



National
Operational
Guidance

Hazard

Polluting materials



NFCC
National Fire
Chiefs Council

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Hazard - Polluting materials

Hazard Knowledge

Contaminated and polluting materials will affect the environment during incidents. Operational actions may cause or increase pollution, for example, if fires are extinguished without any precautionary actions being taken to contain run-off.

The following types of polluting materials could result from an incident: See Section 1.2.4, [Environmental Protection Handbook](#) and National Operational Guidance: [Hazardous Materials](#).

| Scenario | Examples of polluting materials |
|--|--|
| Road traffic collisions | Oils, fuel, coolants or other liquids |
| Spillages of non-hazardous materials | Organic matter such as beer and milk |
| Spillages of hazardous materials | Corrosive, toxic, and flammable materials |
| Using first aid equipment | Clinical waste, disposable gloves, bandages |
| Fires involving environmentally damaging materials | Contaminated fire water run-off, toxic smoke plumes, hazardous wastes/residues |
| Incidents involving contaminating materials | Biological or radioactive materials |

All of these scenarios may result in contaminated personal protective equipment and operational equipment.



Control measure - Access to specialist advice

Control measure knowledge

Seek specialist advice at any incident that could pollute the environment. This could be a hazardous materials adviser or third party expert.

See:

- National Operational Guidance: Incident Command - [Situational Awareness](#)
- National Operational Guidance: Operations - [Reduce exposure](#)
- Delegating environmental protection HEMPAs

Strategic actions

Fire and rescue services should:

- Ensure that fire and rescue service managers who are likely to be in command of an incident involving hazardous materials and/or environmental risk, or are likely to perform the specialist advisory role of hazardous materials advisor (HMA), receive specialist environmental training. This training should place emphasis on larger-scale incidents where there is significant environmental risk
- Consider mobilising or involving a Hazardous Materials Advisor (HMA) for any incident with the potential to pollute the environment, not only those incidents involving hazardous materials. See section 3.3, [Environmental Protection Handbook](#)
- Identify triggers where the local environment agency should be informed or where advice should be requested
- Secure access to more detailed advice from scientific advisers or from the CHEMSAFE service provided by the National Chemical Emergency Centre (NCEC)

Tactical actions

Incident commanders should:

- Ensure that all appropriate environmental agencies are informed of the incident when required
- Consider the appointment of a HMA (or equivalent) to oversee environmental protection



activities

- Consider seeking specialist advice from a HMA on remedial action for spillages and fire water run off
- Request advice from appropriate environmental protection agencies
- Consider specialist advice from:
 - Chemical suppliers whose products are held at the incident site
 - Contracted specialist advice
 - Chemsafe
 - National Chemical Emergency Centre (NCEC)
- Notify the environmental agency if a HVP or large volumes of water are being extracted and used
- Request appropriate environmental protection (EP) resources (e.g. hazmat adviser, EP equipment, pumps)



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

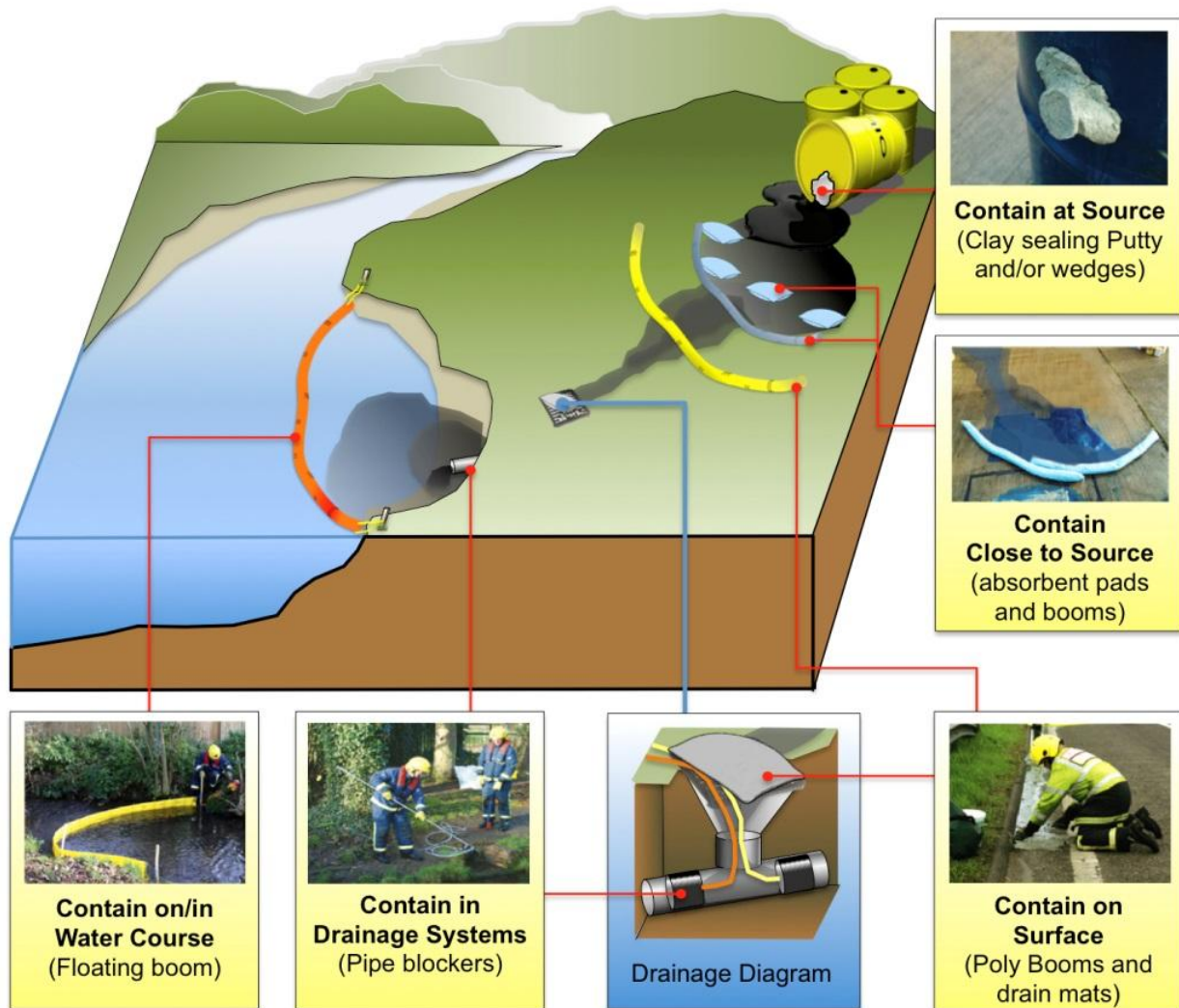
Pollutants may be contained in drainage systems if they have already entered the system. This can be carried out using in-built pollution control devices in the drainage systems such as oil separators, drain closure valves and containment lagoons/tanks and ponds. Such a system should allow predictable 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 - Dilution

Control measure knowledge

In certain situations the best way to deal with domestic quantities of spillage may be to dilute it with a large amount of water. High levels of dilution should ensure that pollutants have little impact

on the environment. It is important to consider the pollutant type and quantity, and how sensitive the receiving water is before doing this.

Approval should also be sought from the environment agency and sewerage company before diluting a spillage unless there is an immediate life risk. In such circumstances they must be informed as soon as is reasonably practicable. See Guideline notification criteria Appendix 4, [Environmental Protection Handbook](#)

Strategic actions

Fire and rescue services should:

- Ensure that fire and rescue service managers who are likely to be in command of an incident involving hazardous materials and/or environmental risk, or are likely to perform the specialist advisory role of hazardous materials advisor (HMA), receive specialist environmental training. This training should place emphasis on larger-scale incidents where there is significant environmental risk
- Consider mobilising or involving a Hazardous Materials Advisor (HMA) for any incident with the potential to pollute the environment, not only those incidents involving hazardous materials. See section 3.3, [Environmental Protection Handbook](#)
- Identify triggers where the local environment agency should be informed or where advice should be requested
- Secure access to more detailed advice from scientific advisers or from the CHEMSAFE service provided by the National Chemical Emergency Centre (NCEC)

Tactical actions

Incident commanders should:

- Contain the spill
- Seek guidance from environment agencies before any attempt at dilution
- Not flush spillages down drains without approval from:
 - The local environment agency
 - Sewerage company
- Ensure that if detergents or other chemicals are added to spillages to assist with clean up or

treatment the resulting mixture is not to be flushed down drains



Control measure - Absorption

Control measure knowledge

Minor spillages can be contained using absorbent materials like pads, sheets and booms. Hazardous materials will retain their hazardous properties when absorbed and this must be considered when handling any absorbed material. Soil, sand and cement all have absorbent qualities and can also be used to create improvised containment barriers or bunds. Absorbent materials should not be used for larger spillages because of the amount of waste that will be created and the cost of disposing it.

Fire and rescue services will normally have the responsibility for disposing of waste they generate at incidents they attend.

Strategic actions

Fire and rescue services should:

- Identify arrangements for the disposal of contaminated absorbents where the responsibility for waste disposal cannot be identified
- Refer to control measure actions for disposal of contaminated firewater run off under [fire water run-off](#)

Tactical actions

Incident commanders should:

- Consider the appropriate type of absorbent to be used for the pollutants
- Consider the benefits of using absorbents against the cost of disposal
- Consider how contaminated absorbent materials will be disposed of in consultation with the relevant environment agency and responsible persons based on the "polluter pays" principle.
- Consider identifying who is responsible for the disposal. See [Disposal](#) section in [Fire water run-off](#)



Control measure - Transportation

Control measure knowledge

There are strict controls on transporting hazardous waste. Fire and rescue services do have dispensation in exceptional, life saving circumstances. See Section 3.10.3, [Environmental Protection Handbook](#).

Fire and rescue services are allowed to transport and store small quantities of non-hazardous waste from incidents.

Strategic actions

Fire and rescue services should:

- Be aware of their legal responsibilities and possible defences for the transportation of hazardous waste
- Develop procedures for the transportation and storage of small quantities of non-hazardous waste, which includes items such as disposable gloves or chemical protection suits. See Section 3.10.4, [Environmental Protection Handbook](#)

Tactical actions

Incident commanders should:

- Consider the legal exemptions. See [Environmental legislation](#)
- Ensure that in the event that emergency transportation of hazardous waste is required, the relevant environment agency is to be informed of the incident as soon as possible and is involved in the decision to transport hazardous waste
- Ensure that fire and rescue service procedures relating to management and transportation of small quantities of non-hazardous waste are followed



Control measure - Aeration

Control measure knowledge

Organic pollutants such as milk and sewage will remove oxygen from bodies of water. Environment agencies and some specialist contractors can use aeration units or chemical methods to raise oxygen levels. Pumping the affected water into the air through hose jets is less effective but is a technique that can be used by fire and rescue services.

Strategic actions

Fire and rescue services should:

- Identify activities that will and will not be carried out by fire and rescue service personnel and equipment

Tactical actions

Incident commanders should:

- Liaise with the local environment agency and, where appropriate, specialist advisers when aeration is to be used to reduce environmental damage.



Control measure - Treatment

Control measure knowledge

Treatment of pollution in a watercourse, for example using activated carbon, or hydrogen peroxide are specialised techniques employed by an environment agency or specialist contractor rather than fire and rescue service personnel. However fire and rescue services maybe asked to assist at incidents where such techniques are employed subject to local agreement.

Strategic actions

Fire and rescue services should:

- Identify activities that will and will not be carried out by fire and rescue service personnel and equipment

Tactical actions

Incident commanders should:

- Ensure that where fire and rescue service personnel or equipment are requested to assist with any form of treatment activity a close liaison with the local environment agency and, where appropriate, specialist advisers is maintained



Control measure - Disposal

Control measure knowledge

During the early stages of an incident when the fire service activities are more dynamic, it may not always be possible to contain fire water safely. In these circumstances use of the foul sewer should be considered for disposal. The flow rate should be controlled to avoid the foul sewer overflowing. Failure to control the flow could result in polluting water entering the water environment. See [Fire water run-off](#).

At some incidents, the foul sewage system may be the best disposal option. If this is the case, the sewerage company must be contacted. They will consider the request and take account of the likely impact if they do not approve the discharge. Agreement from the appropriate environment agency must be obtained before any release takes place. This can be obtained by telephone but must be applied for and confirmed in writing later. See Section 1.6.6, [Environmental Protection Handbook](#).

For further information see Section 3.10.3 [Environmental Protection Handbook](#): The movement of hazardous waste by the fire and rescue service in emergencies.

For further information see Section 3.2.8 [Environmental Protection Handbook](#).

Strategic actions

Fire and rescue services should:

- Be aware of their legal responsibilities and possible defences for the disposal of fire water under the [Environmental Permitting Regulations 2010](#) and [Environmental Damage \(Prevention and Remediation\) Regulations 2015 \(EDR 2015\)](#)
- Develop plans for the disposal of contaminated fire water run off which include plans for:
 - Use off-site storage within drainage infrastructure e.g. balancing ponds
 - Use of foul water drainage
 - Contingencies for where the responsibility for disposal cannot be identified

Tactical actions

Incident commanders should:

- Ensure that waste products created by the fire and rescue service are disposed of both legally and responsibly. The [Environmental Permitting \(England and Wales\) Regulations 2010 \(EPR 2010\)](#) provides two exceptions for the emergency disposal of contaminated fire water runoff where the primary focus of fire and rescue service actions is saving life:
 - Emergency discharge and subsequent contamination of the water environment
 - The removal of waste by a fire and rescue services using fire and rescue service equipment or vehicles
- Consider the legal exceptions. see [Environmental Legislation](#)
- Ensure that the relevant environment agency is informed of the incident as soon as possible and is be involved in the decision to discharge
- Inform sewerage undertakers if discharge is to foul the water sewerage system
- Identify if the responsibility for disposal of waste produced at an incident can be delegated to a third party based on location, material and quantities involved. Namely:
 - Local authority - Playing fields, public open spaces, beaches and some roads
 - Landowner or owner / occupier - Private property
 - Highways agency - (Road Service in Northern Ireland) - Major roads
- Identify if there are any alternative methods of disposal:

- Suitable site arrangements for a waste disposal
- Tankering away the contaminated water
- Identify potential drainage routes for fire water run-off and released vehicle content
- Ensure that waste products created by the fire and rescue service are disposed of legally and responsibly



Control measure - Decontamination

Control measure knowledge

Decontaminating equipment at the incident site will reduce the risk of spreading the contaminant. For low level contamination, equipment should be flushed with mains water. Run-off should be discharged to a foul sewer if approved by the sewerage company. For high level contamination, run-off water should be contained and removed by a registered waste carrier. It can be discharged into a foul sewer if approved by the sewerage company and environment agency.

Where decontamination of people or personal protective equipment is carried out in an emergency it is unlikely that any offence will be committed under the relevant legislation. This is not the case when decontaminating equipment, appliances and roadways. There is no legal defence if pollution is caused following decontamination of equipment or body bags. Where there is uncertainty, advice may be sought from:

- Environment agencies
- Hazardous materials adviser (or equivalent)
- Fire and rescue service high volume pump subject matter advisers
- The local sewerage company

Strategic actions

Fire and rescue services should:

- Be aware of their legal responsibilities and possible defences for decontamination of people, personal protective equipment and the difference in the legislation regarding the decontamination of equipment, appliances, body bags and washing down roadways. See



[Environmental legislation](#)

- Include environmental protection within decontamination procedures
- Where appropriate inform the local environment agency when fire service decontamination activities are in operation

Tactical actions

Incident commanders should:

- Consider the type of decontamination involved and whether it is necessary to contain the decontamination agents used.
- Consider where people are being decontaminated; public drinking water supplies must be protected from the effects of run-off. (Consider the deployment of additional environmental protection equipment)
- Consider informing the local environment agency where any form of decontamination is carried out