



Comhairle Ceantair
**an Iúir, Mhúrn
agus an Dúin**

**Newry, Mourne
and Down**
District Council

A GUIDE TO OPERATING PETROL FILLING STATIONS

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1. Requirement for a Petroleum Licence

A Petroleum Licence is required for workplaces involved in **dispensing petroleum-spirit connected with the refuelling of motor vehicles etc.** For the purposes of petroleum licensing, "Petroleum-Spirit" means petroleum which has a flash point of less than 21°C and "dispensing" means manual or electrical pumping of petroleum-spirit from a storage tank into the fuel tank for an internal combustion engine, whether for the purposes of sale or not.

What happens next?

The Petroleum Officer will then inspect your premises and will also look at the site register.

What happens if I do not pass an inspection?

Depending on the circumstances, you will receive a letter explaining where you do not comply and the steps to be taken to achieve full compliance. In extreme or dangerous conditions, any activity may be stopped by the issue of a legal prohibition or improvement notice. Other enforcement action may also be considered.

Can I appeal and to whom?

You can appeal to the Office of Industrial Tribunals against any legal notices served on you or your business. Legal notices are however, very rare indeed.

If a licence has been refused or if it has been granted but you are not satisfied with the conditions attached, you can appeal to an independent tribunal.

2. Technical Guidance for the Storage and Dispensing of Petrol

What is the Guidance that is applied to new and existing Petrol Filling Stations?

In the case of new or majorly refurbished petrol filling stations or existing ones where any alterations are to be undertaken, the APEA/IP document known as 'Guidance on the Design, Construction, Modification, Maintenance and Decommissioning of Petrol Filling Stations' (3rd edition) is accepted as the nationally recognised guidance that is to be followed.

What does this Guidance cover?

The following sections are contained in the guidance: -

- Scope
- Dispensers and Control Equipment
- Risk Assessment
- Vapour Recovery Systems
- Hazardous Area Classification
- Leak Containment and Detection
- Planning and Design
- Canopies and Buildings
- Acceptance and Commissioning
- Drainage Systems
- Construction Safety
- Electrical Installations
- Autogas
- Decommissioning
- Containment Systems
- Glossary of Terms

Is there any other Technical Guidance I should be aware of?

Yes there is; it relates to operational issues and the document is known as HS(G) 41 'Construction, Operation and Maintenance of Petrol Filling Stations' (1990), published by the Health and Safety Executive (www.hse.gov.uk).

Another HSE guidance document for petrol stations is "HS(G) 146 - Assessing and Controlling the Risk of Fire and Explosion at Sites where Petrol is Stored and Dispensed as Fuel". The risk assessment criteria laid down in HS(G) 146 should strongly influence any decision in whether to replace existing mechanical or electrical equipment or installations.

The Northern Ireland Environment Agency (NIEA) has assisted in the production of pollution control guidance notes intended for all those who are involved in the planning, management and maintenance of petrol filling stations. They are based on guidance published on the Construction and Operation of Fuelling Stations - PPG7 and The Use and Design of Oil Separators in Surface Water Drainage Systems - PPG3.

Additional guidance can also be sought from the undernoted bodies or alternatively from your petroleum supplier: -

- Environmental Agency www.environment-agency.gov.uk
- Petrol Retailers Association
- United Kingdom Petrol Industries Association

3. Petroleum Site Register

What is a Petroleum Site Register?

A petroleum site register is a single file that contains key legal documents regarding a licensed petroleum site. It is good practice for every licensed site to have a register.

What documents should I keep?

Depending on the site, the following is a list of legal documents that should be kept within the register, or in the case of larger sites, a statement to say exactly where critical documents are held in the 'Back Office':

1. Current Annual Petroleum Licence AND the Conditions of Licence
2. Current Vapour Recovery Authorisation
3. Current Site Tank to Pump Diagram
4. Waste Transfer Notes AND Transfer Certificates
5. Staff Training Records
6. Electrical Test Certificate
7. Wet Stock Records (Daily Reconciliation, Weekly and Monthly)
8. Petroleum Delivery Certificates
9. Site Maintenance Records
10. Detailed Site Plans (if available)
11. Emergency Procedures
12. Pollution Response Plan
13. Correspondence and Reports from Enforcing Authorities
14. Risk Assessments
15. Records of visual inspection of waste separators.

How long should I keep these records?

Ideally, 3 years depending on how busy the site is. In the case of records relating to your monitoring and reconciliation system or the operation of other leak detection systems your conditions of licence require that they should be retained for a minimum of 12 months.

Can I make my own register?

You can, provided you follow the above basic requirements.

Who will look at my Site Register?

The Petroleum Officer and Environmental Health Officers. Trading Standards, Company Auditors and Health and Safety Advisors may also wish to see these records.

Will my Supplier be able to provide me with a Site Register?

Almost certainly. All of the major oil companies and operators have in-house site registers that meet all of the above criteria.

4. Decommissioning of Petrol Filling

Reference: Design, construction, modification, maintenance and decommissioning of filling stations published by APEA and EI June 2011 (3rd Edition) Section 15.

Temporary Decommissioning

Temporary decommissioning should be carried out if the whole or part of the petrol containment system is taken out of service for a temporary period, up to one year or if future development and reinstatement is being considered following closure or refurbishment, to maintain adequate safety controls for the facility.

Filling with Water

1. All pipe work should be drained and then disconnected in the access chamber of each tank. The vent pipework however should remain connected.
2. Residual Petrol should be removed from the tank or compartments.
3. Each tank should be filled with water to a level just below the man lid.
4. All disconnected pipe work should be sealed with metallic components in the manhole chamber.
5. The vent pipe should be disconnected just above ground level.
6. Filling should continue until clear water appears at the disconnected vent pipe.
Note: The liquid that first appears may contain significant amounts of product. Release of this material could cause a safety hazard and it should be collected safely for disposal.
7. Once the tank is full, the vent pipe work, together with the flame trap outlet should be reconnected to allow the tank to breathe.
8. The filling/dipping pipe should be securely locked.
9. Offset fill pipes should be adequately secured against unauthorised access, vandalism or inadvertent use.
10. The water content of the tank(s) should be investigated at intervals of not less than once every 3 months and any reduction in level should be investigated, notified to the Enforcing Authority and appropriate corrective action taken.

Partially filling with Water or Diesel

Where a tank is taken out of service pending a decision on its future, it may be rendered temporarily safe, provided adequate controls can be maintained over the site by taking the following precautions.

1. Remove residual petrol, bottom tank and ensure that the fill pipe is intact.
2. Introduce sufficient water or diesel into the tank to maintain a liquid seal between the termination of the internal fill pipe and the tank vapour space. Note: Where diesel is being used it will be necessary to ensure electrical continuity between the tank and the tanker and that the flow rate is restricted to less than 1 m/s.
3. Fix suitable warning notice at the manhole.
4. Introduce a regular inspection regime to ensure that the facility is not interfered with and that the liquid seal is maintained at the fill pipe.

Filling with Hydrophobic Foam

1. All pipe work except the vent pipe work should be drained and then disconnected in the manhole chamber of the tank. The tank should be bottomed as detailed above. In addition, it may be necessary to treat the bottom of the tank with a proprietary emulsifier to ensure, as far as possible that all residual petrol is removed.
2. The tank should be filled with hydrophobic foam generated on site and pumped directly into the tank. The foam should have a designed compressive strength of 15 tonnes/m².

Tanks filled with hydrophobic foam can be reinstated by mechanical removal of the foam or by using a solvent and vacuum extraction method.

Tanks left unused but with product remaining

This is only acceptable if there is a surplus capacity. A liquid seal must be maintained. Maintenance schedules should also be retained.

Dispensers

These may be made temporarily safe if being left in situ. The following precautions should be taken.

1. The dispensers should be electronically isolated, all suction lines drained back and flexible connectors disconnected.
2. The dispenser suction entries should be plugged off and the suction and any vapour lines capped off in the under-pump cavity.
3. The dispenser should be protected from vandalism by sturdy wooden encasement or other suitable material.

This method is only suitable for short periods of time (6 months maximum).

Dispensers removed from Site

The following measures should be undertaken: -

1. Isolate electrically, drain all suction lines and disconnect flexible connectors.
2. Dispensers should be drained of residual petrol and purged with nitrogen. The suction entries should be placed in storage or dispatched for scrap.
3. Cap off the suction line and any vapour lines in the under-pump cavity.
4. Infill the under-pump cavity with a suitable backfill material.

Interceptors

Interceptor Chambers should be emptied of all liquid and sludge contents by a Hazardous Waste Disposal Contractor. The chambers should then be replenished with clean water.

Electrical Installation

This should be disconnected by an electrical contractor who will apply the appropriate degree of disconnection (up to removal of the main intake box) and isolation.

Reinstatement

This depends on whether it was out of action for a short period (12 months) for cleaning or pending modifications or site development. A longer period may be agreed with the Petroleum Licensing Authority. In either case the procedure for reinstatement should be discussed with the Enforcement Authority before any work is commenced. The APEA guidance mentioned in Section 2 also contains useful information on this issue.

Reinstatement following Short Term Decommissioning

A full visual inspection should be carried out and any defects or omissions rectified or replaced as the case may be.

Normally, the only testing necessary will be to prove the integrity of the tank lid gasket and pipe work reconnections. A Risk Assessment should be carried out to determine whether further testing is necessary.

Reinstatement following Long Term Decommissioning (12 months plus)

The site should be risk assessed to establish whether there are adequate safeguards in place to control the risks of fire, explosion and environmental pollution from the storage and handling of petrol. The Filling Station electrical installation should be subjected to a full examination and test, with a compliance certificate issued before operating again.

Permanent Decommissioning

(a) Underground Tanks to be removed – A Brief Summary

Before any work is carried out to render a tank permanently safe, all pipe work carrying fuel should be drained back to the tank and residual product removed from the tank or compartments. Before commencing excavation of an underground tank it should be inerted to remove the risk of explosion using one of the methods as follows.

- **Hydrophobic foam fill** - Tank should be filled with hydrophobic foam generated on site and pumped directly into the tank. The foam should have a designed compressive strength of 8 tonnes/m² and at this density is appropriate for inerting tanks for a period not exceeding 6 months.
- **Nitrogen foam fill** - High-expansion foam is produced in a generator using nitrogen, water and a detergent foam compound, which is then introduced in the tank via the fill pipe. Unless the tank is completely filled with nitrogen foam it will be necessary for a competent person to test the atmosphere inside the tank.
- **Nitrogen Gas** - After tank is bottomed out all openings should be sealed except those required for the inlet of nitrogen and the exhaust outlet (vent pipe) to atmosphere. The nitrogen should then be introduced and the mixture leaving the tank vented so that the tank remains at atmospheric pressure throughout the entire operation. The atmosphere in the tank should be tested and purging continued until oxygen levels have been reduced below 5%. On completion of the purging, the openings of the tank should be sealed and the tank excavated.
- **Water fill** - After tank is bottomed out the suction pipe(s) should be disconnected and the tank connecting points sealed. The tank should then be completely filled with water. Care should be taken to ensure that any water/residual fuel does not overflow from the fill point. The vent pipe should then be disconnected and the tank connection point and fill point sealed. Extreme care to be taken not to puncture the tank with mechanical plant which would cause contaminated water to escape. Not a suitable method if there are leaks in the tanks. When tank ready for lifting from the excavation the water should be uplifted and disposed of as contaminated waste.
- **Dry ice** - Only to be carried out by a competent specialist contractor. Following bottoming of tank, the vent pipes should be removed and all openings sealed except the one required for insertion of dry ice. At least 2kg of dry ice allowed for each cubic metre of tank volume, in pellet form or blocks less than 3cm diameter. Suitable personal protective equipment to be worn by operatives. Tank should be left for 12 hours and then the atmosphere tested taking readings from top, middle and bottom. When oxygen readings of less than 5% achieved at all levels, openings should be sealed and excavation work commenced. During excavation any holes found in the tank should be securely plugged.
- **Combustion gas** - Special combustion gas generators available for this purpose can be used for inerting tanks. Procedure to be followed as per nitrogen gas above.
- **Cleaning** - As an alternative to rendering a tank inert the tank can be cleaned and degassed. Method involves making the tank safe by removing all flammable materials and vapour. All residual petrol and sludge removed first and tank surfaces cleaned, forced ventilation applied until tank certified gas free by competent person.

Tank uplift, transportation and disposal

Prior to lifting a tank a risk assessment and Safety Method Statement should be prepared. Tanks should not be lifted by chains or wire ropes unless they are protected to prevent contact with tank (to reduce risk of sparks and sources of ignition). Fabric straps with a design strength suitable for the tank weight should be used. Tanks should not be lifted by placing chains or ropes around the tank lid as the neck can rip from the tank.

After excavation the words '**PETROL HIGHLY FLAMMABLE**' should be painted in clear indelible letters at each end and/or on opposite sides of the tank. The recipient of the tank should be made aware of the tank's history in order that adequate precautions against fire and explosion can be taken when dealing with it.

These works must be carried out by a contractor competent in lifting tanks and should be accompanied by appropriate certification.

Dismantling redundant tanks on sites

If a site is not currently being used to store petrol or if there is sufficient space to carry out the works safely, tanks can be broken up on site prior to disposal. Only cold cutting techniques should be used. Before dismantling, the tanks should be filled with water to prevent build-up of flammable vapour, or alternatively be cleaned and certified gas free by a competent person. The first step in dismantling should be to cut a large opening in the top of the tank or each compartment to provide adequate explosion relief and natural ventilation. Systematic demolition from the top downwards should then follow.

Pipework removal

The removal of pipework should not be carried out until it has been drained and isolated from sources of vehicle fuel and the site earth bonding arrangements. Flushing the pipes with water should precede the removal and dismantling work as a precautionary measure.

(b) Underground Tanks to be left in situ - A Brief Summary

The following methods should be considered if tanks are not to be excavated and removed from site but are to be left in situ.

o Filling with sand and cement slurry

With this method of decommissioning the tank is completely filled with a 20:1 sand/cement slurry. This mixture will set to form a solid homogeneous mass fill. The tank or all compartments should be bottomed and then inerted. Pipework should be disconnected and removed and the tank lid removed in preparation for the sand/slurry filling. The slurry should be vibrated during pouring to remove air pockets and ensure complete filling of tank.

o Filling with hydrophobic foam

- 1 The tank should be bottomed and in addition it may be necessary to treat the bottom of the tank with a proprietary emulsifier to ensure, as far as possible that all residual petrol is removed.
- 2 The suction pipe(s) should be disconnected and tank orifices sealed. The vent pipe should be disconnected and a temporary ventilation outlet fitted by the contractor applying the foam.
- 3 Foam is generated on site and pumped through a hose connected to the fill pipe. Filling should continue until foam discharges through the temporary vent pipe which should then be removed and the vent connection securely capped. Additional pressure, typically 0,5 bar should then be applied to the foam.
- 4 Decommissioning is completed by replacing the tank fill cap securely and filling the access chamber with foam, sand or concrete.
- 5 Where impractical to remove redundant pipework, it can also be inerted by filling with foam.

- **Filling with foamed concrete**

Foamed concrete is a sand and cement slurry with added foam to give a mixture with a final density not exceeding 1200kg/m³. A similar procedure to be followed as for filling with sand slurry cement. Foamed concrete is normally added through an open tank lid following bottoming and inerting the tank with water.

- **Oil/water separator and drainage**

Where practicable the oil/water separator should be exhumed and removed from the site for safe disposal. Alternatively, the chamber(s) should be filled, in situ, with concrete slurry, sand or other similar inert material. Before removing or infilling it will be necessary to carry out the following preparatory work: -

1. Arrangements made for removal of any liquid or sludge contained in the chambers by a hazardous waste disposal contractor.
2. All inlets to any associated redundant drainage system should be sealed off.
3. Outlet pipe from redundant oil/water separator should be sealed and capped off at the site boundary or at the point where it connects to any remaining live drainage system within the site. When the surface drainage is to remain operational the inlet and outlet pipes to the separator should be linked.

- **Electrical Installation**

Where the site is totally decommissioned and is to be demolished the electricity company should be requested to disconnect the supply prior to the commencement of the decommissioning work. In other cases, a competent electrical contractor should apply the appropriate degree of disconnection and isolation.

- **Dispensers**

Dispensers may be removed from the site as per the procedure detailed under temporary decommissioning section.

5. Undertaking of work in Petrol Filling Stations

What do I need to do before starting work on a Petrol Filling Station?

Before any work is commenced on any part of the petrol installation, you must obtain approval from the Petroleum Licensing Authority.

Work means any work that involves storage tanks, pipe work, drainage systems, dispensers (pumps), sales buildings (where pumps are authorised), LPG Installations, any tank and line testing and any measuring equipment or devices.

You should give at least 28 days notice in writing but depending on the nature and extent of the work this may be relaxed if it is of a minor nature or an inspection will be carried out by the Petroleum Officer if deemed necessary.

Do I need to have any documents whilst work is being undertaken?

If the site has closed down you will need a visitors signing in book and display health and safety at work posters. You should also have site risk assessments and a safety method statement. All staff involved should have the appropriate safety protective clothing including high visibility vests, safety footwear and hard hats, if deemed a 'hard hat' area. Specific areas of work should be fenced or coned off with any warning signs prominently displayed.

Portable fire-fighting equipment should be supplied and there should be emergency procedures laid down before work starts with access to a telephone within one minute's travel by foot.

Confined Space Access to part of the underground Installation

Before any entry, you should undertake a pre-entry assessment and keep a record of it. Staff should have a means on them to demonstrate they have received the appropriate training in confined space access and have a working knowledge of a 'Man Down Procedure'. A 'surface man' should always be present whilst contractors are inside a confined space with entry restricted to 30 minutes maximum, with each committed member in a harness. A first aid kit should always be available.

Hot Work methods for cutting/welding

Before doing this, you must obtain the approval of the Petroleum Licensing Authority in writing by submitting a supporting case study showing there are no alternatives. Risk assessments and safety method assessments are also to be submitted.

6. Notification of Work in Petrol Filling Stations

It is a condition of the petroleum licence that any work that is undertaken on a petrol filling station or workplace installation that dispenses petrol must be notified to the Petroleum Licensing Authority in writing BEFORE that work commences.

The scope and extent of these works must be made known together with the name of the project manager and contractors involved.

On most occasions there will be the need for a site-specific risk assessment and a safety method statement that must be submitted along with any notification.

It would also be helpful for a scale drawing to be submitted that can show where the work is taking place in conjunction with the hazardous areas.

Finally, it is important to establish whether the work will cause either partial or total closure to take place and the additional safeguards necessary to protect contractors, staff and any members of the public where the work area must be segregated from any parts of the forecourt that remain open.

7. Tank and Line Testing

Until 1996 it was normal to have both underground storage tanks and pipelines tested periodically. These periods were on installation, after 20 years, 25 years, 30 years and every 2 years thereafter.

The common practice now is to install double skin steel tanks and a pipe work system that either has secondary containment or is twin walled that in each case, further reduces the risk of a leak and contamination.

Since 1996, there has been an increase in electronic gauging and monitoring for fuel leaks that are continuously measuring the contents and condition of the underground installation itself. Should a failure occur, both an audible and visual alarm will operate in the 'back of office' and in the majority of cases, the affected part of the installation automatically shuts down.

Sites having continuous monitoring will only be asked to test their tanks and pipelines if a leak is suspected, PROVIDED the electronic gauging system is maintained on a regular basis.

Single Steel Tanks and Pipelines

In the case of these types of installations, periodic testing will continue in the absence of more modern containment systems and continuous monitoring. Furthermore, any site that has a history of outflows and leaks will be subjected to periodic testing, irrespective of the kind of installation.

Farms

Taking into account the size of tanks and the low risk they pose, self-certification will be arranged and the use of an 'ullage' test will be accepted. Here, the licensee seals the tank fill point for 24 hours after taking a dip reading. After the 24 hours have elapsed a second dip reading is taken and provided there has been no reduction in the contents of the tank, it will be deemed to have passed.

It must be stressed that this facility may be removed if evidence of poor maintenance and management is recorded.

Dealing with Leaks and Spillages

It is inevitable that at some stage, a fuel leak or spillage will take place on a petroleum licensed premises, the risk increases as the installation ages or the throughput of the site rises. The wear and tear on equipment such as delivery hoses, nozzles and valves will in time fail.

It is essential that a sound routine maintenance programme is in place to preserve the lifespan of the various components of the installation starting with simple checks through to specialist engineers attending the site to conduct maintenance work.

Reporting Leaks and Spillages

It is a condition of the petroleum licence to report any fire, explosion, leak or spillage but clearly some interpretation of this is necessary as the Petroleum Licensing Authority could be contacted every time a few drops of fuel are spilt! Conversely, a leak or spillage of 100 litres represents a sizeable amount of fuel and in the case of petrol, can have catastrophic consequences if ignited.

The amount in either case to report a leak or spill should be 20 litres or more unless the circumstances suggest that site conditions will worsen.

In this case, the licensee should contact the Northern Ireland Fire and Rescue Service and notify Antrim and Newtownabbey Borough Council.

Information Required

When reporting leaks and spillages, the caller should clearly state any or all of the following: -

- Date and time of the incident
- Location or address of the incident
- A brief description of events leading to the incident
- Any accidents and injuries to people or property
- If the incident was captured on CCTV (if installed)
- What corrective action (if any) was taken at the time
- Who else has been informed of the incident
- If any of the emergency services were called (Police, Fire, Ambulance)

Pollution Incident Response Plan

Although it is not a condition of the petroleum licence, the Management of Health and Safety at Work Regulations (N.I.) 2000 as amended, do require procedures to deal with imminent danger to people. Your risk assessment should identify the foreseeable events that should be covered by these procedures and should include pollution/spread of flammable liquid. All sites should therefore have their own 'Pollution Response Plan' that takes into account a major leak or spillage for up to the first hour of the incident occurring. This will involve company contacts and specialist contractors being called and the plan should cover any time of day or night.

8. Dangerous Substances and Explosive Atmosphere Regulations 2003

These regulations implement the Chemical Agents Directive 98/24/EC (CAD) and the Explosives Atmospheres Directive 99/92/EC (ATEX 137), known also as the Dangerous Substances and Explosive Atmospheres Regulations (Northern Ireland) 2003 (DSEAR).

DSEAR require employers and the self-employed to: -

- Carry out a risk assessment of any work activities involving dangerous substances.
- Provide technical and organisational measures to eliminate or reduce as far as reasonably practicable the identified risks.
- Provide equipment and procedures to deal with accidents and emergencies.
- Classify areas where explosive atmospheres may occur into zones and to mark those zones where necessary.

Overall, DSEAR can be seen as complimentary to the general duty to manage risks under the Management of Health and Safety at Work, making explicit good practices for reducing the risk to persons from fires, explosions and energy - releasing events which in turn are caused by dangerous substances such as flammable solvents and fuels.

It applies to substances that are known to be dangerous that include petrol and LPG and it is aimed at controlling fire and explosion risk.

DSEAR requires employers and self-employed persons to carry out a risk assessment before commencing any new work activity and in the case of an employer with 5 or more employees, to record the significant findings of the assessment as soon as possible that includes: -

- The measures taken to eliminate and/or reduce the risk.
- Sufficient information to show that the workplace and work equipment will be safe during operation and maintenance including any hazardous zones and any special measures to ensure the co-ordination of safety measures and procedures when employers share a workplace.
- Arrangements to deal with accidents, incidents and emergencies.
- Measures taken to inform, instruct and train employees.

The risk assessment required by DSEAR is an identification and careful examination of the dangerous substances present in the workplace and the work activities involved.

DSEAR reflects the safety strategy of *ELIMINATION, CONTROL AND MITIGATION*.

For further information on how to carry out a risk assessment please refer to the "GUIDANCE ON MANAGING THE RISKS OF FIRE AND EXPLOSION AT PETROL FILLING STATIONS (DSEAR)" from this Council.