



National
Operational
Guidance

Hazard

Leaks from high pressure oil pipelines



NFCC
National Fire
Chiefs Council

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Hazard - Leaks from high pressure oil pipelines

Hazard Knowledge

A network of high-pressure oil pipelines exists in most parts of the UK. The pipelines transport flammable liquids, including petrol, diesel, aviation fuel and oil. At any one time several liquids may be in a pipeline. Should a leak or breach occur then two or three different liquids could be released.

Pipelines are typically 100 - 400 mm diameter steel pipes, laid in 1.5 m deep excavations. Marker posts normally identify the pipeline route. Excavations, landslips, flooding, pipeline corrosion and operational errors may compromise the integrity of a pipeline. Should a break occur, up to two million litres of product could be released over a 30-minute period, resulting in a significant environmental emergency. See Section 2.7, [Environmental Protection Handbook](#).

Pollution from high pressure pipe lines can occur from:

- Mechanical failure of pipeline plant
- Accidental pipe line strike
- Illegal activity (pipe tapping)

The response and tactics used will depend on the incident, its location and resource availability. Any incident is likely to be declared a major incident because of the large quantities of highly flammable product released. Incident commanders may consider the following actions:

- Blanketing pollutant with firefighting foam to reduce vapour and ignition risks.
- Providing resources to protect drinking water supplies, important wildlife habitats and sewer systems.

The pipeline operator should be contacted immediately to find out if the affected section is being isolated.

See Section 2.7, [Environmental Protection Handbook](#).



Control measure - Containment

Control measure knowledge

The principle of containment whenever practicable and safe to do so is the preferred approach to managing incidents where polluting liquids or materials have been released or generated by on-site activities, including firefighting.

This hierarchy should be used in most instances when containing contaminated fire water run-off and spillages of polluting materials:

Hierarchy	Activity	Description
1	Containment at source	The most effective intervention point is where the source of pollution can be controlled to stop or reduce the volume released. Methods include the use of clay seal putty, leak sealing devices, wedges, and drums. Contaminated fire water will ideally be contained at an incident scene either inside the building or as close to it as possible.
2	Containment close to source	The next point of intervention is as close to the source as possible. This may be when it is not possible to contain at source or where there has already been significant loss of pollutant. Methods include the use of grab packs, booms and pop-up pools.
3	Containment on the surface	The most common way for contaminants to enter the environment is via drainage systems. Methods to prevent this include the use of booms, clay drain mats, pipe blockers, pumps, and inflatable dams.
4	Containment in drainage system	Pollutants may be contained in drainage systems if they have already entered the system. This can be carried out using in-built pollution control devices in the drainage systems such as oil separators, drain closure valves and containment lagoons/tanks and ponds. Such a system should allow predictable volumes of run-off to be stored, although allowance should be made for rainfall and how well systems have been maintained. Portable equipment such as pipe blockers can also be used.

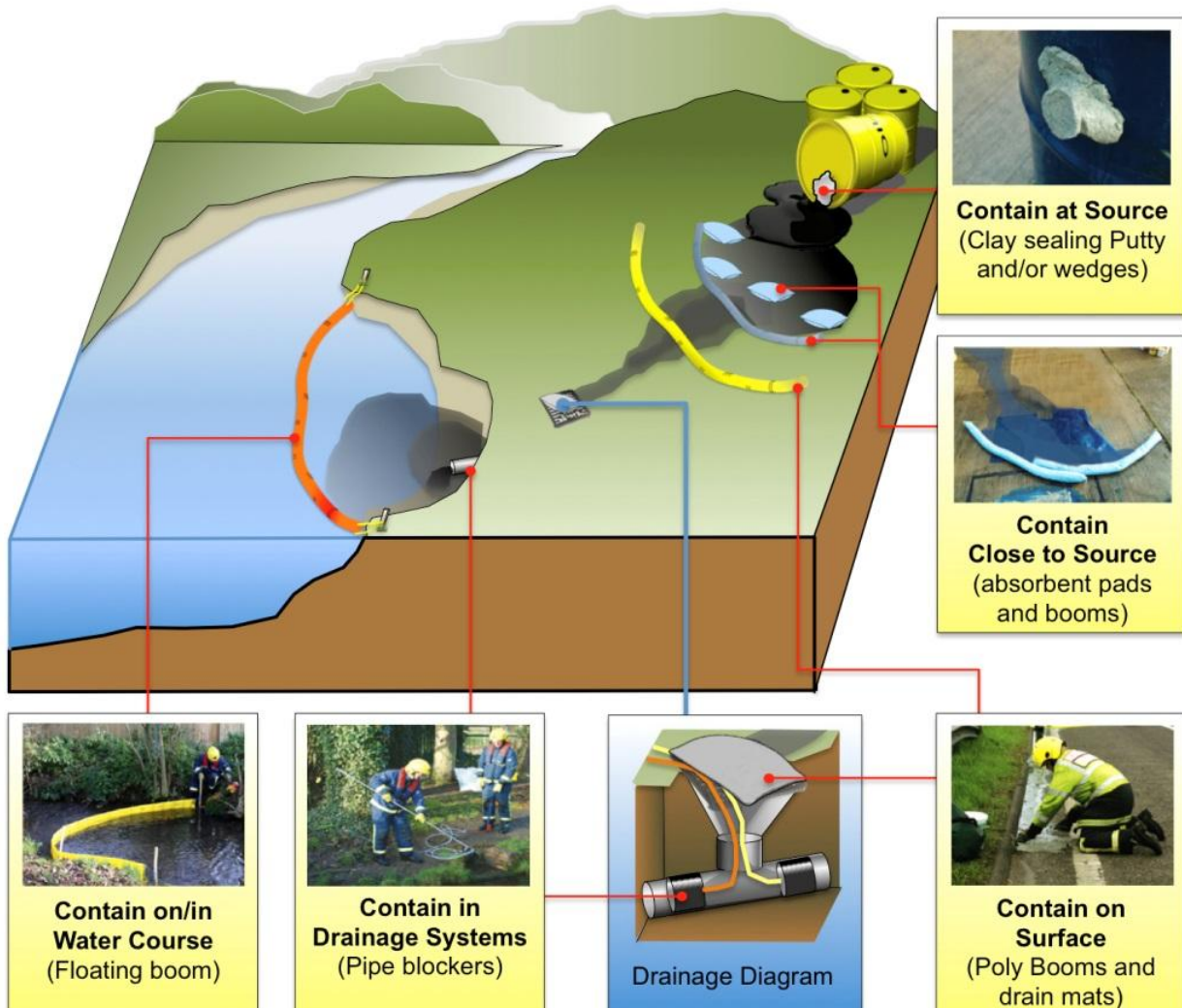


- 5 Containment on or in watercourse The deployment of booms on a watercourse downstream of an incident is of significant benefit where a pollutant floats. Damming can be used where pollutants are mixed or do not float but is normally restricted to small ditches and streams with low flows. Booms can also be deployed around drinking water intakes.

See Section 3.2, [Environmental Protection Handbook](#).



Pollution Hierarchy



Off-site containment is an alternative that can be considered by fire and rescue services. Foul sewerage systems can be used to contain polluting material if approved by the sewerage company and environment agency. When doing so take care that pollutants and sewage do not escape from any storm overflows into the sewerage system. The contained pollutants and sewage may then be removed.

It may also be possible to divert pollutants to a local sewage treatment works, where the pollutant can either be treated in the treatment process or contained in storm tanks before deciding on disposal. These tanks are present at many treatment works and are used to store the large volumes of diluted sewage produced during high rainfall. Approval from the sewerage company must be sought before diverting pollutants to a sewage treatment works because the treatment process can be affected if levels of pollution are too high. This would result in the release of both

pollutants and untreated or partially treated sewage. See Section 1.66, [Environmental Protection Handbook](#).

Pollution control devices such as drain closure valves, storage lagoons or balancing ponds are installed in some surface water drainage systems. These devices can be used to help contain pollutants if permission is given by the sewerage company, the owner/occupier or highway authority. In some places the environment agencies keep large volume pumps that can be used to support, supplement or replace fire and rescue service pumps.

Unless there is an immediate risk to life, containment measures can be used and advice and guidance from environment agencies should be sought before making any attempt to dilute. Never add detergent or any other cleaning products to spillages and never hose spillages to the drain without prior authority from the environment agencies and/or sewerage undertakers.

For further information see the [Environmental Protection Handbook](#).

Strategic actions

Fire and rescue services should:

- Develop procedures for containing fire water run-off
- Obtain sewerage information from local sewerage undertaker
- Consider the inclusion of drainage information in operational risk plans. See National Operational Guidance: [Operations](#)

Tactical actions

Incident commanders should:

- Minimise the impact of the incident and fire service actions on any identified environmental risk
- Consider the legal exemptions in relation to environmental protection i.e.
 - A discharge is made in an emergency to avoid danger to human health
 - All reasonably practicable steps were taken to minimise pollution
 - The relevant environment agency is informed of the incident as soon as possible
- Consider carrying out an [environmental risk assessment](#) to identify:
 - Site drainage



- local surface waters and/or groundwater and vulnerability
- Attempt to control pollution using a Source – Pathway - Receptor model
- Consider the availability of pollution control equipment and/or pollution containment facilities on site
- Establish the location of the nearest sewage treatment works, and whether it has the capacity to contain and or treat fire water run-off?
- Inform and/or seek advice from environment agencies and/or sewage undertakers where necessary
- Consider diverting water to holding areas or sacrificial areas that will not affect firefighting operations
- Identify potential drainage routes for fire water run-off and released vehicle content
- Consider future disposal options. Refer to section [Disposal](#)
- Identify the location of motorway pollution control devices (PCD) and operate as necessary
- Communicate any risk to the environment to those attending the incident and relevant agencies



Control measure - Diversion

Control measure knowledge

In some cases, pollutants can be diverted to areas that are considered to be of less environmental value or having less risk (called 'sacrificial' areas). For example, low-lying areas such as roadways can be used. This strategy must be agreed with the appropriate environment agency, highways



authority, and other relevant parties.

Strategic actions

Fire and rescue services should:

- Identify if high pressure pipelines traverse their area of response
- Where appropriate, have multi-agency emergency plans, procedures and equipment in place for dealing with high pressure oil pipeline incidents which include guidance relating to the diversion of oil

Tactical actions

Incident commanders should:

- Inform, or request the attendance of, the relevant environment agency and any other appropriate agencies:
 - Pipeline operator
 - Nature conservation bodies
 - Public Health organisations
 - Local authority
 - Highway agencies
 - Other relevant parties including police, landowners and marine agencies
- Identify sacrificial areas where products can be diverted
- Ensure water companies and other water abstractors are aware of threats to drinking water and other abstractions, which can be achieved via environment agency



Control measure - Operational risk information plan

Control measure knowledge

Operational risk information plans are prepared in accordance with the [Fire and Rescue Services](#)

[Act 2004](#) and focus on firefighter safety. The plans should also include information on pollution, prevention and control where a risk to the environment is identified at an incident.

For further information see:

- [DCLG operational risk information guidance](#)
- Section 2.2 and 2.3, [Environmental Protection Handbook](#)
- National Operational Guidance: Operations [Identify foreseeable risk](#)
- National Operational Guidance: [Incident Command](#)

Strategic actions

Fire and rescue services should:

- Include environmental risk information within operational risk plans

Tactical actions

Incident commanders should:

- Consider pollution prevention information contained within site specific risk plans
- Carry out an [environmental risk assessment](#)
- Implement the environmental protection measures identified in operational risk information
- Monitor the impact of fire and rescue service tactics on the identified environmental risk
- Identify operation and effectiveness of fixed installations and pollution prevention measures