

<b>Title:</b>	Environmental protection
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<b>Synopsis:</b>	Guidance relating to the protection of the environment during the course of firefighting, rescuing or managing hazardous
<b>Published:</b>	13/06/2014
<b>Next Review Date:</b>	13/06/2017
<b>Status:</b>	Approved
<b>Version:</b>	First edition version one
<b>Latest Position:</b>	First edition version one published 13/06/2014

*National Operational Guidance – Environmental protection first edition version one (ARCHIVED on 15-02-2016)*

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# **National Operational Guidance**

## **Environmental Protection**

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## **Environmental protection**

At an incident, the highest priority for fire and rescue services will always be the safety of the public and firefighters. But they must also take into account the potential damage to the environment caused by either the incident itself or fire and rescue service actions which can affect air, land and water.

Effective and informed action by responders can reduce the environmental impact of incidents and protect public safety. This section of national operational guidance sets out the knowledge and controls that should be considered to protect the environment. It does not give information on the specific risks from hazardous materials, which can be found in the Department for Communities and Local Government's hazardous materials guidance.

The national operational guidance for environmental protection contains a number of references to the Environment Agency's [Environmental Protection Handbook for the Fire and Rescue Service](#).

## **Environmental responsibilities**

Responsibility for protecting the environment in the UK rests with a number of different organisations at central and local government levels.

The most significant of these are the four UK environment agencies: the Environment Agency in England, Natural Resources Wales, the Scottish Environment Protection Agency and the Northern Ireland Environment Agency. Each has similar duties and powers to protect and improve the environment, although there are some differences in responsibilities between them, for example in flood risk management, fisheries, and controlling industrial discharges and emissions. The term 'environment agencies' is used in this guidance to refer to these four organisations.

Nature conservation bodies are the enforcing authority for open land such as sites of special scientific interest (SSSI), specific areas of conservation and special protection areas. These bodies include Natural England, Scottish Natural Heritage, Natural Resources Wales and the Northern Ireland Environment Agency.

The Maritime and Coastguard Agency is responsible for pollution from shipping and offshore installations such as oil rigs. The Secretary of State has a power to extend marine responsibilities when it is considered to be in the national interest. See Section 1.8.2, [Environmental Protection Handbook](#).

Local authorities have environmental responsibilities including the impact of smoke from a fire and vehicle emissions. They deal with complaints related to noise, litter and odour for sites not regulated by environmental agencies and most fly tipping incidents. See Section 1.3.5, [Environmental Protection Handbook](#).

## **Fire and rescue service responsibilities**

The statutory requirements for fire and rescue services are set out in the Fire and Rescue Services Act 2004, or the equivalent in devolved administrations. The act allows a fire and rescue service to take any appropriate action if an incident harms, or is likely to harm, the environment, but it does not contain a specific duty or requirement to protect the environment.

There are, however, duties for fire and rescue services in five areas of environmental legislation:

- Water quality
- Sewage systems
- Land and soil
- Waste
- Nature conservation

It is important to be aware of the duties that environmental legislation places on fire and rescue service actions and the defences available. Fire and rescue services can be prosecuted and be liable for clean-up costs if their actions cause or worsen pollution.

Fire and rescue service actions can also damage areas of nature conservation. These include legally protected sites such as sites of special scientific interest, special protection areas and national nature reserves. These sites are protected because of the value of the habitat and species present and include forests, wetlands, rivers, beaches and moorlands. Fire and rescue services have a legal duty to consider the effect their actions might have at incidents on or near these sites.

## **Environmental legislation**

*The Environmental Permitting (England and Wales) Regulations 2010 (EPR 2010)*

Under the regulations it is an offence to *cause* or *knowingly permit* the release of pollution to ground or surface waters. This is unless the release is allowed by an environmental permit or exemption.

To *cause* must involve an active operation or the failure to take action. To *knowingly permit* involves the failure to prevent pollution where there is knowledge of it occurring.

The regulations do allow a defence where fire and rescue service actions cause pollution, but the following three criteria must all be met:

- 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

See Section 1.4, [Environmental Protection Handbook](#).

*Environmental Damage Regulations 2009*

Under the regulations, fire and rescue services must take steps to prevent or reduce environmental damage. They must notify the appropriate regulator of:

- Damage to a site of special scientific interest
- Damage to species and habitats outside SSSIs that are protected by EU legislation
- Serious long-term damage to ground or surface water (that results in a decline in water status under the Water Framework Directive)
- Contamination of land by substances or organisms that cause significant risk to human health

In normal circumstances there is no defence against a breach of the regulations. However there is a defence in exceptional circumstances. See Section 1.4.6, [Environmental Protection Handbook](#).

The regulator may require fire and rescue services to carry out preventive and remediation measures. It may also be necessary to pay costs for any environmental damage caused. For protected sites and species, a fire and rescue service may be liable if damage is deliberate or is caused by negligence.

#### *Water Industry Act 1999*

It is an offence to release polluting material into a sewer without having consent from the sewerage company. Sewerage companies must be informed when accidental releases occur. See Section 1.6.4, [Environmental Protection Handbook](#).

### **Other relevant legislation**

England and Wales:

- The Hazardous Waste Regulations 2005 (as amended)

Scotland:

- Water Environment (controlled Activities) (Scotland) Regulations 2011
- Sewerage (Scotland) Act 1968 as amended
- Water Environment (Controlled Activities) (Scotland) Regulations 2011
- The Special Waste Regulations 1996, as amended
- Environmental Liability (Scotland) Regulations 2009

Northern Ireland:

- The Water (Northern Ireland) Order 1999
- The Waste and Sewerage Services (NI) Order 2006
- The Groundwater Regulations (Northern Ireland) 2009
- The Environmental Liability (Prevention and Remediation Regulations (Northern Ireland) 2009

### **Fire service legislation**

In addition to their responsibilities under the Fire and Rescue Services Act 2004, fire and rescue services must be aware of their responsibilities under other relevant legislation which consider the environment.

#### *The Fire and Rescue Services (Emergencies) (England) Order 2007*

The Order places a duty on fire and rescue services (in England) to have the capability to remove chemical, biological, radiological, nuclear and explosive contaminants from people at an emergency. There is also a duty to contain water used for decontamination for a reasonable time. Fire and rescue services must take steps to prevent or limit environmental damage when decontaminating people.

The Fire (Additional Function) (Scotland) Order 2005 places a similar duty on the Scottish Fire and Rescue Service, as does the Fire and Rescue Services (Emergencies) (Wales) Order 2007 in Wales. See Section 1.6.6, Environmental Protection Handbook

#### *Civil Contingencies Act 2004*

As Category 1 responders, fire and rescue services are part of the multi-agency response to civil emergencies. The role of the fire and rescue service under the act is to save life, and to protect

property and the environment. To be an 'environmental emergency' an incident must be one of the following:

- Contamination of land, water or air with harmful biological, chemical or radioactive substance
- Flooding
- Disruption or destruction to plant life or animal life

## **Risk management planning**

Fire and rescue service risk management plans should consider environmental risk. They should identify and assess the:

- Location of watercourses and other water bodies
- Location of SSSIs, other protected sites or sensitive habitats
- Location of sensitive aquifers
- Location of water abstraction points
- General water conditions (e.g. hardness, acidity, temperature)
- Drainage plans and location of pollution prevention systems

A basic understanding of environmental science will help fire and rescue services prioritise environmental protection work. See Section 1.2, [Environmental Protection Handbook](#).

## **Working with environment agencies**

Partnerships between environment agencies and fire and rescue services are a key part of any strategy to control pollution. The main responsibilities of the environment agencies are:

- Managing water resources used for public and private water supplies
- Preventing and controlling pollution in inland waters, estuaries and coastal waters (to a distance of three miles)
- Protecting people and the built environment from flooding
- Regulating emissions and operations at large or complex industrial sites
- Setting consistent standards for treating, storing and moving waste
- Regulating the disposal of radioactive waste from nuclear licensed sites
- Regulating the keeping and use of radioactive materials on sites other than licensed sites

See Section 1.3, Environmental Protection Handbook

## **Communicating with environment agencies**

Fire and rescue services must have systems to advise environment agencies when there is potential for pollution, or when pollution has occurred. This includes pollution from fire and rescue service actions. There is no legal defence where pollution is caused by a fire and rescue service in non-emergency situations.

When informed of an incident, environment agencies will first provide help by telephone. A competent agency officer will assess how serious the incident is and decide on the response. The environment agencies classify environmental impacts from Category 1 to Category 4, with Category 1 incidents the most serious. Environment agencies will try to attend every incident where there

may be a significant environmental impact or advise incident commanders if requested. See Section 3.1, [Environmental Protection Handbook](#).

### **Scene protocols**

The attending environment agency officer will assess the scene, offer advice or take action to prevent or limit pollution. The following roles are taken by environment agencies' officers:

- Competent officer—the officer receiving initial details of the incident and determining the response
- Site controller—responsible for coordinating the environmental response at the scene
- Base controller—an experienced member of staff responsible for overall incident control

The same person may perform one of more of these roles at simple incidents.

Environment agencies may also take direct action to control pollution if there is an immediate threat to the environment and the polluter cannot be found or is unable or unwilling to act. See Section 3.6, [Environmental Protection Handbook](#).

### **Motorway and highway drainage**

The overall responsibility for managing motorways and trunk roads lies with the relevant highways agency. Some roads are managed by private companies, and other 'A' roads and all minor roads are managed by local authorities.

There are three major objectives in road drainage:

- To remove surface water quickly to provide safe roads and minimum nuisance.
- To provide effective drainage to maximise the life of the road.
- To minimise the impact of run-off on the receiving environment.

Road drainage can be broadly classified into two elements—surface and sub-surface. These two elements are not completely separate from one another.

Because it is important that water drains quickly from the road surface, it can be difficult to intercept polluted run-off from an incident before it enters a local waterbody.

The highways agencies have access to a wide knowledge base of the area along the road network, including the location and operation of pollution control devices. They will also be able to call on additional environmental protection equipment and resources from their own incident support units.

Green bins containing pollution control materials are located near many motorway slip roads. The stations are kept locked and keys are held by environment agency and highways agency traffic officers. See Section 1.7, [Environmental Protection Handbook](#).

## Hazard and control statement

The hazard and control statement lists the hazards that could reasonably be expected to be present for that area and a very brief description of the controls that could be used to reduce exposure to or impact of each of them. Other specific hazards exist in addition to oil pipelines and wildfires and these are considered in the detailed guidance in the [Environmental Protection Handbook](#).

Hazard	Control measures
Fire water run-off	Controlled burn Containment Recycling Reduction Disposal Operational risk information plan
Firefighting with foam	Containment Substitution Reduction Disposal
Smoke plumes	Controlled burn Extinguish Removal or separation Use of Air Quality Cell or appropriate function Operational risk information plan
Polluting materials	Access to specialist advice Containment Dilution Absorption Transportation Aeration Treatment Disposal Decontamination
Physical damage	Defined paths and tracks in protected areas Liaison with conservation bodies Operational risk information plan
High pressure oil pipelines	Containment Diversion Operational risk information plan

Wildfires	Containment Firefighting foam and chemicals Access to specialist advice High volume pumps Operational risk information plan
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## Hazards, control measures and actions

### General

Incident commanders should carry out an environmental risk assessment for every incident. For smaller incidents this may be included in the dynamic risk assessment. For larger or protracted incidents, an environmental analytical risk assessment should be completed.

Pollution control should be carried out using a Source-Pathway-Receptor model. The first action is to identify any hazards to the environment (the source). When a hazard is identified, measures should be taken to prevent or reduce the risk of pollutants reaching (via a pathway) vulnerable parts of the environment (the receptor). For example, contaminated fire water (the source) could travel via surface drains (the pathway) into a local watercourse (the receptor).

### Fire water run-off

#### Knowledge

During incidents contaminated fire water can affect the environment through direct run-off into a waterbody, soaking away into the ground or by entering drainage systems. These systems may then transport pollutants in the firewater into rivers, lakes, estuaries and the sea, and groundwater or to sewage treatment works. Introducing a heated liquid into a watercourse is also a form of pollution because it may cause de-oxygenation or kill aquatic organisms. See Section 1.6, [Environmental Protection Handbook](#).

Hazard	Control measures
Fire water run-off	Controlled burn Containment Recycling Reduction Disposal Operational risk information plan

#### Actions

##### *Controlled burn<sup>1</sup>*

UK law does not require fire and rescue services to extinguish fires. There are times when an incident commander may consider stopping or limiting firefighting, for example, when it is not possible to contain polluted fire water. A controlled burn may reduce environmental damage by avoiding or restricting the use of extinguishing media or allowing better combustion of pollutants. However, it may also worsen them. See Section 3.7, [Environmental Protection Handbook](#).

<sup>1</sup> Note that a controlled burn does not relate to controlled burn of moorland, heathland etc., or agricultural or other wastes.

Examples of when a controlled burn should or should not be considered are shown below.

Controlled burn considered	Controlled burn inappropriate
Life or health is not at risk or a controlled burn will reduce risk to people	Life or health is at immediate risk or a controlled burn will increase risk to people
There is little chance of extinguishing the fire	There is a high chance of extinguishing the fire with minimal health or environmental impacts
Fighting the fire with other techniques could cause a significant risk to firefighters	The fire is likely to spread widely or to high hazard areas
Property is beyond salvage	Important or valuable buildings are involved
Fire conditions, weather conditions and/or the local landscape are appropriate for minimising air quality impacts	Fire conditions, weather conditions and/or the local landscape are inappropriate
Fire water run-off could damage an area of high environmental sensitivity or value	Drainage from the site leads to an area of low environmental sensitivity or fire water is not polluting
Fire water run-off could affect drinking water sources or affect sewage treatment works	Fire water can be contained on site or off-site

Incident commanders will decide whether to allow a controlled burn. They should take specialist advice wherever possible from tactical advisers, environment agency staff, owner/occupiers and public health bodies. The decision should be communicated as appropriate—including to the public via the media if necessary.

A controlled burn strategy may be considered at any time during an incident. At incidents where it is expected that the fire will burn for some time it may be appropriate to use both controlled burn and extinguishing tactics. For example, using a controlled burn in the initial stages of an intense fire may result in lower concentrations and better dispersion of pollutants because of the high combustion temperatures as well as reduced run-off. However as the fire dies back and begins to smoulder, the pollutant levels in the smoke plume may increase. At this point an extinguish strategy could be used. Such a strategy would also give more time for firewater containment measures to be put in place.

Certain buildings and their contents have a high value because of their architectural, historical or monetary significance. In these cases the benefits of a controlled burn must be considered against the building's value. Advice should be taken from the owner or occupier and the appropriate conservation body and decisions made on a case-by-case basis. Other containment measures may be used when a building is of high value and/or poses a high environmental risk.

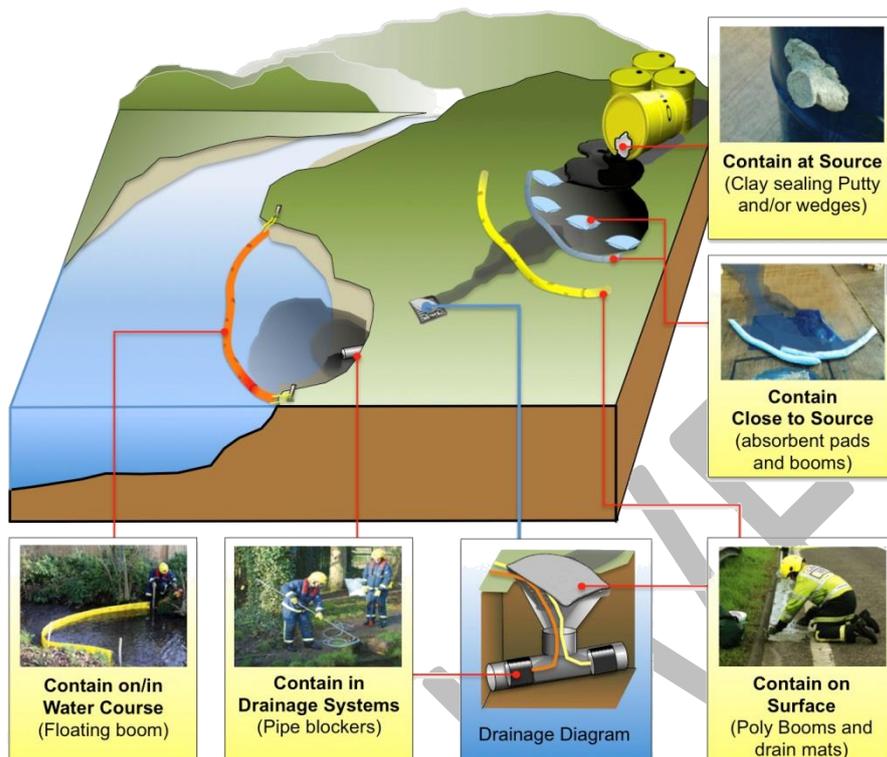
*Containment*

This hierarchy should be used 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 flexi-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, which allow predictable volumes of run-off to be stored. Or portable equipment such as pipe blockers can also be used.
5	Containment on or in watercourse	The deployment of booms 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



Fire and rescue services can use foul sewage systems to contain polluting material if approved by the sewage company and environment agency. When doing so take care that pollutants and sewage do not escape from any storm overflows into the sewage system. The contained pollutants and sewage can then be removed by tanker.

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, 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.

### Recycling

Pumps can be used to recycle firewater at an incident. It is important that the act of recycling water does not make the situation worse. Consistent recycling of fire water run-off will increase the concentration of pollution, leading to difficulties in disposing of it later. Advice on using and disposing of recycled fire water should be sought from subject matter advisers. Incident commanders should make sure that the fire water is not harmful to firefighters.

### *Reduction*

The amount of water used can be reduced by using sprays instead of jets and using hand-held jets instead of ground monitors. This will reduce the amount of firewater run-off.

### *Disposal*

If it is not possible to contain fire water safely it may be possible to direct it to the foul sewer. 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. Link to section in 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](#).

### *Operational risk information plan*

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 & 2.3, [Environmental Protection Handbook](#).

## **Firefighting with foam**

### **Knowledge**

Firefighting foam causes water pollution. This should not stop fire and rescue services from using foam where there is an operational need. In most cases preventive action can be taken to limit any impact. Using foam can also have environmental benefits such as reducing water use and extinguishing a fire more quickly.

The main environmental effects of firefighting foams are:

- They can lead to the de-oxygenation of water
- They can be toxic to aquatic life and present risks to drinking water supplies
- Some compounds in them do not break down in the environment and can accumulate in animals.

The type of foam used should be appropriate for the task in hand and the minimum quantity used. Using foam is a trigger for notifying environment agencies of an incident. This includes the use of compressed air foam systems. Extra care should be taken when using firefighting foam close to water sources or sensitive environmental areas. Some sites have oil separators in drainage systems. Firefighting foam run-off should not be allowed to enter an oil separator because it will pass through it unaffected and may also flush oil into the drainage system. See Section 3.9, [Environmental Protection Handbook](#).

Hazard	Control measures
Firefighting with foam	Containment Substitution Reduction Disposal

## Actions

### *Containment*

Actions for foam containment and run-off are the same as those for *Fire water run-off*. Link Every effort should be made to stop foam entering surface and groundwater during incidents.

Incident commanders should also consider:

- The availability of pollution control equipment and facilities
- The need to work with local environment agencies and sewerage companies
- Operations in and around protected sites (e.g. SSSIs)

### *Substitution*

Using foam may have an environmental benefit as fires can be quickly extinguished and fire water run-off is reduced. However, incident commanders can consider using a different extinguishing media.

### *Reduction*

Link to section in Fire water run-off

### *Disposal*

Link to section in Fire water run-off

### *Operational risk Information plan*

Link to section in fire water run-off

## Smoke plumes

### Knowledge

Incident commanders should take advice from environment agencies, public health bodies and the police at fires that produce large amounts of toxic smoke. This will help them decide whether or not to extinguish the fire based on the environmental and public health implications. If they decide to extinguish the fire then pollution control measures should be used to protect bodies of water from fire water run-off.

Hazard	Control measures
Smoke plumes	Controlled burn Extinguish Removal or separation Air quality cell function Pollution response plan Operational risk information plan

## Actions

### *Extinguish*

High volume pumps can be used to provide water for firefighting. When doing so, the appropriate environment agency must be informed. As well as containing run-off care should be taken not to draw too much water because this can threaten water supplies and ecosystems.

### *Removal or separation*

Fires at open-air storage sites, particularly those storing combustible waste can create large volumes of smoke and firewater containing a wide range of pollutants. The direct application of water with or without firefighting additives to stacks of burning material is often ineffective and may generate large volumes of smoke and contaminated fire water. Fire and rescue services may need to consider other tactics such as separating burning material from the fire and extinguishing it with water jets, in pools or tanks of water, and/or using a controlled burn.

### *Air quality cell function*

If major chemical air pollution occurs at an incident, the environment agencies and public health bodies will set up an air quality cell. This will include other organisations including the Meteorological Office, the Health and Safety Laboratory and local authorities.

The air quality cell will coordinate air monitoring and will provide air quality information. Public health bodies will use this information to provide health advice to responders and the public. See Section 3.8, [Environmental Protection Handbook](#).

### *Operational risk information plan*

Link to section in Fire water run-off

## Polluting materials

### 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](#).

Scenario	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

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

Hazard	Control measures
Polluting materials	Access to specialist advice Containment Dilution Absorption Transportation Aeration Treatment Disposal Decontamination

## Actions

### *Access to specialist advice*

Fire and rescue services should consider seeking specialist advice at any incident that could pollute the environment. This could be a hazardous materials environmental protection officer, other hazmat specialist or third party expert.

### *Containment*

These are broadly the same as those for *fire water run off containment*. link However, where it has not been possible to control a pollutant in or near the containment vessel or on the road it may be possible to contain it in sewer systems, e.g. by blocking drainage outfalls with a pipe blocker.. Pollutants may also be contained in drainage ditches using booms or damming techniques.

### *Dilution*

The best way to deal with a small 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.

Spillages should not be flushed down drains without approval from the environment agency and sewerage company. Fire and rescue services should seek guidance from environment agencies

before any attempt at dilution. If detergents or other chemicals are added to spillages the resulting mixture should not be flushed down drains.

#### *Absorption*

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

#### *Transportation*

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. This includes items such as disposable gloves or chemical protection suits. See Section 3.10.4, [Environmental Protection Handbook](#).

#### *Aeration*

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.

#### *Treatment*

Small spillages of acid and alkalis can be treated by using neutralising materials. Care should be taken as the resulting reaction may be volatile. The hazardous waste that is produced must be disposed of appropriately. Fire and rescue services are responsible for any waste produced as a result of their activities.

Treating pollution in water can be very difficult and is a specialist technique used by an environment agency or specialist contractors.

#### *Disposal*

Link to section in Fire water run-off

#### *Decontamination*

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 environmental protection officer (or equivalent subject matter expert)
- Fire and rescue service high volume pump subject matter advisers
- The local sewerage company

## Physical damage

### Knowledge

Fire and rescue service resources including appliances, command units and equipment may cause physical damage if placed or used in sensitive protected sites. This can be managed by careful movement and deployment of resources and knowledge of local sites and the areas most susceptible to damage.

Hazard	Control measures
Physical damage	Defined paths and tracks in protected areas Liaison with conservation bodies Operational risk information plan

### Actions

#### *Defined paths and tracks*

Fire and rescue service staff should use the least damaging routes to incidents, stay on marked paths and tracks and take care when deciding where to place their equipment.

#### *Liaison with conservation bodies*

Advice should be sought from the staff and volunteers from relevant nature conservation bodies.

#### *Operational risk information plan*

Link to section in Fire water run-off .Operational risk information plans should identify safe areas for deployments and movements and identify areas that are most susceptible to physical environmental damage.

## High pressure oil pipelines

### 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 may be released.

Pipelines are typically 100 – 400mm diameter steel pipes, laid in 1.5m deep excavations. The route is identified by marker posts. The integrity of a pipeline could be compromised by excavations, landslips, flooding, pipeline corrosion and operational errors. 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

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 reduce ignition risk.
- Providing resources to protect drinking water supplies and important, wildlife habitats and sewer systems.

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

Hazard	Control measures
High pressure oil pipelines	Containment Diversion Operational risk information plan

## Actions

### Containment

Link to section in Fire water run-off

### Diversion

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 environment agency, highways authority, and other relevant parties.

### Operational risk information plan

Link to section in Fire water run-off

## Wildfires

### Knowledge

Large uncontrolled wildfires can have a significant effect on the environment. They occur in vegetation such as woodland, scrub, grassland and heaths and can be either of natural or of man-made origin. To differentiate from large vegetation fires, wildfires have one or more of the following characteristics:

- Involve a geographical area of more than one hectare.
- Have a flame length of more than 1.5 metres.
- Require a committed resource of over four fire service appliances.
- Require resources to be committed for over six hours.
- Present a serious threat to life, environment, property and infrastructure.

Wildfires can pollute air, water and land. In common with most incidents, wildfire pollution prevention will concentrate on protecting the environment.

Effects to be considered include:

- Pollution of surface and groundwater from firewater run-off containing
- Firefighting foam and additives
- Soil dislodged by firefighting
- Combustion products from burnt vegetation
- Seawater, if used to extinguish fires it can affect species that are dependent on fresh water and their habitats and other sensitive flora and fauna

Longer term pollution effects

- After the fire, for instance, from increased soil run-off due to loss of vegetation.

The environmental impact of a wildfire is influenced by:

- Fuel—the type, moisture content, and density
- Prevailing weather conditions—rainfall, air temperature and humidity
- Landscape—such as the orientation and steepness of slopes

Wildfires could also threaten critical infrastructure such as pipelines and the national grid. See section 3.11.1, [Environmental Protection Handbook](#).

Hazard	Control measures
Wildfires	Containment Firefighting foam and chemicals Access to specialist advice High volume pumps Operational risk information plan

## Actions

### *Containment*

Pollution control measures such as containment should be used to prevent pollution of surface and groundwater. The control measures are outlined under fire water run-off (see above).

### *Firefighting foam and chemicals*

Using foam or other firefighting chemicals should be considered. The control measures are outlined under fire water run-off Link . The use of high-pressure water fogging systems should be considered instead of foam or water jets, along with other techniques that avoid the use of extinguishing media such as creating firebreaks.

### *Access to specialist advice*

Incident commanders should consider the appointment of a hazardous materials environmental protection officer (or equivalent subject matter expert) to oversee environmental protection activities at incidents. Specialist wildfire officers may be also appointed. The attendance of partner

agencies such as environment agencies, conservation bodies and the Forestry Commission should be requested at an early stage of the incident.

*High volume pumps*

High volume pumping appliances may be used to pump significant amounts of water during a wildfire. Specific procedures have been produced between the fire and rescue service and environment agencies. The environment agencies keep pumps at various locations that can be used to support, supplement or replace fire and rescue service pumps.

Fire and rescue services should avoid drawing too much water from rivers used for drinking water sources, important fisheries, or wildlife habitats. They should also be aware of bio-security (cross-contamination) concerns, for example taking water from one source and contaminating another. The environment agency should be consulted for advice on abstraction rates. See Section 2.12, [Environmental Protection Handbook](#).

*Operational risk information plan*

Link to section in Fire water run-off

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