for Petroleum and Explosives Administration (APEA) Blue Book[2].**

You can also get advice on the technical requirements for your specific system from your **local petroleum licensing and enforcing authority[3]**

2. Assessing risks and preparing for an underground storage tank

What you need to review before installing or using an underground storage tank for fuel.

Before you install an underground storage tank you should prepare and be able to show in writing that you:

- have carried out an environmental risk assessment suitable to the facility
- will have appropriate engineering requirements to prevent pollution
- will have appropriate management systems and controls
- have prepared emergency plans and procedures

You'll need to consider in your review:

[2] http://www.apea.org.uk/publication/blue-book-pdf

[3] http://www.apea.org.uk/contacts

- your facility's environmental setting, in particular the vulnerability of the underlying groundwater
- how old the facility is
- the facility's storage and throughput volumes (how much it processes)
- practical engineering options and control mechanisms the likely costs and benefits of upgrading the facility

Carry out a risk assessment

You should read the guide to **groundwater risk assessments**[4] to see how to carry out an assessment and help you understand the source>pathway>receptor model.

For underground storage tanks (USTs) the hazard (or source) is the fuel stored (e.g. the liquid hydrocarbons) and handled on site. The receptor of concern is groundwater, and any surface waters or wetlands that might interact with groundwater.

The most important source>pathway>receptor interaction is the loss of product that migrates until it reaches the underlying groundwater. On reaching the groundwater, the hydrocarbons (which are classed as hazardous substances) will dissolve into the groundwater ('dissolved phase contamination'). This is pollution and you must take all necessary measures to prevent the entry of hazardous substances to groundwater, including cleaning up any spills or leaks.

What you need to assess

It's important you create an environmental risk assessment to make sure that you identify the risks to groundwater and the appropriate protection measures.

You should include in your written report:

- the physical, chemical and biological properties of any material that could cause pollution
- how you'll store or transport materials and what the condition of the storage containers is like what happens if there's an accident, flooding, vandalism or containment failure
- any surface water drains and foul sewers that flow off your site

[4] https://www.gov.uk/guidance/groundwater-risk-assessment-for-your-environmental-permit

- any **sustainable drainage systems**[5] you have on your site
- whether there are areas of unsurfaced ground on the site
- whether there are any risks because of the site's layout and if there's a risk of traffic collisions (e.g. are there any storage areas particularly at risk from cars accidently hitting them, or potential blind spots)
- any other risks to people and the environment and the extent of the damage they could cause (e.g. small surface water streams running close by the site, or fuel transfer areas particularly at risk from spillages or accidents)
- local landscape and different weather conditions and the flood risk that could be reasonably expected at and around your site

When installing a UST you need to create a more in depth assessment - see the section on installing an Underground Storage Tank to see what you'll need to assess in detail.

Create a risk management action plan

Once you've carried out an environmental risk assessment you should create a risk management action plan. This should set out what you'll do to prevent groundwater pollution on your site.

When you're preparing your action plan you should:

- outline the engineering and operational control measures you need to protect groundwater
- decide which risks need immediate attention and which ones you can deal with in the longer term - you may need help from your trade association or petroleum enforcement officer
- prioritise avoiding risks over controlling them (e.g. consider installing tanks in less vulnerable areas before considering how to make them more secure in more vulnerable areas)

Your risk assessment will form part of the development of an environmental management system (EMS) for an operational facility. Your risk management action plan should be included as part of the EMS.

[5] http://gov.wales/topics/environmentcountryside/epq/flooding/drainage/?lang=en

Using your risk assessment to design your facilities

You must use your findings from your risk assessment when designing new facilities or updating existing ones.

New facilities

During the risk assessment process you'll find out the best engineering and remediation measures for environmental protection that you'll need to be accepted at a UST facility. Natural Resources Wales will expect you to carry out these requirements in full for a new facility.

In assessing whether engineering standards comply with the code, you should use **Health and Safety Executive**[6] and industry guidance such as the **APEA Blue Book**[7]

See the section on how to install a new UST for the extra information you'll need to include in your risk assessment.

Existing facilities

With existing facilities you may not find it practical to retrofit (fit into existing equipment) in full the engineering requirements you identified in the risk assessment. However, you should develop a plan to phase in improvements over a realistic and acceptable period agreed with your local planning authority and Natural Resources Wales.

If you propose significant changes to an existing facility (e.g, installing new tanks or pipework) you'll need to meet the requirements highlighted in the risk assessment. You'll also need to meet any local authority planning conditions and Natural Resources Wales requirements, depending on the level of risk at the site.

Leaks

You should have leak detectors installed. You must not let a situation like a leakage happen or continue because you ignored leak indication alarms. This could lead to pollution, and enforcement action from Natural Resources Wales.

[6] http://www.hse.gov.uk/fireandexplosion/owner-petrol-station.htm

[7] http://www.apea.org.uk/publication/blue-book-pdf

3. Develop an environmental management system

You need to show that you operate your facility in an environmentally responsible manner by developing operational control procedures in an environmental management system (EMS). Your EMS should show the facility's operation control procedures by establishing what measures you are going to have to protect the environment, and how you'll carry them out.

Your EMS should include:

- what measures you need to protect the environment, and how you'll carry them out how you'll carry out checks and deal with problems
- how you'll carry out a management review of your environmental systems and procedures, and put in place any improvements - you may need to get professional help to develop this
- the training processes you have in place on the site
- your processes for dealing with emergencies (i.e. your pollution incident response plan)
- any plans you have to upgrade the tank and any equipment it's connected to plans for upgrading the facility's engineering requirements

Accreditation of your EMS

If you operate a large-scale site you'll have to get your EMS fully accredited. You'll have to cover the cost of this yourself.

You won't need full accreditation if you operate a small-scale site but you should still have the main components of an EMS in place. Having an accredited EMS will help show you comply with guidelines.

The two main EMS certification schemes are **ISO 14001**[8] and the **Eco-Management and Audit Scheme (EMAS)**[9]. You can also use **BS 8555:2003**[10] – this isn't a certifiable standard but guidance for implementing an EMS on a phase-by-phase basis.

[8] http://www.bsigroup.com/en-GB/iso-14001-environmental-management

[9] http://ec.europa.eu/environment/emas/index_en.htm

[10] http://shop.bsigroup.com/ProductDetail/?pid=000000000030077920

4. Installing an underground tank

This section provides information on how to install an underground storage tank, pipes and related equipment. You should see the **APEA Blue Book**[11] for detailed technical advice on how to install tanks and related equipment.

Get planning permission

You need planning permission from your local planning authority to install a new underground storage tank (UST) system (the tank plus any equipment connected to it). You'll need planning permission for individual tanks, but if changing pumps you may not - check with your local planning authority. You're likely to need to send your environmental risk assessment with your application.

If your plans could significantly affect the environment, including the potential to cause groundwater pollution or affect nearby conservation interests, your local planning authority is likely to consult Natural Resources Wales. Natural Resources Wales may require specific controls or may object to your plans if you choose a site:

- within sensitive aquifers
- close to features that could be affected by pollution (e.g. groundwater, rivers and lakes)
- in a groundwater Source Protection Zones

Section D of the Natural Resources Wales approach to **groundwater protection**[12] states its position in relation to the storage and transmission of pollutants including USTs. If Natural Resources Wales believes that the conditions your local planning authority set won't minimise the risk to groundwater it may impose restrictions, e.g. require you to have an environmental permit with additional conditions.

Risks to groundwater and good practice when designing a system

You should consider the potential environmental risks when designing and constructing a facility. If you don't, you risk causing a significant pollution incident. When designing a new system you'll need to assess any new risks alongside your overall existing risk assessment for the facility.

[11] http://www.apea.org.uk/publication/blue-book-pdf

[12] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/598778/LIT_7660.pdf

Design and site selection

You need to design the facility so that it reduces the potential groundwater pollution and health and safety risks. As part of your design and before installing a UST you need to consider the:

- site's environmental suitability
- tank design
- tank contents
- pipework
- materials used to construct the tank and associated pipework
- environmental measures you'll use, e.g. wetstock reconciliation

You should also consult Natural Resources Wales on where to site your UST before you install it. You should include in your risk assessment and say how close the tank will be to:

- local watercourses
- sensitive groundwater locations
- public and private water abstraction points
- environmentally sensitive areas (e.g. sites of special scientific interest)

You should also identify and include in your risk assessment:

- the site's geology and hydrogeology (both local and regional)
- the proposed site layout and the equipment requirements
- subsurface site layout and equipment requirements
- historic site activities (including if there are any existing USTs)
- whether the ground needs a specific type of foundation
- how corrosive the soil is

- groundwater conditions (e.g. anticipated depth to groundwater, including seasonal variations)

Natural Resources Wales will want to make sure that you have environmental controls in place if the groundwater is considered to be:

- sensitive or vulnerable to pollution
- in a groundwater source protection zone
- shallow at the location

Natural Resources Wales may also oppose you installing the UST (e.g. if you're in a groundwater Source Protection Zone). See section D of the Natural Resources Wales approach to **groundwater protection**[13] to find out when this may affect you.

Construction

You must have an experienced person supervise all on-site works so that the system is installed as agreed. If you don't construct the facility correctly (e.g. through unsealed joints) you could lose fuel when the system's used.

You must:

- make sure that any protective coatings applied to the tanks and pipework aren't damaged during installation
- inspect protective coatings during and after installation
- repair any damage to protective coatings immediately and before the excavation is filled in again

To minimise the risk to groundwater you should check and put in your risk assessment:

- that the proposed tanks and pipework are appropriate for the site's environmental setting
- if the ground conditions mean that a specific foundation type is needed
- the depth to groundwater

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/598778/LIT_7660.pdf

- if ground conditions are likely to corrode below-ground construction materials
- if the site layout will create specific risks
- where the surface water will drain to

You should make sure each of the following are correctly installed and secure against leaks and spills:

- the tank pipes
- the leak detection system
- the fuel dispensers
- the drainage system - including oil separators delivery areas

You should also carry out quality checks and get them certified by the experienced person before you use the tank.

Install the tank

All new tanks should:

- be double-skinned (have an inner and outer skin)
- have a class 1 leak detection system (such as interstitial monitoring) that meets **European standard EN13160**[14]

Doing this means that your tank is constantly tested for its life and the system will alert you if the inner skin fails. You can get more details on leak detection systems in the APEA Blue Book.

You must make sure that your UST has:

- an access chamber to contain any leak or spill until you can clean it up
- overfill prevention

Materials you can use for your UST include:

- double-wall steel in line with **EN12285-1**[15]

[14] http://shop.bsigroup.com/ProductDetail/?pid=000000000030301252

- double-wall glass reinforced plastic (GRP)

If you use steel tanks Natural Resources Wales may need you to install effective and durable anti-corrosion measures. You can get more details in the APEA Blue Book.

Install pipes

You should make sure that pipes meet the British Standard **BS EN 14125**[16] and are suitable for the particular UST system. They should be:

- strong enough to cope with internal and external pressures
- strong enough for handling and loading
- compatible with the materials they're carrying and any other materials they come into contact with through the ground or tanks
- with correctly formed and sealed joints - ideally you should have as few joints as possible to minimise corrosion risk

You should install pipes above ground if possible, using ducts where they can be easily inspected (unless this causes a health and safety or fire risk). If you have no alternative and have to bury pipes, you should:

- use double-skinned pipes with interstitial monitoring (this will alert you to leaks before any product escapes into the soil and groundwater)
- avoid using joints, bends and fittings that can be mechanically dismantled

Install dispensers

You should install fuel dispensers where they won't be damaged (e.g. in areas with low risk of vehicle collision). Make sure that they meet British Standards (see the APEA Blue Book for this information).

Prevent accidents in delivery areas

You should design your delivery area to make sure:

- they're large enough that vehicles can unload without difficulty

[15] http://shop.bsigroup.com/ProductDetail/?pid=000000000030145147

[16] http://shop.bsigroup.com/ProductDetail/?pid=000000000030219524

- tanks don’t overfill - use automatic shut-off valves or electronic alarms to limit the amount of fuel delivered into the tank

Install a leak detection system

You need to have a leak detection system in your UST system - you can get detailed information on what you need in the APEA Blue Book.

You should choose a system that offers the right level of protection for the site based on the site’s environmental sensitivity.

Make sure you choose a robust and accurate leak detection system that should allow you to monitor any product losses. You should use it along with other systems and checks to carry out wetstock reconciliation.

You must make sure that only trained people operate your leak detection system.

Sites in groundwater source protection zones

If your site is in an SPZ, you may need a more responsive wetstock management system to reduce the risk of pollution. For example, statistical inventory reconciliation, which enters wetstock figures into a statistical model every day and identifies small leaks of a few litres a day.

You should also install boreholes for groundwater monitoring around the UST and collect samples from the boreholes regularly. You can agree monitoring schedules with Natural Resources Wales.

Install a drainage system

You should have properly designed drainage systems and maintain them. You should make sure your drainage system:

- contains all surface spills

- doesn’t discharge contaminated site water to surface watercourses, soakaways or the ground - use waterproof surfacing in any places where loss of fuel could happen

- carries surface water run-off to an appropriately designed oil-water treatment system (e.g. a separator)

- is made from materials that are resistant to attack by hydrocarbons (this includes both the hardstanding and pipework)

Drainage systems you can use

There are two types of drainage system you can use:

- separate systems
- combined systems

Separate systems

Separate systems have 2 drains:

- foul sewer carrying contaminated water (sewage or trade effluent, like vehicle wash water) to a sewage treatment works
- surface water drains carrying uncontaminated clean water (drainage from roof or clean yard areas) connected directly to the water environment

Combined systems

Combined systems have one sewer carrying both foul and surface water to a sewage treatment works.

Separators

You can fit oil separators to surface water drains to prevent pollution by oils by separating and storing oil from water. These will help contain any oil leaks from vehicles, plant and accidental spillages.

You must correctly design, install and maintain oil separators for them to work effectively.

Carry out checks before you use the UST

Before you use a new underground storage tank you should make sure:

- all valves, fill pipes and vent pipes are clearly identifiable, as set out in your management system
- monitor any wells you've installed are identifiable, as set out in your monitoring or management plan

Before operating your UST you should carry out the following checks:

- complete and test drainage systems, including separators, and discharges that need to be completed and tested - these tests should be carried out by a qualified drainage consultant
- charge separators with water so you can start using them seal electrical and other ducts
- make sure tanker stands are installed and forecourt areas are completed
- make sure any emergency equipment is installed and ready to use

You should record the outcomes of all these checks in your EMS.

You should also test the following for integrity and safety (see the Blue Book for advice on how to do so):

- tanks
- pipes
- fuel dispensers
- manhole chambers

If you're using your tank to store petrol, you'll need to carry out these tests before you can get a petroleum storage licence. You must keep any certificates for the tests on site for inspection.

5. Using an underground storage tank

How to use an underground storage tank safely to minimise the risk to groundwater.

Leaks can happen when you move fuel to and from your storage facilities. You should develop operation control measures to prevent spills or leaks:

- during the delivery of liquid hydrocarbon product to your tank during storage
- when you're dispensing fuel (e.g. when customers fill up their car)
- when you're removing waste from the site through drains
- during maintenance and repairs

The level of risk to groundwater will depend on your engineering and operational control measures and on the facility's location.

Make sure product is delivered safely

Spills can happen during the delivery of fuel to a tank, e.g.:

- during the uncoupling of delivery pipes
- due to split hoses or leaks from offset fill pipes

As part of your environmental risk assessment before installing your tank you should have considered the risks to groundwater during delivery. To protect groundwater during delivery, you should make sure:

- the site has a separate tanker stand area
- the site's drainage system can capture spills from the delivery point
- the interceptor has enough capacity and has been regularly maintained
- there are overfill prevention systems on the site
- delivery pipes are clearly labelled
- that the correct delivery procedures are being followed

Store product safely

You could lose a significant amount of product if tanks and pipes fail during storage. As part of your environmental risk assessment before installing your tank you should have considered the risks to groundwater during storage.

When you're carrying out an environmental risk assessment of existing equipment you should consider:

- the age of the tank and pipes - older tanks are likely to be single-skinned and made from steel and so be a greater risk
- how close the base of the tank is to groundwater
- the type of ground the tank is installed in - e.g. loose ground may affect the tank's long-term stability, or the ground could react with the tank

- whether the tank and pipes are single or double-skinned and the materials they're made from - single-skinned tanks are a greater risk
- how the tank and pipes were installed whether the tank and pipes are damaged
- whether the tank and pipes have received corrosion protection (e.g. cathodic protection)
- whether interstitial and wetstock monitoring is functioning correctly

Avoid spills and leaks during dispensing

You should make sure product doesn't spill or leak:

- from the pipes connecting the tank to the dispensing system
- during the dispensing process

You should take extra care in situations where spills are likely to discharge into the water environment, e.g. during the refuelling of boats. In these situations you should be aware of the immediate impact any spills will cause and make sure you've covered this in your risk assessment.

When you're carrying out an environmental risk assessment of existing equipment you should consider whether dispensers:

- conform to modern standards as set out in the APEA Blue Book
- are fed by a suction or a pressure system
- are regularly calibrated and serviced
- are fitted with nozzle shut-off valves

See the **APEA Blue Book**[17] for further details on what to consider and why.

Your risk assessment should also identify whether:

- you can refuel vehicles on the site
- pumps on the suction system are fitted with under-pump check valves

[17] http://www.apea.org.uk/publication/blue-book-pdf

- the site is secure against damage or vandalism

Make sure drainage system is working properly

Your drainage system should be designed to carry all contaminated water and spills to collection or containment points for disposal or treatment. You must deal with contaminated run-off legally - e.g. discharging to foul sewage under a trade effluent agreement with your waste carrier, or collecting and paying for it to be tankered away.

If you're using a petrol interceptor, you should make sure it discharges to a foul sewer - you'll need to get approval for this from your sewerage undertaker. When you're carrying out an environmental risk assessment you should consider:

- whether the drainage system is intact and can deal effectively with fuel spills whether the drainage system covers the whole site
- the age and condition of the drainage system
- the links between drainage system and the water environment (e.g. groundwater, lakes and rivers), particularly if you're in a sensitive environment, like close to a wetland or in a source protection zone or in an area at risk from flooding

Your risk assessment should also cover:

- the environmental sensitivity of the underlying aquifer and how vulnerable it is to pollution
- whether waste materials or effluents are discharged from the site
- whether there are any soakaways on the site (and whether they should be decommissioned)
- the distance of the nearest water supply boreholes (both public and private)
- whether the forecourt oil or water separator is clean and functional, and where it discharges to
- whether there are good dispensing and monitoring procedures in place on the site

- whether any vehicle washing facilities drain through a separate dedicated system

Deal with effluent and run-off from vehicle washing and cleaning activities

If you cause pollution you're breaking the law. Pollutants that you need to deal with include things that are washed off, like:

- hydrocarbon residues (from spillages)
- dirt
- brake dust
- traffic film residue
- oil

Your cleaning agents (including those labelled biodegradable or traffic film removers) are also pollutants.

Trade effluent is dirty water or run-off from vehicle washing and cleaning carried out as a business or industrial activity. You must arrange for collection and disposal of effluent to prevent pollution. It's illegal to discharge trade effluent to the environment without permission from Natural Resources Wales or into drains without permission from your local sewage undertaker.

In particular you should make sure cleaning effluent, run-off or cleaning chemicals don't enter:

- oil separators
- drains or gullies connected to the surface water drainage system

You need to have an up-to-date plan of your whole site that identifies where vehicle washing and cleaning takes place. This will help you to make sure drains are connected to the right system. Use a drainage consultant or consulting engineering company to create this plan if you can't do it in-house.

Inspect and repair the tank and related equipment

Your risk assessment should also consider how you'll prevent spills or leaks during repairs, including how you'll:

- first drain the pipeline and tanks
- avoid accidental damage to tanks and pipes
- make sure you have any materials needed to deal with small spills (e.g. absorbent granules, mats)
- carry out monitoring and checks to make sure repairs are done properly
- discharge any materials (including waste waters) containing waste fuels lawfully (e.g. to a permitted waste disposal site)

Operation, leak detection and maintenance

The design and engineering of your operational control systems should help reduce risks to groundwater. For example, making sure you adopt best engineering standards, appropriate leak detection systems will help reduce the risk of groundwater pollution.

You should also have an appropriate operational control system, a system including procedures that the operator has explaining how they will run their activity and in a way that minimises the risk of pollution. Your operational control system forms part of the EMS and should include:

- general operational control procedures
- leak detection and environmental monitoring
- maintenance

These should form part of your facility's environmental management system (EMS).

Your measures to reduce risks to groundwater will share features with your fire control measures (e.g. bunding arrangements to contain fire fighting waters) - you need to make sure that there is full integration between the two systems. You can get more information in the **APEA Blue Book**[18].

[18] http://www.apea.org.uk/publication/blue-book-pdf

Correct operational procedures form a major part of risk mitigation and help reduce the risk of pollution occurring and damage caused from an incident. Significant activities you should have developed operational control procedures for include:

- product delivery
- fuel dispensing
- product volume monitoring
- regular and one-off maintenance activities
- how to control visiting contractors
- staff awareness and training
- how you'll respond to major and minor spillages
- how you'll respond to alarms and other signs of leakage

Detecting leaks

You should detect leaks through (in order of priority):

- automatic leak detection systems
- wetstock monitoring
- environmental monitoring
- integrity testing

If your tank is in an environmentally sensitive area, your leak detection system should detect leaks immediately, before the surrounding area is seriously affected.

As part of your environmental risk assessment you should identify the minimum detectable leak that your detection system can identify. Find out more about monitoring and testing tanks and related equipment in the **APEA Blue Book**[19] and **PETEL 65/34**[20] .

[19] http://www.apea.org.uk/publication/blue-book-pdf

[20] http://products.ihs.com/Ohsis-SEO/313516.html

Maintenance

You should have a regular maintenance and inspection programme to keep everything in good working order and to demonstrate that you're managing the environmental risk.

You need to have these procedures as part of an Environmental Management System and through **ISO 14001**[21].

You must follow a plan of works when carrying out any maintenance or repair work on an underground storage tank or associated pipework.

Keep records

You should keep records relating to your tank and any equipment connected to it. Your fire and rescue service and Natural Resources Wales may ask to see your records if there's an incident or if your site's inspected.

These will help when you're:

- doing further building work on the site
- decommissioning or removing equipment

Records should include technical drawings. These should show:

- the location and orientation of the tanks and pipes
- their dimensions
- the materials used

You should also:

- record all repairs and alterations to the system
- keep records dated and maintained during the life of the tank
- keep records on the site for future reference (e.g. in the event of a leak or spillage)

[21] http://www.bsigroup.com/en-GB/iso-14001-environmental-management/

6. Decommissioning an underground storage tank

How to decommission an underground storage tank temporarily or permanently and the risks to groundwater.

> This decommissioning guidance applies to all underground storage tanks, not just those used to store fuel.

Decommissioning includes a range of activities, from completely closing and removing an underground storage tank (UST) facility as a whole, to replacing individual tanks or lengths of pipework. The type of measures you need to follow apply to all types of facilities, but the scale will vary.

The APEA Blue Book and PETEL 65/34 have guidance on best practice for decommissioning a UST. **GPP27**[22] also provides information on decommissioning and removing underground storage tanks.

Decommission unused USTs

You should immediately decommission any USTs that you're no longer using. Decommissioning includes both:

- closing and removing a UST system (the tank and any equipment connected to it) as a whole
- replacing individual tanks or lengths of pipe

You can decommission a UST either permanently or temporarily. If you only temporarily decommission a UST you must make sure that it doesn't cause pollution and you have plans to permanently decommission it as soon as possible.

As part of the decommissioning process you should:

- Carry out a full environmental risk assessment.
- Sample any surrounding soil and groundwater (you should do this before, during and after decommissioning) - the results from this will be important in your risk assessment.
- Remove any residual product from the tank and pipes (this is called 'bottoming').

[22] http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/

- Remove any explosive vapours from the tank and pipes to make them safe, before removing them from the ground.
- Remove and then clean tanks, pipes, dispensers and separators.

You should consult the APEA Blue Book for further technical guidance on decommissioning tanks (including health and safety issues).

To avoid pollution you should remove tanks and associated pipework that you're unlikely to use again. If you leave tanks in place there's a risk that some product remains in the tanks that you won't be monitoring or maintaining.

If you can't make sure of the following you should review your plans to decommission the UST:

- your methods don't lead to a loss of fuel to the ground either accidentally or on purpose
- you don't leave any equipment underground
- you don't leave any product underground (e.g. in tanks, pipes or drains)
- you dispose of contaminated tanks and pipework lawfully
- you comply with relevant **waste management requirements**[23] by using registered waste carriers and any permits that you may need for waste treatment or storage

Bottoming a tank

Removing the residual product in tanks and pipelines (bottoming) is a high-risk activity. You must dispose of waste at a permitted waste facility and you must make sure you don't lose any product to the ground.

After you've bottomed the tank you need to have it made safe by removing any explosive vapours, e.g. by filling it with inert gases or water. If you use water, make sure you dispose of it properly afterwards, e.g. by transferring it to a waste treatment facility or discharging it to a foul sewer with the consent of the local sewerage undertaker. You should use the same methods before removing pipes from the ground.

[23] https://www.gov.uk/managing-your-waste-an-overview/your-responsibilities

You must bottom and make safe any USTs and pipework before removing them from the ground.

When excavating the UST you need to prevent surface water from entering the site as it could become contaminated - you'd then have to treat it as hazardous waste and dispose of it accordingly.

Sample soil and groundwater

You should sample soil and groundwater for subsurface contamination before, during and after removing the tank. You're likely to need a qualified environmental consultant to plan your sampling programme and take the samples for you to meet the relevant standards. You can contact **Natural Resources Wales**[24] for advice before taking any samples.

If you find contamination, you'll need to carry out further investigations (and most likely a risk assessment) to identify how to deal with the problem. You can contact **Natural Resources Wales**[24] for advice.

Make the UST safe if you plan to leave it in place

If you can leave fuel or water in a tank on a temporarily decommissioned site you must continue to monitor the tank. Make sure any tank left permanently on a site is also made safe. You can only leave a tank permanently on site if Natural Resources Wales are satisfied that there'll be no risk of soil or groundwater pollution.

If you plan to leave the UST or pipes in place once you've made them safe you need to have them made safe - this is known as 'inerting'. Fill it with either:

- a sand and cement slurry
- hydrophobic foam
- foamed concrete

If you plan to leave the tank on the site, keep a record of:

- its capacity

[24] https://naturalresources.wales/about-us/contact-us?lang=en

- the product it contained
- the method of decommissioning , if any (e.g. degassing, filling with concrete)
- the date of decommissioning

If tanks and their pipework are no longer suitable or safe for storing petroleum spirit you should not use them to store diesel (or other hydrocarbons) without checking their integrity.

Remove separators

When disposing of the oil and water separator you should:

- dispose of all residual liquid and sludge lawfully away from the site
- seal all inlets and outlets

You should remove oil and water separators and dispose of them lawfully away from the site. If you can't dispose of them away from the site you should fill them in in a similar way to USTs.

Make sure any drainage systems that remain active after decommissioning does not provide a channel for pollutants to reach groundwater or other surface waters (e.g. rivers, streams, lakes or wetlands).

Temporary decommissioning

If you temporarily decommission a site you can leave product or water in tanks. If you do then you must continue your monitoring procedures as if the facility remained operational. If you can't continue monitoring then you should empty the tanks and make safe.

7. Train staff

What to train your staff and where you can get training courses and materials.

You must make sure that staff are properly trained to reduce risks of operator errors and accidents - training is an important part of the environmental management system for your facility.

Through your training programme and procedures you need to make sure that staff:

- understand the need for environmental protection
- are aware of the risks posed by an underground storage tank facility
- know what the risk management procedures and controls are

You should offer training on:

- on-site hazards and risks
- risk management measures and procedures
- emergency procedures
- controlling visiting contractors

You should train anyone working on the site on their responsibilities and keep a record of training. You should train all new staff, and give refresher training for existing staff.

Train your staff

You should teach all new staff about environmental protection and give refresher training to existing staff. Your training should cover:

- how to manage hazards and risks to groundwater on the site (get more information at the Groundwater Forum[25]
- the consequences of groundwater pollution
- what to do in an emergency

[25] http://www.groundwateruk.org/Groundwater-Basics.aspx

- how to supervise visiting contractors
- any environmental protection measures specific to the site

Your training should also cover environmental protection, including:

- groundwater (and general) environmental sensitivity
- the consequences of groundwater pollution
- facility specific risks and environmental protection measures
- an individual's specific role and responsibility

You should put this in your environmental risk assessment and risk management action plans, and should form part of any environmental management system that you have in place.

Your staff involved in operating the facility should read and understand these documents. At a minimum all staff involved in operating the facility should be aware of the existence of these documents and of the issues detailed in them.

For retail filling stations, this doesn't include members of the general public using a facility as customers.

Training sources

You can get health and safety training courses and materials from several industry bodies, including the:

- Association for Petroleum and Explosives Administration (APEA)
- Forecourt Contractors Safety Association (FCSA)
- Energy Institute (EI)
- Petroleum Enforcement Liaison Group (PELG)
- Petroleum Retailers Association (PRA)

Larger oil companies also offer in-house training.

A number of courses run by these organisations already include, or are planned to include, awareness of environmental protection issues. Attendance at a suitable environmental protection course could offer evidence that you're meeting training requirements.

8. Prepare for emergencies

If there's a risk that groundwater has been polluted you must contact **Natural Resources Wales**[26] to report an environmental incident. Call them on **0300 065 3000**

Create an incident response plan

You should prepare a pollution incident response plan (PIRP), which may be part of your site's EMS, setting out what you'll do in an emergency such as a major spill.

You need to tailor your PIRP to your site, and at a minimum it should include:

- **emergency contact details** e.g. the fire and rescue service , Natural Resources Wales[26], specialist contractors and water companies (for both water supply and foul drainage - they can be different companies)
- a product inventory of all the liquid hydrocarbons you're storing in USTs)
- a site layout plan
- a plan of the drainage arrangements on the site, including any discharge points
- details of the location of emergency response equipment (e.g. fire extinguishers, absorbents and emergency bunding)
- details of the location of any buried equipment, including water supply pipes
- your processes for inspecting and looking after the site
- your emergency procedure

You should create separate procedures for large-scale and small-scale incidents, including how you'll report them.

[26] https://naturalresources.wales/about-us/contact-us?lang=en

Large-scale incidents

For a large-scale incident with a large amount of fuel lost, your PIRP may only be able to help you make sure that the immediate environmental impact is minimised rather than a full clean up.

If this happens you'll need a longer term strategy. This will include environmental monitoring (including groundwater) and the potential use of environmental consultants to help you put your strategy in place.

Your PIRP should set out how you'll deal with major incidents. If a leak or spill leads to significant groundwater pollution you may face:

- substantial costs for groundwater remediation
- additional costs associated with responding to the incident (costs may be set by Natural Resources Wales as part of a recovery exercise)
- fines or costs through the criminal or civil courts
- ongoing monitoring costs to monitor the remediation operation

In planning for large scale emergency incidents your PIRP should include procedures to:

- prevent or minimise the spread of fuel (e.g. using bunding, closing the interceptor outfall)
- prevent fire and explosion (e.g. isolate or switch off electrical equipment)
- prevent further loss of product (e.g. uplifting fuel from a leaking tank)
- protect the health and safety of the general public and surrounding area (e.g. using temporary fencing, evacuating nearby properties)
- protect drinking water supply pipes
- remediate (e.g. cleaning up pollution) and monitor groundwater as necessary

Record incidents

You should record all incidents that have the potential to damage the environment (e.g. fuel spills). You should consider these when updating the facility's risk assessment.

If you make routine investigations of petrol filling sites (e.g. borehole logs, depth to groundwater, previous quality monitoring) you should store it centrally and make it accessible to staff and specialist contractors out of hours (e.g. on a central server). You should also keep records of actions you took in response to any incident.

If there's a serious risk of fire or explosion, you should contact the fire and rescue service and police immediately.

You must also let each of the following know about any incident that leads to a significant amount of product entering the ground:

- Natural Resource Wales
- your petroleum licensing authority
- your local environmental health department
- the Health and Safety Executive, if necessary (e.g. if there is an injury)

Your PIRP should explain how you'll do the following after a major incident:

- prevent or limit the spread of product (e.g. by using bunding or closing the interceptor outfall)
- prevent fires and explosions (e.g. by isolating or switching off electrical equipment)
- prevent further loss of product (e.g. by removing it from a leaking tank)
- protect the health and safety of the general public and surrounding area (e.g. by using temporary fencing or evacuating nearby properties)
- protect drinking water supply pipes
- relieve the situation and monitor it
- remove pollutants from the tank and related equipment

Where to keep your PIRP

You should keep copies of your PIRP both:

- on-site
- at off-site locations where they can be easily accessed

You should list all people or organisations that have the PIRP and you should keep it up to date. You should re-issue the PIRP if there are any changes in the retained contractors.

You may also want to provide copies to:

- the fire and rescue service
- Natural Resources Wales
- other regulatory authorities
- specialist contractors working on your site

You should keep an up-to-date record of everyone who has a copy of your PIRP.